

**WORK CONDITIONS AND EXPERIENCES OF EMERGENCY MEDICAL SERVICES
PERSONNEL IN THE DEPARTMENT OF HEALTH IN TWO PROVINCES, SOUTH
AFRICA**

BY

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DEDICATION

I would like to dedicate this manuscript to my lovely wife, Mogomotsi Sibanda. She was my pillar of strength throughout my years of study. We had difficult moments but you stood by me and I really appreciate that and am very blessed to have a partner like you. You have encouraged me when I was feeling down and demotivated. You helped me burn the midnight oil and for that I am forever grateful for your support and love. I would also like to dedicate it to my four lovely daughters Palesa, Kelebogile, Letlhogonolo and the last addition to the family Thatoyaone for understanding that their father could not spend much time with them but had to focus on his studies. Daddy loves you so much. Not forgetting my late Father who kept on asking when do I finish studying (may His soul rest in peace) daddy this is to you. Not forgetting my mother, my brother and my sister as well. To all my friends who believed in me, thank you. You didn't just give me the nickname Professor, I believe that you saw the potential in me and this is to you as well. To all those that saw a mentor in me, I am saying you encouraged me to always do better so that I do not disappoint, you are the best.

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ABBREVIATIONS AND ACRONYMS

ACEP	American College of Emergency Care
AED	Automated External Defibrillator
AEA	Ambulance Emergency Assistant
AIDS	Acquired Immune Deficiency Syndrome
ALS	Advanced Life Support
B-Tech EMC	Bachelor of Technology in Emergency Medical Care
BAC	Basic Ambulance Course
BCEA	Basic Conditions of Employees Act
BLS	Basic Life Support
BLUE	Best Linear Unbiased Estimations
CCA	Critical Care Assistant
CNS	Central Nervous System
COIDA	Compensation for Occupational Injuries and Disease Act
CRF	Corticosteroid Releasing Factor
EC	Eastern Cape Province
ECG	Electro Cardio Gram
EAP	Employee Assistance Programme
ECP	Emergency Care Practitioner
ECP-B	Emergency Care Practitioner – Basic
ECP-I	Emergency Care Practitioner – Intermediate
ECP-A	Emergency Care Practitioner –Advanced
ECT	Emergency Care Technician
EMS	Emergency Medical Services
EMT – B	Emergency Medical Technician – Basic
EMT – I	Emergency Medical Technician – Intermediate
ESP	Employee Support Programme
EWP	Employee Wellness Programme
FDNY	Fire Department New York
FS	Free State Province

GHQ	General Health Questionnaire
GP	Gauteng Province
HIV	Human Immune-Deficiency Virus
HPCSA	Health Professions Council of South Africa
IES	Impact of Events Scale
ILS	Intermediate Life Support
J-DR	Job Demand Resource
KED	Kendrick Extrication Device
KZN	Kwa Zulu-Natal Province
LP	Limpopo Province
MVA	Motor Vehicle Accident
MP	Mpumalanga Province
NDoH	National Department of Health
NDip EMC	National Diploma in Emergency Medical Care
NIMH	National Institute for Mental Health
NW	North West Province
NC	Northern Cape Province
PDP	Professional Driver Permit
PTSD	Post-Traumatic Stress Disorder
SA	South Africa
SAPS	South African Police Service
USA	United States of America
VA	Veterans Association
WC	Western Cape Province
WGP	Work Goal Process

ABSTRACT

The purpose of this study was to explore and determine whether Emergency Medical Services personnel are vulnerable to stress and to what extent. What the study also wanted to determine is whether the affectors contribute to the development of stress vulnerability in the EMS setting in the South African context. The study further aimed at coming up with recommendations for the Department of Health to alleviate the burden that stress vulnerability has on services in the two provinces and with a possibility of extending this to other provinces in the country.

In this study work conditions, experience and the environment within which EMS personnel operates were explored. The extent to which these conditions, experiences and environment impact or affect the lives of EMS personnel was also examined. The likelihood that impact or influences might cause vulnerability to stress among EMS personnel were also investigated.

The aim of the study was to investigate the impact of work conditions and experiences of Emergency Medical Services personnel and how this can lead to stress vulnerability in the Department of Health in Gauteng and North West Provinces.

There are four objectives in the study that were explored and they are: (1) To describe the relationship between work conditions, work experiences and the stress vulnerability among EMS personnel, (2) To determine the stress vulnerability among EMS personnel and how this affects their lives, (3) To explore how stress vulnerability affect gender, ethnicity, different age groups differently, and (4) To devise methods and tools to be used to alleviate stress vulnerability in the EMS employee's workplace and to address the current situation. From above objective it is clear that there is very little if no knowledge of the existence of the vulnerability to stress in the EMS environment.

The study employed the stratified random sampling technique. It was chosen above all other techniques because it is the best suited method for this study. The other reason that led to the method being chosen was that the EMS population was divided in strata consisting of age, gender, years of service, ethnicity, location, etc. The study was also quantitative and qualitative

in approach simply because there were open ended questions that were meant for a specific group of the sample and there were closed ended questions meant for the other group of participants. Further to this descriptive analysis techniques were used to analyze the data collected. The population of EMS personnel within the two provinces Gauteng and North West Province is *N*2,349 and the derived sample was 501, though the sample size that was required was *n*470. All the 501 questionnaires collected were usable. The primary method used for collecting data was questionnaires. The data is presented using both tables and graphs as well as discussion of the results. The data analysis tool that was used is the SPSS software v 20 and with the help of a statistician.

The study revealed that EMS employees are somewhat exposed to stress vulnerability within Gauteng and North West Provinces. This loosely translates that EMS personnel are exposed to affectors that render EMS personnel in the country vulnerable to the development of stress. The findings also conclude that stress vulnerability is not related in any way to gender, age, ethnicity and area of operation as suggested by the hypotheses. This suggests that all EMS employees regardless of their background and characteristics are exposed to the development stress vulnerability as they are equally exposed to affectors and might yield the same results across the different areas of operation. It is very clear that EMS employees seek assistance to deal with stress in one way or the other to ensure that their emotional wellbeing is looked after to render ready to handle the next patient.

In conclusion, based on the results of the study stress vulnerability exists within the EMS environment. It is not related in any way to age, gender, race or qualification levels. It is believed that the affectors that EMS personnel are exposed to, affect any employee as long as they work operationally and this is part of their everyday duties. It is further believed that no one level of qualification is better than the other with relation to exposure to development of stress vulnerability for as long as employees are exposed to the same eafectors.

According to the study there were six recommendations made but not necessarily limited to: (1) the need to conduct further research on areas that did not stand out; (2) the employment and appointment of psychologists to ensure that there are regular screening and debriefing of EMS

employees; (3) employment pre-screening to ensure that the right caliber of candidates are employees are employed; (4) the need to establish a chaplaincy service as it exists in some services and is somewhat helpful for debriefing purposes and spiritual upliftment, (5) establishment of EMS trauma lines as most employees are not keen on sharing information face-to-face, as a pilot to see if this assist and roll out when the results are positive, and (6) Establishment of assessment and interventions teams to ensure that they go around the provinces and assess the EMS employees and make recommendations for intervention processes. This will assist in identifying those employees who are developing signs of stress vulnerability.

TABLE OF CONTENTS

Chapter 1 – Orientation

1.1	Introduction	1
1.2	The Role of EMS	2
1.3	The Problem	4
	1.3.1 Nature of the Problem	4
	1.3.2 Problem Statement	7
1.4	Purpose of the Study	7
1.5	Aims and Objectives	10
	1.5.1 Aim of the Study	10
	1.5.2 Study Objectives	10
1.6	Research Questions	10
1.7	Rationale for the Study	11
1.8	Significance of the Study	11
1.9	Scope of the Study/Area of Study	13
1.10	Definition of key concepts	16

Chapter 2 – Literature Review

2.1	Introduction	17
2.2	Work conditions of EMS employees	18
	2.2.1 Rural vs Urban Services	22
	2.2.2 Available and well-functioning equipment & vehicles	23
	2.2.3 Human Resource support and developmental training	26
	2.2.4 Job strain and its impact on employee performance	29
	2.2.5 Work-Life Balance	30
	2.2.6 Work-Family Conflict	34
	2.2.7 Overtime work	36
	2.2.8 Sleep disturbance due to shift work	38

2.3	Job satisfaction in EMS	39
2.4	Characteristics of EMS employees	42
2.4.1	Age and Stress Vulnerability	43
2.4.2	Levels of training in EMS	44
2.4.3	Gender and Race	49
2.5	Burn-out or Job-Stress	51
2.5.1	Basic Support from managers	52
2.6	Additional stressors in EMS	54
2.7	Development of stress in the workplace	57
2.8	Conclusion	66

Chapter 3 – Theoretical Framework

3.1	Introduction	68
3.2	Research objectives	68
3.3	Theoretical background	68
3.3.1	The Vie Theory	72
3.3.2	High performance cycle theory	74
3.3.3	Opponent process theory	76
3.3.4	Comparison theory	76
3.4	Environmental factors hypothesis	78
3.4.1	Provincial services vs Local Authority services	79
3.4.2	Government support for EMS	80
3.4.3	The socio economic barrier	80
3.5	The Employee Assistance Program	81
3.5.1	Perceived usefulness	81
3.5.2	Perceived ease of use	82
3.5.3	Employee’s anxiety	82
3.5.4	Relevance to the study	83
3.6	Organization factor hypothesis	83
3.6.1	Availability of EAP	83

3.6.2	Organizational support	84
3.6.3	Organizational readiness	84
3.6.4	Top management support	85
3.7	Summary of the chapter	85

Chapter 4 – Research Design and Methodology

4.1	Research Design	86
4.2	Methodology	86
4.2.1	Quantitative research design	87
4.2.2	Qualitative research design	89
4.3	Target population	89
4.3.1	Unit of analysis	90
4.4	Sampling design	90
4.4.1	Type of sampling design chosen	91
4.4.2	Sample frame	92
4.4.3	Sample size	93
4.4.4	Sampling procedure	94
4.5	Data collection methods	94
4.5.1	Measuring instrument	95
4.5.2	Components of the questionnaire	96
4.5.2.1	The Biographical Questionnaire	96
4.5.2.2	The Life Satisfaction Questionnaire	96
4.5.2.3	The Affectometer Questionnaire	97
4.5.2.4	The Impact of Events Scale Questionnaire	97
4.5.2.5	The General Health Questionnaire	98
4.5.2.6	The Stress Vulnerability Questionnaire	98
4.5.2.7	The Work Environment Questionnaire	98
4.5.2.8	The Job Satisfaction Questionnaire	98
4.5.3	Procedure	99
4.5.4	Variables	99

4.5.4.1	Independent variables	100
4.5.4.2	Dependent variables	100
4.6	Data analysis	104
4.6.1	Data analysis techniques	104
4.6.1.1	Correlation analysis	105
4.6.1.2	Regression analysis	106
4.6.1.3	Analysis of variance	108
4.7	Validity and reliability	109
4.8	Ethical consideration	110
4.8.1	Voluntary participation	110
4.8.2	No harm to the participants	111
4.8.3	Anonymity and confidentiality	111
4.8.4	Respect integrity of participants	112
4.8.5	Freedom to withdraw	113
4.8.6	Deception	113
4.8.7	Analysis and reporting	114

Chapter 5 – Data Analysis and Presentation of Results

5.1	Introduction	115
5.2	Source of data	115
5.3	Research Instrument	116
5.3.1	Reliability test	116
5.3.1.1	Reliability test on measuring instrument using Cronbach’s Alpha	116
5.3.1.2	Reliability test on measuring instrument using Split Half reliability test	116
5.4	Assumption of regression analysis and ANOVA	123
5.4.1	Assumption For linearity, normality and homoscedasticity	123
5.4.2	Assumption of multicollinearity	126
5.4.3	Assumption of interval level data	128

5.4.4	Assumption of recursiveness	129
5.4.5	Assumption of specification and identification	129
5.4.6	Assumption of uncorrelated disturbance	131
5.4.7	Assumption of independent and random sampling	132
5.4.8	Assumption of reliability	132
5.5	Independent and random sampling	134
5.6	Assumption of the error terms	134
5.7	Homogeneity of variance or equality of variance	135
5.8	Summary	135
5.9	Descriptive analysis	135
5.9.1	Socio-Demographic and employment status profile and characteristics of EMS personnel in the study	135
5.10	Multivariate analysis	145
5.10.1	Correlation analysis	145
5.11	Regression analysis and analysis of variance	152
5.11.1	The impact of Life Satisfaction on Vulnerability to stress	152
5.11.2	Stress Vulnerability as a function of fifteen independent variables	155
5.12	Analysis of Variance	162
5.12.1	Age and vulnerability to stress	162
5.12.2	Educational qualifications and vulnerability to stress	163
5.12.3	Race and vulnerability to stress	165
5.12.4	Gender and vulnerability to stress	166
5.13	Conclusions and summary	167

Chapter 6 – Findings, Discussion, Conclusion and Recommendations

6.1	Introduction	168
6.2	Summary	168
6.3	Implications of the study	187
6.4	Contributions of the study	188

6.5	Conclusion	194
6.6	Recommendations	195
6.5.1	Recommendation 1 – Further research	195
6.5.2	Recommendation 2 – Appointment of psychologists	196
6.5.3	Recommendation 3 – Employment pre-screening	197
6.5.4	Recommendation 4 – Chaplaincy services	198
6.5.5	Recommendation 5 – Establishment of trauma lines for EMS	198
6.5.6	Recommendation 6 – Establish assessment and intervention teams	199
	Appendices	200
	Annexure 1	200
	Annexure 2	201
	Annexure 3	202
	Annexure 4 – Coefficients	203
	References	213
	Questionnaire	227
	Ethic Clearance Certificate	244

List of tables

Table 2.1	Job satisfaction levels in EMS	40
Table 2.2	Gender, EMT/Paramedic U.S Population	50
Table 4.1	Sample size determination	94
Table 5.1	Test of reliability – Cronbach’s Alpha and Split Half reliability test	118
Table 5.2	Test of reliability – Cronbach’s Alpha and Split Half reliability test	119
Table 5.3	Test of reliability – Cronbach’s Alpha and Split Half reliability test	120
Table 5.4	Test of reliability – Cronbach’s Alpha and Split Half reliability test	121
Table 5.5	Test of reliability – Cronbach’s Alpha and Split Half reliability test	122
Table 5.6	Coefficient used for testing Collinearity	133
Table 5.7	Distribution of EMS personnel by Gender, Race and Years of Service	137
Table 5.8	Distribution of EMS personnel by Age group and Years of service	140
Table 5.9	Distribution of EMS personnel by Qualification, Years of Service and Current position	141
Table 5.10	Distribution of EMS personnel by Current position, Race and Years of Service	142
Table 5.11	Distribution of EMS personnel by Race, Current Position and Years of Service	143
Table 5.12	Distribution of Gender, Current Position and Years of Service	144
Table 5.13	Correlation of variables of the study	146
Table 5.14	Regression Analysis of Stress Vulnerability on Independent Variables	153
Table 5.15	ANOVA	153
Table 5.16	Regression of Coefficients of Stress Vulnerability on Life Satisfaction	154
Table 5.17	Regression Analysis of stress Vulnerability on independent variables	156
Table 5.18	ANOVA	158
Table 5.19	Regression coefficients of Stress Vulnerability on independent variables	159
Table 5.20	Regression analysis of Stress Vulnerability on independent variables	161
Table 5.21	Results of Stress Vulnerability regression	161
Table 5.22	Regression coefficients of Stress Vulnerability on Independent Variables	162
Table 5.23	Age and Vulnerability to Stress	163
Table 5.24	Educational qualifications and Vulnerability to Stress	164

Table 5.25	Race and Vulnerability to stress	165
Table 5.26	Gender and Vulnerability to stress	166

List of figures

Fig 1.1	Star of Life – Response Criteria	2
Fig 3.1	Maslow’s Hierarchy of Needs	70
Fig 3.2	The Porter-Lawler’s model of motivation and job satisfaction	73
Fig 3.3	Locke and Latham’s High Performance	74
Fig 3.4	Lawyer’s model of facet satisfaction	78
Fig 5.1	Percentage distribution of EMS personnel in the area of research focus	136
Fig 5.2	Percentage gender distribution of EMS personnel in the study	136
Fig 5.3	Percentage distribution of racial groups who participated in the study	138
Fig 5.4	Percentage distribution of EMS personnel by Age	139

CHAPTER 1

ORIENTATION

1.1 Introduction

Emergency Medical Services (EMS) started out in the early 1970s and was mainly focused in the military (Cowley & Boyd, 1983). The military had medics that attended to casualties of war. With the evolvement of medicine and infrastructure, there was a need to improve the services and even take the service to the community. In the mid-1970s a wider experience and expertise of services which led to the evaluation of the current systems was introduced. This brought about change in the level of training for Emergency Care employees. This also facilitated change to the method of training to include more invasive procedures like intravenous cannulation to enable practitioners to administer fluids to patients who has lost a lot of blood. In the 1980s South Africa experienced major improvements due to the changes in road infrastructure and the lifestyles of South Africans. These improvements and changes gave birth to the review of EMS and the scope of practice for all EMS employees. As accidents started increasing, so did the level of training. The scope of practice widened and EMS evolved to a level where Advanced Life Support (ALS) was born. Advanced Life Supports practitioners were allowed to do invasive procedures that doctors perform and even administer medication at schedule 6 and 7 level.

EMS employees are regarded as an essential service providers because they are the first responders to the emergency scene to attend to patients and then transport them to the hospital. Without these services most of the patients are not able to reach the hospital for expert medical help resulting in death (American College of Emergency Care (ACEP), 2004). EMS employees must be capable of addressing the day-to-day need for effective pre-hospital emergency medical response. EMS employees are required to give medical help within the “Golden Hour” (Pan, 1998). The Golden Hour is the hour immediately after a serious injury, when caring for the injured is critical to the victim’s survival. Timing is crucial as patients in or near shock can die if not treated within the Golden Hour after injury (Locke, 1982) and this would also determine the

patient's prognosis. Thus EMS employees are expected to function optimally as the patient's life is dependent on them.

It is important to note that EMS employees are exposed to different affectors in their everyday life at work. These affectors are of a traumatic nature and can lead to stress vulnerability. A study by Sign, Reddy and Prakash (2012) looked at the stress vulnerability among professional students. The study wanted to determine whether there are differences among these students when it comes to the development of stress vulnerability.

These professional student are not exposed to affectors the same way as the EMS employees thus making EMS employees exposed much greater that the students. The researcher further believes that since the discontinuation of the use of the Chaplain for debriefing of EMS practitioners, this has seen the rise in the exposure to stress vulnerability.

1.2 The Role of EMS

EMS exists to fulfill the basic principles of first aid, which are to Preserve Life, Prevent Further Injury and Promote Recovery. This common theme in life is demonstrated by the Star of Life (U.S. Department of Transport, 1995). The Star of Life is shown here with each of the arms to the star representing one of the six points. These points represent the six stages of high quality pre-hospital care in **Fig 1.1**:

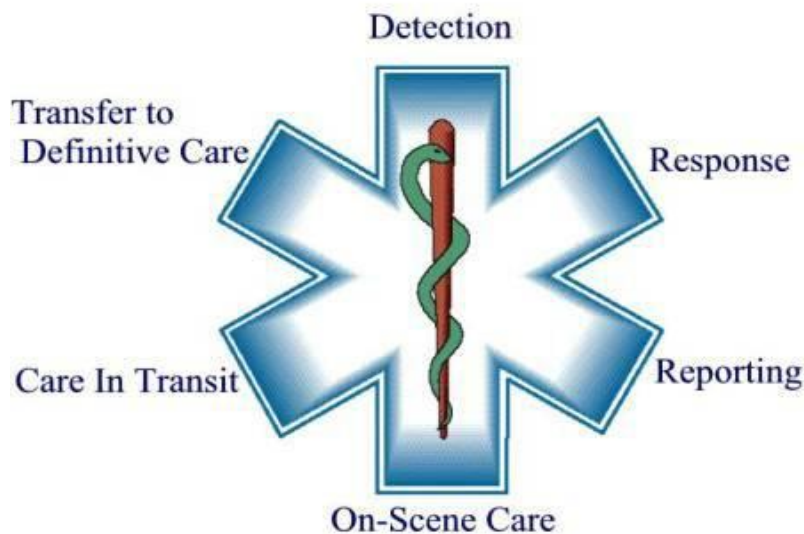


Fig 1.1 Star of Life – Response criteria

According to the U.S. Department of Transport, the cycle starts with detection and moves clockwise up to where the patient is taken to definitive care. The six steps are explained hereunder for clarity and understanding:

- **Early Detection** – employees of the public, or another agency, find the incident and understand the problem
- **Early Response** – the EMS professional arrives on the scene as soon as possible enabling care to begin
- **Early Reporting** – the first person on the scene makes the first call to the emergency medical services and provides details to enable a response to be dispatched.
- **Good On-Scene Care** – the EMS professional provides appropriate and timely interventions to treat the patient at the scene of the incident.
- **Care in Transit** – the EMS professional loads the patient into the ambulance and continue to provide appropriate medical care throughout the journey.
- **Transfer to Definitive Care** – the patient is handed over to appropriate care setting, such as the emergency department/casualty department at the hospital, into the care of physicians and medical staff.

If for any reason the chain is interrupted or one of the six points are not carried out, this might lead to poor prognosis or death of the patient. As mentioned earlier, treatment needs to take place within the “Golden Hour” or this will be the demise to the patient.

It is clear that persons in this line of work are prone to several pressures as their decisions could often translate into the survival or demise of patients. The other harsh reality they face at work is having to choose which patient to treat first especially during multi-casualty incidents where resources are limited. In these cases they choose which patient has higher chances of survival and which one they leave to die because of limitations with the availability of resources, equipment and transportation. They also depend on the capacity of receiving hospitals whether the medical team can carry on with treatment of these patients or not. Some of the hospitals do

not have the capacity in terms of training and resources to treat multiple injury patients. This takes its toll on EMS employees and frustrates them because they put in all efforts to save patients only to be turned away. The other harsh reality is that they resuscitate patients and get them to have a pulse and breathe on their own, only to be killed by incompetent nurses and some doctors who are not familiar with emergency protocols. EMS employees are like any other person and therefore more likely to become vulnerable to stress as a result of their work. They face the worst kind of trauma which includes witnessing deaths, seeing decapitated bodies, some bodies are cut in half with the intestines outside, and they have to declare patients dead, as this is part of their scope of practice.

1.3 THE PROBLEM

1.3.1 Nature of the Problem

EMS employees work twelve hour shifts which are split into two days day-shift and two days night-shift. Their daily work involves treating patients, lifting and loading stretchers onto and off the ambulances. They go into dark alleys, into trenches, into mountainous areas to fetch patients, pull newborn babies out of pit latrines, out of dustbins and resuscitate them back to life if they are still viable to survive. They lift heavy patients who cannot walk themselves to the ambulance. They witness unsightly dead bodies with distorted faces, avulsed limbs, and intestines hanging outside the body, decapitated bodies and even bodies that are minced into multi pieces especially in accidents involving busses, trucks and trains. They also come across charred and stiff bodies especially in shack fires, burned cars during accidents or even house fires. They take patients out of smashed vehicles, fallen structures and underneath rubbles. This is not easy for any human being to witness. Some carry these pictures in their minds and struggle individually to cope. This may eventually contribute to stress vulnerability of EMS employees. They also have to work under stressful work conditions that include harsh weather conditions and even work with unruly patients. Some are assaulted, stabbed and female employees have been reported to have been raped by patients in some parts of the country. What seem to aggravate the situation is the low salaries that are not commensurate with the pressures posed by the work conditions. These are the work conditions that are believed to contribute to stress vulnerability and eventually the development of stress vulnerability amongst EMS employees. No studies has been conducted in

the South African context that can provide conclusive evidence that stress vulnerability exist in the EMS environment.

EMS employees in the rural provinces are the worst off as they are not exposed to Employee Assistance Programme (EAP) or any psychological or wellness services. If the services are available, they are either insufficient or employees do not know about them and how to access them. The other challenge is that males generally do not see the need of consulting a psychologist as they feel they are man enough to handle stress until it is too late. This creates a problem at work and affects relationships generally. Some of them go into rebound, when some attempt suicide or succeed in killing themselves. In cases where treatment is available the situation is exacerbated by the therapy sessions being too expensive thus leading to failure to complete therapy.

Demanding and stressful as the job may be, the workplace does not always cater for the psychosocial needs of the employees. There are no psychologists employed by any EMS in South Africa except for some of the metropolitan municipalities. Kriek (2008:11) in her study confirms the statement in which she mentioned that many if not most emergency medical workers have never consulted a counsellor or a psychologist. In addition, most of the South African EMS do not provide their employees with these crucial services. She further added that when these services are provided, there are either on an ad hoc basis or the services are not utilized to their full potential. The Department of Health rely on the services provided by EAP practitioners who end up referring patients to external and private psychologists. According to a study conducted by the Public Service Commission (2006) Employee Assistance Programmes (EAPs) were implemented in the South African Public Service to deal with various employee problems long before HIV and AIDS became known, and long before transformation imperatives generated a broader range of workplace problems to deal with. This creates a problem because even the EAP that is available cannot cater for the employees within the provinces. According to Statistics South Africa (2012) and the Local Government Website, North West is divided into four districts, namely Bojanala Platinum District, Dr Kenneth Kaunda District, Dr Ruth Segomotso Mompati and Ngaka Modiri Molema District. EMS employs with 693 EMS employees placed throughout the four districts. Each district has only one EAP practitioner. It is

interesting to note that these EAP practitioner are not only employed to cater for EMS employees but for every employee in the Department of Health within the province. This is not enough to cater for all the employees within the North West Province. This practically means that when the EAP is off sick, there is no one to help the employees, and this worsens the situation for EMS employees who may need immediate intervention or may be in a crisis situation. This exacerbates the development of vulnerability to stress amongst EMS employees.

There should be a balance between resources available to do the job and the demand of the job itself. This is confirmed by Kriek (2008:9) where she states that EMS can provide employees with the psychological services, but where there is a greater need for well functioning equipment, the efforts are no good. Where imbalance exist between the two or when work demands exceeds the available resources, it impacts negatively on the performance of the employees as they become frustrated and end up losing their drive to work. As a result, the morale is affected which has an impact on. This in turn agitates managers who end up taking disciplinary actions against the employees. This leads to a working environment that is not conducive for the workers and they end up taking unnecessary sick leave or leave of absence which further has a negative impact on the management of the service. This in turn increases the staff turnover especially among the intermediate and advanced life support practitioners and thus leads to high overtime expenditure because other employees would be called in to fill ,the gaps that were created by those who left the service. Kriek (2008: 6) supports the statement when she states that workers that resigned left their employers not their occupation and they left South Africa to seek employment elsewhere and not within the borders of the country or with private entities. What exacerbates the problem is that vacated positions takes up to 10 month to a year to be filled which leaves a gap that is closed by using personnel on overtime. This translates into high overtime expenditure and exhaustion as personnel do not find enough time to rest as they are required to come and work during their off-days.

The Government of Consumer and Employment Protection in Australia published the benefits of work life balance initiatives in 2006 on their website. The Government of Consumer and

Employment Protection in Australia identified the following to be the benefits of work-life balance:

- Lower staff turnover and increase return on training
- Reduced absenteeism and lateness
- Improved employee morale and commitment
- Reduced stress and improved productivity
- A more flexible workforce
- Increased ability to attract and recruit staff
- Potential for improved occupational health and safety
- Fulfillment of equal opportunity objectives
- Good corporate citizenship and an enhanced corporate image.

These benefits are not visible in the EMS employ hence the relevance of this study.

1.3.2 Problem Statement

In this study work conditions, experience and the environment in which EMS employees operates under, are explored. The extent to which these conditions, experiences and environment impact or affect their lives is also determined. The likely impact or influences this might cause vulnerability to stress among EMS employees will also be determined. There is reason to believe that the uncontrolled work environment within which EMS employees operate in has an influence in contributing to stress vulnerability. Furthermore, the experiences of EMS personnel will be explored as there is reason to believe that what they go through in their everyday life at work, has an impact on the stress vulnerability which leads to burn out.

1.4 PURPOSE OF THE STUDY

1.4.1. The reason for conducting this study is motivated by personal experience which showed the deteriorating conditions of EMS employees due to lack of support services aimed at helping employees cope with their job. There is reason to believe that the unavailability of the psychological and pastoral support services contribute to the development of

susceptibility to stress which seems to be growing among EMS employees. This study is further motivated by the objectives as mentioned above. The researcher wants to understand the impact that work conditions and work experiences has on stress vulnerability development within the EMS environment.

- 1.4.2. Further to this, there is a need to determine how stress vulnerability has an impact on the life satisfaction of EMS employees which most often result in high staff turnover especially of the higher qualified scarce skills categories. This will assist to come up with turn around strategies in the future to reduce the staff turnover rate. The researcher further wanted to determine if different age groups are affected by stress vulnerability different or is there no difference. This is motivated by the assuming that the longer one is in the service and the older the person is, stress vulnerability will have very little impact on the individual as the person will be able to deal with it better through the years of experience being in the service.
- 1.4.3. The other aspect that the researcher wants to look at is whether individual at different qualifications levels are affected the same or differently by the development of stress vulnerability. There is reason to believe that employees at different qualification levels are rather exposed differently to stressors. It is also assumed that most individuals that are on different qualification levels can cope differently with stress related affectors and the environment. It is assumed that those with higher qualification have been longer in the service and can deal with stress vulnerability better because they have developed and harnessed coping mechanisms better than newly employed candidates.
- 1.4.4. Further to this, there is reason to believe that different ethnic groups and gender have an impact into the development of stress vulnerability. The assumption is that different ethnic group cope differently to stressors. This has never been explored in the Emergency Medical Services context hence the need to explore this to determine whether this is true or not. There is also reason to believe that female cope better with stress as compared to males. Mothers have been regarded as the icon in the family as they juggle between chores and responsibilities which gave birth to the word “multi-tasking”, which the

majority of women can excute with ease. The truth as to whether females cope better under EMS management, need to be explored to highlight how women cope as they were recently exposed to such working environment as EMS was predominantly a male dominated service. This will assist the Department of Health and policy makers with knowledge as to whether this is addressing the gender equity mandates of government.

- 1.4.5. This study is further undertaken to prove that the wellbeing of EMS employees has not been looked after, regardless of the trauma they face in their everyday life in the line of duty. There is reason to believe that such services no longer exist thus leaving EMS employees vulnerable to stress development. In the past de-briefing services were available to debrief after major and gruesome incidents to avoid employees becoming vulnerable to stress. The researcher further believes that since the absence of these support services, there is likelihood that stress vulnerability is increasing among EMS employees as witnessed by absenteeism and increased sick leave days taken.
- 1.4.6. In addition to the above, EMS employees are not always given adequate resources to carry out their work and yet are expected by the public to treat patients to the best of their abilities. This is frustrating and unbearable and thus making work conditions unbearable. The researcher chose this study because he believes that his years of work experience in EMS and having first-hand knowledge of what EMS employees experience and face on a day-to-day basis would contribute positively in coming up with intervention process to assist the employees that are affetcted by stress. The researcher also undertook the study to ensure that NDoH and all provincial health departments start looking at the wellbeing of employees and to highlight to them how important the services of these employees are as EMS plays a supportive role not only to the Health Department but to other departments that need their services on a regular basis. This study will further assist the NDoH to come up with strategies to mitigate for the condition and interventions for all the departments. This in itself will contribute to the departments employing the help of pshychological services and de-briefing sessions increased in order to deal with the problem before it exacerbrates.

1.5 AIMS AND OBJECTIVES

1.5.1 Aim of the Study

The aim of the study is to investigate the impact of work conditions and experiences of Emergency Medical Services employees and how this leads to stress vulnerability in the Department of Health in Gauteng and North West Provinces.

1.5.2 Study Objectives

According to Du Plooy (2002) research objectives are what we simply describe as outcomes of the research. He further mentions that objectives are not mutually exclusive, meaning that a study can have more than one objective. Study objectives outline why the research is undertaken and what the researcher wants to achieve at the end of the research. The study will therefore be guided by the following objectives:

- 1.4.2.1 To describe the relationship between work conditions, work experiences and the stress vulnerability among EMS employees
- 1.4.2.2 To determine the stress vulnerability among EMS employees and how this affects their life satisfaction
- 1.4.2.3 To explore if stress vulnerability is affected by different age groups, different qualification levels, ethnicity, and gender differently
- 1.4.2.4 To devise methods and tools to be used to alleviate stress vulnerability in the EMS employee's workplace and to address the current situation.

1.6 RESEARCH QUESTIONS

Research questions are formulated to answer the bigger questions about the research itself and the route it is taking. The following are the research questions:

- 1.6.1. What is the relationship between work conditions, work experiences and stress vulnerability among EMS employees?

- 1.6.2. What impact does stress vulnerability have on the operationalization of EMS employees in South Africa?
- 1.6.3. How is stress vulnerability affected by different age groups, qualification levels, ethnic groups and gender?
- 1.6.4. How can these measures/strategies be implemented to reach optimally desired results?

1.7 RATIONALE OF THE STUDY

The researcher conducted a similar research at Master's Degree level that unearthed the need to conduct a further study of this nature in EMS in South Africa. The study the researcher conducted at Master's level was titled: The psychosocial experiences of Emergency Medical Services employees within the North West province. The sample size for the study was 200 of which only 167 of the returned questionnaires could be used because some were returned incomplete. Gwebushe, Lombard and Ward (2006) also conducted a similar research titled: Critical incidence exposure in South African emergency services employees: prevalence and associated mental health issues. Their study was only focused in the Western Cape. The two studies revealed that there seems to be some form of stress vulnerability among EMS employees and thus the researcher opted to conduct this research to determine the relationship between EMS work conditions and stress vulnerability. The prevalence of stress vulnerability could increase the liability costs for the employer because the employer has to pay high cost of overtime to have a full running shift when employees are booked off sick. Further to this, there are no services in place to deal with the stress vulnerability and if this exists, the services are not accessed as it was anticipated they would be (Kriek, 2008).

1.8 SIGNIFICANCE OF THE STUDY

The study will have bearing in the practical environment of the workers and influence the formulation of policies in the Health Department in South Africa. It is hoped that the study will influence decision makers to implement policies and processes that will assist EMS employees to cope with their work environment. It is further anticipated that this will bring about a change in

the work conditions of EMS employees for the better and help reduce the high staff turnover to outside countries.

The researcher further intends to utilize the outcome of the research to advise the National Department of Health (NDOH) on how best to go about managing the increase of vulnerability to stress among EMS employees within the service in South Africa. The study will assist policy makers to understand the need and urgency of implementing programs that will help EMS employees cope with the stress work demands. The belief is that with proper and up to date treatment, stress vulnerability can be alleviated. The study will further benefit the employees as it will create a sense of awareness about their working conditions and need for psychological interventions. The researcher also hopes to find the link between stress vulnerability and work conditions and how the two relate with each other. Research findings may also serve as points of further enquiry regarding specific issues relating to stress vulnerability in Emergency Services.

There is reason to believe that different variables have an influence on the development of stress vulnerability. Thus the relationships between these variables and the stress vulnerability will be investigated:

- Age of EMS employees and how this has an impact on stress vulnerability
- Educational qualifications, as this is used as a determinant whether those holding higher qualification levels are exposed differently to stress vulnerability compared to those holding junior qualifications in the EMS environment.
- Gender, as there is reason to believe that women cope better with stress
- Years of service of the EMS employees as longer serving employees are believed to have the ability to handle stress better or are exposed to stress and thus suffer from high stress levels
- Position at work as there is reason to believe that the position you hold at work determines whether one will be exposed to stress vulnerability or not.

1.9 SCOPE OF THE STUDY/STUDY AREA

The study was conducted in South Africa with specific focus on the North West and Gauteng provinces. South Africa consists of nine provinces namely Gauteng Province (GP), Northern Cape Province (NP), North West Province (NW), Free State Province (FS), Western Cape Province (WC), Limpopo Province (LP), Kwa-Zulu Natal Province (KZN), Mpumalanga Province (MP) and Eastern Cape Province (EC). The provinces are very vast and range from urban to rural. The population in each province is different depending on the size of the province and the geographical layout. Each province has EMS developed to different levels and the services are different from province to province. The services should be uniform throughout the country but since the management in each province is different, this results in provinces having different standards and unique identity.

For purposes of this study only two of the nine provinces was selected, i.e. North West province and Gauteng province. The study intentionally did not look at the provinces separately hence analysis and comparison was not done. Future studies will be conducted that will specifically look at the differences between the rural and urban EMS settings. The two provinces are selected because they are easily accessible to the researcher coupled with the following criteria:

- The relationship of the researcher with the managers in those provinces is solid which would assist in carrying out the research
- Reliability of the managers in the chosen provinces to assist in carrying out the study as these managers are also researcher candidates and understand research dynamics
- The distance to travel from the researchers home base to the provinces
- The geographical layout of the provinces for ease of access, e.g. their location and how many districts they are divided into.
- The researcher is familiar with both provinces as he has worked in both of them for a long period. This would help make the research easy to carry out.

Based on the criteria mentioned above, the researcher chose North West and Gauteng Province. A brief on each of the provinces follow to highlight why the researcher chose the province based on the criteria above. The North West province is located in the Northern Western part of South Africa. It is basically a developing rural province divided into four districts namely; Bojanala

districts (in the Rustenburg area and surroundings), Ngaka Modiri Molema district (the Mafikeng area and surroundings), Dr Kenneth Kaunda district (the Matlosana area and surroundings) and the Dr Ruth Segomotso Mompati district (Naledi and surrounding areas). EMS services are distributed among the four districts and are placed in each sub-district within the respective districts. The North West serves a population of around 2.8 million who are mostly the Tswana speaking inhabitants.

The Gauteng province is located in the central part of South Africa with a population of around 7.5 million. It is basically an urban province with well-developed infrastructure and very diverse cultures. EMS services in Gauteng province are well developed even though not to the optimum. Gauteng province is divided into six districts namely the West Rand District Municipality (in the Krugersdorp area and surroundings), The City of Johannesburg Metropolitan Municipality, the City of Tshwane Metropolitan Municipality, the Ekurhuleni Metropolitan Municipality, the Sedibeng District Municipality, and the Metsweding District Municipality (obtainable from the Gauteng province website). The chosen provinces have different characteristics thus a diversity that will enrich the study.

1.10 DEFINITIONS OF KEY CONCEPTS

Advanced Life Support: (ALS) is a treatment consensus for cardiopulmonary resuscitation in cardiac arrest and related medical problems, as agreed in Europe by the European Resuscitation Council. It is a level where ALS practitioners can give life-saving medicines to patients with procedures that include resuscitating a person back to life.

Basic Conditions of Employment: regulates employment conditions such as leave, working hours (ordinary, Sundays and public holidays), employment contracts, employee records, deductions, pay slips, overtime, and terminations for employers and employees.

Basic Life Support: (BLS) is a basic level of pre-hospital medical care provided by trained responders, including emergency medical technicians, in the absence of advanced medical care with a limited scope of practice. It is limited to basic emergency skills only.

Emergency Medical Services: The ambulance services that consists of emergency vehicles and emergency employees qualified as Basic Life Support, Intermediate Life Support and Advanced Life Support who are the first to come into contact with a patient at a place of illness or injury.

Employee Assistance Programme: A programme developed to assist employees and it is managed by a social worker with his or her team. They look after the well-being of the employees in a department.

Emergency Care Employees: Means employees registered under section 17 of the Act as paramedics, ambulance emergency assistants, basic ambulance assistants, operational emergency care orderlies, emergency care assistants and/or persons who holds a valid first aid certificate issued by a first aid organization accredited by the Professional Board for Emergency Care Practitioners.

Golden Hour: The hour immediately after a serious injury, when caring for the injured is critical to the victim's survival.

Health Professions Council of South Africa: A governing body for all health practitioners in South Africa which was established under the guidance of the Minister of Health to protect the interest of all patients in the country.

Intermediate Life Support: (ILS) is an intermediate level of pre-hospital medical care provided by trained responders, including emergency medical technicians, in the absence of advanced medical care with a limited scope of practice. It is medical treatment at a level above BLs and a level lower than ALS.

Prognosis: The outcomes of the patient after receiving medical treatment be it positive or negative results.

The Act: The Health Professions Act, 1974 (Act no 56 or 1974).

Triage: A process for sorting injured people into groups based on their need for or likely benefit from immediate medical treatment. Triage is used in hospital emergency rooms, on battlefields, and at disaster sites when limited medical resources must be allocated.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In the Literature review chapter, the researcher was looking different literature that is in line with the study. According to Wikipedia Free Encyclopedia (2008), literature review is a body of text that aims to review the critical points of current knowledge on a particular topic. The ultimate goal is to bring the reader up to date with current literature on a topic and forms the basis for another goal, such as the justification for future research in the area. Welman, Kruger & Mitchel (2005: 38), states that in academic research a way to identify a research problem is to do literature review. They further stated the importance of literature review as follows:

A review of literature can provide a researcher with important facts and background information about the subject under study. If a study on the same topic has been conducted before, a review provides the researcher with information about aspects of the problem which have not been investigated or explored before. A review can also help a researcher develop various parts of the study. Findings of past studies can be accessed which the researcher can relate to his own findings and conclusions.

From the above statements it is clear that the review of existing literature is very vital in any research. This gives the researcher a broader perspective of the topic under study. Primary and secondary sources are consulted and the purpose of the review is to assist the researcher in approaching the topic for research by finding out what the views of other writers are concerning the problem. Some writers purport that literature is reviewed in order to sharpen and deepen the theoretical framework of the research. This is done to also find out if studies similar to this has been conducted in the past. It is important to note that Ward, Lombard and Gwebushe (2006) conducted a study that focused on the critical incident exposure of EMS employees in the Western Cape. The writer also conducted a study about the psychosocial experiences of EMS employees and how this affects their lives within the North West Province, at the Master's

degree level. It is important to note that at the time of this study the two studies were so far the only two that were conducted focusing on EMS employees in the South African context. Other researchers have also conducted similar studies worldwide and this needs to be looked at to learn from what these researchers unearthed.

This study has looked at factors that are believed to influence the development of stress vulnerability in the workplace. The study looked at the relationship between work conditions, work experiences and the vulnerability to stress among EMS employees; stress vulnerability among EMS employees and how this affects their life satisfaction; explored how stress vulnerability affects gender, ethnicity, different age groups and different qualification categories; and devise to methods and tools to be used to alleviate stress vulnerability in the EMS employee's workplace and to address the current situation.

For the researcher to clearly articulate this, the study looked at literature in the following areas:

- Work conditions of EMS employees
- Job satisfaction
- Levels of training in EMS
- Current situation vs ideal situation per province
- Additional stressors in EMS

2.2 Work condition of EMS employees

The University of Indiana (2010) issued a policy that focused on the work conditions of employees for the University Human Resource Services. They have identified and classified adverse and unsafe work conditions as follows:

- Adverse or unsafe working conditions are physical conditions of a workplace that make it impossible or impractical for employees to work in their usual work location. Examples of adverse or unsafe conditions are loss of heat or electricity, damaged buildings, and

restricted access to an area of campus due to flooding or tornado damage, or situations that implicate personal safety.

The policy further states that employees need to be re-assigned to another working environment should the current one be classified as unsafe or adverse to work in. This is done to protect the employees that work in that environment.

Pomaki, Maest and Ter Doest (2004: 6) conducted a study among health care employees. They wanted to discover if the employee wellbeing is predicted by work conditions. In their study the authors considered correlates of employee psychosocial distress and well-being using a goal-focused approach grounded in Ford's motivational systems theory. They focused on work conditions and midlevel worker goal processes (WGP) using a questionnaire. Of importance however is that WGP has explained the variance in job satisfaction, burnout, depression and somatic complaints. This means that investigation of WGP can enhance the understanding of employee psychosocial distress and well-being. It is clear from the study conducted by the authors that work conditions have a significant impact on employee wellbeing and this needs to be investigated thoroughly to identify whether this has any bearing or not.

The Morbidity and Mortality Weekly Report (2002: 1) published the findings of what happened to Emergency workers during the September 11 attacks on the World Trade Center. They reported that 343 Fire Department of New York (FDNY) rescue workers died and during the next 24 hours an additional 240 rescue workers sought emergency medical treatment. The Morbidity and Mortality Weekly Report (MMWR) (2002: 2) further reported that some workers reported traumatic injuries only after three months so that they can take part in the rescue missions. This shows that the rescue workers are passionate about their work and nothing will deter them from doing what they are employed for and even neglecting their own safety. Respiratory illnesses were reported some 11 months later as well as stress related illnesses that include PTSD, depression, anxiety disorders, and bereavement issues. This shows the comradeship that is among these rescue workers putting their lives at risk to rescue a stranger. Most EMS employees take their work serious and believe that their work is a calling. They are taught of safety precautions during training but at times ignore them because they believe they

have a duty towards the patients they serve. They even risk losing their lives just to save the lives of a stranger. This was reported on to indicate to the readers as to how passionate EMS employees are in their work. Further to this, they are required by protocol to ensure that they provide medical treatment to the sick and injured. This leads to them neglecting their own well being and not out of free will but due to their commitment to their work and limitations as per their operational protocols and standard operating procedures.

The work conditions for every employee should be conducive and they should be happy to work in such environment. This is supported by a study by Kriek (2008: 3) where she states that the EMS is an occupational field in which the emergency worker deals with trauma and medical emergencies on a daily basis. They therefore have to switch from low energy to high adrenaline performance and absolute focus in a matter of seconds. Kriek (2008:3) further concurs that the environment in which EMS workers operate within is unstructured, they often work irregular hours, travel at high speeds, and they are frequently exposed to traumatic incidents and on top this, they have to deal the public and collaborate with various services such as the fire brigade, police and tow-in services. EMS employees are no different from other employees and they deserve better working conditions as well. This is not the case given the nature of work they do. EMS employees are subjected to work in all weather conditions, be it rainy, very cold and windy. They cannot refuse to work as saving people's lives is their daily work. They have to grin and bare the harsh weather conditions and do not have the luxury of air conditioned offices and closed up areas like other health employees. The Department of Health relies on their services to transport patients to medical facilities and without them, services would fail. They are the face of the department and the first to get into contact with the patients. If the workforce in EMS become incapacitated to treat patients this will pose a risk to the lives of those in need of emergency treatment and transportation

Tkach and Rumpf (1995) conducted a study on EMS employees and their study revealed that when EMS employees leave their training they are armed with newfound knowledge but usually lack the appropriate life skills to excel and survive on the streets. As new providers enter the real EMS environment, they face challenges of making life-and-death decisions in uncontrolled working environments. This includes making appropriate decisions while functioning effectively

even in potentially dangerous settings. The high job stress this creates often leads to burn-out, high turn-over rates and high absenteeism rates leading to the use of personnel on overtime to close the gap. This is the situation within EMS in South Africa. Some employees are thrown in the deep end where they do not even have support systems to induct them soon after training. This is normally caused by a shortage of employees and the newly qualified employee are usually seen as a replacement and thus has to learn on their own. They are left to take decisions on their own and in real life situations there is no time to consult the manual or even the tutor for advice. This leads to them being frustrated especially when they cannot give the right treatment to the patient because they are either limited by their scope of practice or limited by resources given to them by the department. This leads to them developing mind blocks and thus cannot take the right decision about which treatment the patient should receive. Thus it cannot be stressed enough that it is very vital that EMS employees are in their right sound mind to take these decision as the patient's life is dependent on them. They also need to function in conducive and acceptable work conditions in order to alleviate the burden on them.

Emergency Medical Services employees, just like any other employee also need tools to do their job. The equipment they use should be available and functioning as this may determine whether they are able to give patients treatment accordingly to prevent death of these patients. EMS employees just like nurses and doctors in the hospitals depend on most of these equipment. The situation is different with EMS employees as they are issued with one set of equipment unlike doctors and nurses who have several replacement sets of the same equipment at their disposal. When the equipment that EMS employees use fails, it leads to the demise of the patient. Even if equipment is available, the employees cannot replenish timeously because they are too busy especially during peak periods such as at the end of the month or during holiday seasons. Ward, Lombard and Gwebushe (2006: 228) state that employees mentioned work conditions, low salaries, lack of, or faulty equipment, hazardous working conditions and crime as stressors in the work place. It is clear that the unavailability of equipment or the use of faulty equipment leads to the development of stress for EMS employees as this frustrates them. Employees are expected to do the job and thus they need to be given the tools to do so. Without the necessary tools of the trade, it frustrates employees and this impacts on their wellbeing as most of them feel that they

are not doing justice to patient management when they are capable to do so, but the limitations with regards to equipment does not allow them.

What this study sought to highlight is the impact that work conditions has on the wellbeing of EMS employees. It is clear that the unavailability of resources, the adverse working conditions, the long shift hours, experiencing death of patients regularly and other factors in the work environment has a negative impact on the wellbeing of EMS employees. This might lead to the development of stress vulnerability in the long run and especially without the proper support services which allow employees to debrief and ventilate and get their adverse work experiences out of their system. This is very vital as work conditions of EMS employees is unique in its nature and cannot be comparable to that of office/medical facility based employees. Caverley, (2005) conducted a study on civil service resiliency and coping. The purpose of the study was to explore the interrelationship between workplace stress, coping and resiliency, and their influence on employee health and productivity (Caverley, 2005: 402). The study revealed that there is indeed an interrelationship between the above and that they have an influence on employee health and productivity. The study suggested that managers, executives and human resource management practitioners are presented with proposed strategies as a means of examining coping, resilience and workplace stress within Civil Service work setting (Caverley, 2005: 401). It is also vital in EMS that such strategies are employed to always measure the coping level and the level of stress among EMS employees. This will assist with reducing the high staff turnover, high absenteeism and overtime work that results from these conditions.

2.2.1 Rural vs Urban Providers

A study by Franks, Kocher & Chapman (2004:5) revealed that rural areas are underserved by Emergency Medical Technicians (EMTs) in comparison to urban areas. Rural emergency medical providers are more often volunteers than employees, have less education and are less likely to become Paramedics because of the two year training commitment. Franks, Kocher & Chapman (2004:5) further state that rural areas find it difficult to recruit EMTs/Paramedics due to the long hours, less available backup, fewer calls, and longer driving times to hospitals. Freeman, Slifkin and Patterson (2008) also state in their findings that the general characteristics

of rural EMS agencies differ from characteristics of agencies based in the urban areas. Stripe and Susman (1991) confirms that there are differences in the provision of pre-hospital care between the urban and rural areas in that 70% of calls in the rural setting involve the elderly whereas in the urban setting only 36% of the calls are for transporting elderly patients. The differences between the provision of pre-hospital services in the rural and urban setting is that rural settings have vast coverage areas and the urban settings are clustered with high rise buildings and streets. This has an impact as the rural areas have travelling distances as compared to the urban areas. What is most significant between the two settings is that the response times remain the same. While Grossman, *et al* (1997) argues that the response time in the rural area is longer than the response time in the urban area and that rural victims are seven times more likely to die before their arrival at the medical facility due to the long transport time. They further state that the mean response time for the urban setting was 7 minutes as compared to the rural setting which was 13.6 minutes, meaning that it takes the emergency care workers longer to reach the patient and even transport them to a medical facility in a rural setting as compared to a shorter time in the urban setting.

This is the situation with the South African setting. In the South African context response times for urban is 15 minutes and 40 minutes for the rural setting to cater for the long travelling times due to road conditions and long distances. This study concurs with what Grossman *et al* (1997) has stated in their study. There is also reason to believe that rural areas are mostly neglected and do not have the necessary resources to deal with the workload and the allocation is done on the size of the base and not on the call load and the travel distances. Further to this the employer most often does not offer attractive salary packages and thus cannot attract skilled employees.

2.2.2 Available and well-functioning equipment and vehicles

Bakker, *et al* (2003: 17) conducted a study among employees working in different home care organizations. The central assumption in their study is that burn-out develops when certain job demands are high and when job resources are limited because such negative working conditions lead to energy depletion and undermine worker motivation and learning opportunities. The results in their study showed that job demands are primarily and positively related to the

exhaustion component of burnout, whereas job resources are primarily related to cynicism (negatively) and professional efficacy. Burnout has been defined as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who do people work of some kind. This is the case with EMS employees in the world as they work with people and thus are exposed to such working environments. EMS employees in SA experience some form of burn out at one point or another as they often do not have all the resources they need to carry out their work. The worst can be seen during peak times when the number of callouts exceeds the number of vehicles and manpower available or during a disaster incident where more than the usual amount of resources is needed.

For any company to run and function optimally and productively, well-functioning equipment is essential. Vehicles have become part of the resources in most companies as this improves production. EMS is a highly mobile environment and depends solely on transport to reach its patients and transport to medical facilities. There is a also need to have well-functioning equipment because without any one of these components the other will not function. They need equipment that they will use in saving patient's lives and they need the vehicles to transport these patients to the nearest medical facility for further treatment. The equipment must be in good order and so are the vehicles to avoid breakdowns while treating and transporting patients. According to the protocols for the BLS, ILS and ALS as contained in Protocol Manual of the Health Professions Council of South Africa (2006) and the Board for Health Care Funders checklist for ILS, the following needs to be contained in the ambulance. Listed hereunder are the basic equipment needed by EMS employees and their functions when they treat patients:

For invasive procedures and for the treatment of patients, EMS uses Oxygen cylinders filled with oxygen - used to administer oxygen to patients who needs it like those that suffered from a heart attack, stroke, has lost a lot of blood and basically every patient that needs it according to EMS treatment protocol. Ambu-bag ventilation device – These are used for ventilating patients who are in need of oxygen at high concentrations. Without this equipment patients cannot be given oxygen and thus might be detrimental to the brain as it only survives for a period not longer than four minutes without oxygen. Electro Cardio Graph (ECG) machine – used to monitor the heart rate of every patient and to also

administer stack of defibrillation during the resuscitations of patients. Suction unit - is used in patients who have a lot of fluids in the mouth to prevent them from aspirating and end up with vomit in the lungs that will kill the patient due to internal drowning.

For the immobilisation of patients who might be involved in any form of accident, EMS use the Kendrick Extricating Device (KED) – used to extricate (get a patient out) a patient out of a vehicle involved in an accident. This device is critical in that it is used to immobilize the back and neck to prevent further injuries to the back and neck and to improve the prognosis. Without this the patient might end up being a paraplegia or quadriplegia. Traction splint (Trac 3) – used to immobilize the leg of a patient when it is broken at the thigh. It is very vital in that it immobilizes the broken bone to prevent further tissue damage from the bone to the adjacent muscles, nerves and major blood vessels. This would determine whether the patient goes into shock or not as an adult can lose up 3 liters of blood from a broken bone which is life threatening. Spine board and scoop stretcher - these are used to fully immobilize any patient who is suspected to have suffered any form of back injury in any trauma situation. This can be trauma from rugby or motor vehicular accident (MVA). They are vital in that they prevent further injury to the spinal cord by immobilizing the spinal column. Spider harness - is used in conjunction with the spine board and scoop stretcher and without it, the patient cannot be fully immobilized. Neck collars - are used to immobilize the neck of patients who have suffered suspected neck injury of any form. Without this the patient may suffer permanent damage to the spinal cord that will lead to quadriplegia.

Other equipment that is needed is the jump-bag (medical bag) that has a variety of surgical sundries that ranges from drips, bandages, and other accessories that are vital in patient treatment.

Emergency Medical Services employees also need fully equipped and roadworthy vehicles to be able to go to patients and transport them to medical facilities for further treatment. The vehicle must be visibly marked and have red lights and sirens that are used to warn other motorists of an oncoming emergency vehicle as the National Road Traffic Act, no 93 of 1996 requires. They

must also be fitted with a two way communication radio that is used for communication purposes between the call centre, base station and the vehicle. Without this, messages cannot be communicated either way and thus the service will collapse. At times they have a shortage of or malfunctioning equipment as they are used over and over again and by different people all the time. Some equipment are serviced and some are not due to budgetary constraints and this leads to EMS employees not being able to carry out their daily function which is to save people's lives. Some are expected to improvise and some cannot carry out what their protocol stipulates and are later charged for not working according to protocol as set out by the Health Professions Council of South Africa (HPCSA). This is frustrating to them because they know they could have saved the person's life should they have had the correct resources.

2.2.3 Human resource support and developmental training

Any well established organisation has a Human Resource Management and Development (HRMD) component to ensure that employees are taken care of. The main function of the HRMD unit is to ensure that employees are employed where vacancies exist and to look after the wellbeing of employees. They have to ensure that these employees are taken on developmental training as well. They also look after the wellbeing of the employees in that you find the EAP section within human resource component of the company. They also manage leave and other aspects of human resources. So is the case with EMS within the country. Every EMS unit in South Africa has or is supposed to have a human resource component attached to it. This component must be fully functional to ensure that the needs of the employees are taken care of.

The other aspect that is not given much attention and which has constraints is the training of EMS employees. Most employees were employed at a basic level and thus need to be trained at an Intermediate level. This cannot take place at once because once two or more employees leave a station to go on training; this leaves a gap at the station. Other factors that increase the gap are employees who go on leave for one or other reason. This places a strain on the particular station regarding their capacity to carry out their duty. The other burden that puts a further strain on training is the availability of funds to send the employees on training. Without a sufficient budget employees cannot thus be sent on training and this creates a problem as some do not want to

understand but want to go on training. This results in some employees absenting themselves from work which subsequently causes a further burden to the capability to carry out their daily function.

Further to this employees need to be satisfied at work and this will increase production in any industry be it a profit making one or not. The European Foundation (2006: 2) has conducted a study into the job satisfaction of employees. It states that many experts believe that job satisfaction trends can affect labour market behavior and influence job productivity, work effort, employee absenteeism and staff turnover. According to the European Foundation (2006) job satisfaction is a strong predictor of overall individual well-being as well as a good predictor of intentions or decisions of employees to leave a job. Emergency Medical Technicians have high turnover rates for a variety of reasons that include: burnout, low compensation, and lack of professional recognition (Franks, Kocher & Chapman, 2004: 4). This is similar to EMS employees in South Africa as they are experiencing burnout due to the long service because of lack of higher qualifications or an employee has reached a ceiling for promotion. Emergency Medical Services in South Africa does not pay their employees sufficient salary as compared to other countries. The mean salary in California is \$25,450 and they range from a low of \$19,000 for an entry level EMT-I to \$50,000 for a paramedic (Franks, Kocher & Chapman, 2004:4). In South Africa the mean salary is R210, 000 with the BLS paid a salary of R87,000 and a paramedic being paid as high as R344,000 (OSD Salaries, Resolution 3 of 2009).

One other factor that contributes to high staff turnover is burnout. Most paramedics in South Africa have the profession to start businesses either in EMS training or EMS related fields like ambulance conversions. Mr. Herbert Ntsobi was the Director of EMS in the KZN and has since left the service to start a business in ambulance conversion. He is the managing employee of the Ambucare Industries. Mr. Kooshie has since left the service and now owns Ambuklin Converters. Mr. Nelson Mogotsi has also left the service and started his training academy in the EMS field. These are just a few of the employees that were employed by the public service who started their own businesses. Some went into the events management service where they provide medical and ambulance services to companies that usually host big functions. Mobile Medical Company (MMC) which is owned by an ex-paramedic was providing medical and ambulance

services to the recent Pastor TD Jakes' festival which was held in October in November 2008. All there ex-EMS employees left because they could no longer handle the field work and thus decided to start businesses in the fields they know best.

The other factor that leads to high staff turnover is the lack of professional recognition. Kriek (2008: 6) supports the statement where she states that workers that resigned left their employers not their occupation and they left South Africa to seek employment elsewhere and not within the borders of the country or with private entities. Emergency Medical Services employees in many parts of the country are still regarded as ambulance drivers. This emanates from the history when the service was still new in South Africa. The service used to have ambulance drivers who were not medically qualified. This has evolved over the years and EMS service in the country no longer employs ambulance drivers. This was done because there was a high need of the service and thus needed two persons to be a crew of an ambulance and thus both had to be medically qualified. This was to avert the waste of resources because the ambulance driver would then just wait for the patient to be treated by either a BLS or ILS before transporting them to hospital. Ever since EMS evolved, now the driver can become the person who treats patients and vice versa. This still did not change the perception of medical staff and the communities regarding EMS employees. There are still medical staff and communities that regard them as ambulance drivers. This has led to them not taking them seriously regardless of their capabilities. It has even brought questions forward as to why paramedics are allowed to do invasive procedures. Some do not even want to accept patients who are found to have been injected with morphine or any high schedule medicine. This creates frustration for the EMS employees and they thus feel undermined and end up leaving the service.

The HPCSA used to have a record of approximately 48 000 emergency employees registered on the board but currently sitting with approximately 29 800 employees. Most of the employees have left the country to join their counterparts in countries like the United Kingdom, Australia, Dubai, Saudi Arabia and many others that are unknown to the researcher. This is because they are not satisfied in their job due to the low salaries they receive as compared to their counterparts in countries that are mentioned in the text. South Africa has lost skilled employees due to the high salaries they are paid by the foreign countries. EMS employees has been engaged in

negotiations with government to increase their salaries for over eight years now and still nothing has changed, even though the government of the day knows the reason why employees leaves the country. The Western Cape came up with a model that would see EMS in the country improving to be placed among the world class services across the world. However government indicates not to be in a position to implement stating that is not cost effective and that it will cost the country a lot of money. What the government does not realize is that this is done for the community and not to enrich EMS employees. This was meant to improve the service and thus improve the patient treatment outcomes as well. The researcher believes that as long as the employees are not satisfied at their workplace, the government would never seize to have health and stress related problem from employees. This matter needs attention as it contributes to the development of stress vulnerability in the workplace.

2.2.4 Job strain and its impact on employee performance

Bakker and Demerouti (2006) state that many studies have shown that job characteristics can have a profound impact on employee well-being (e.g. job strain, burnout, and work engagement). They further state that job demands such as high work pressure, emotional demands, and role ambiguity may lead to sleeping problems, exhaustion and impaired health whereas, job resources such as social support, performance feedback, and autonomy may instigate a motivational process leading to job-related learning, work engagement and organizational commitment. There has been several models used to determine the relation between Job Resource - Demand and employee wellbeing. What needs to be noted is that job strain is the result of a disturbance of the equilibrium between the demands employees are exposed to and the resources they have at their disposal. Such is the case with EMS employees within South Africa. In most provinces not limited to the provinces under review, the lack of resources is a contributory factor to employee frustrations. This leads to them not being efficient in their patient management and thus creates a sense of uselessness in them. This exacerbates the development of stress vulnerability in EMS employees as confirmed by Barker and Demerouti (2006).

According to the demand-control model, job strain is particularly caused by the combination of high job demands and low job control. Thus one basic premise is that employees who decide for

themselves how to meet their job demands do not experience job strain (e.g. job-related anxiety, health complaints, exhaustion and dissatisfaction) (Bakker and Demerouti, 2006: 310). This is not the case with EMS employees as they rely on managers to carry out some of their functions. They depend on whether the manager gives them basic equipment they require for patient treatment. They do not control their hours of work as they work according to a roster that is published every month. The other factor is that managers depend on the allocated budget to buy resources needed to carry out the job and if there are no funds in the budget the resources cannot be bought. This creates frustration in the personnel and most end up being delinquent and deliberately staying away from work.

Employees are not aware of this situation as they expect to get the resources because there is a budget available. Employees are not exposed to how the budget is managed and thus would complain every moment they request resources as they are not privvy to the reasons why the resources cannot be bought when they need them. Employees are not involved in decision making and rather decisions are made by managers high up in the hierarchy and they are expected to implement at grassroots level, whether the decision favorable not.

2.2.5 Work-Life balance

Work-life balance in the life of EMS employees also needs to be investigated. We also need to find out to what extent this affects their performance and how this can be changed to ensure that the department is not negatively affected by the results. There are several studies done about work-life balance and its impact on employee well-being. This study seeks to distinctly outline how this leads to the development of stress vulnerability in the work place. According to the Wikipedia free encyclopedia's (2008) definition, work-life balance means striking a balance between work and life at home, life with family, friends and your hobbies, instead of focusing on work alone. Work life balance is a meaningful achievement and enjoyment in everyday life (Parsons, 2002: 1). Work-life balance is simply striking a balance between work and life at home. Parsons (2002: 1) further states that the primary way in which companies can assist their employees is through work-life balance programs and training. Achievement and enjoyment at work is a critical part of anyone's work-life balance. Furthermore, achievement and enjoyment in

the other three quadrants of one's life (e.g. family, friends and self) is critical as well. According to the European Foundation (2006: 1) there is evidence that support the case that innovative working time and work-life balance policies can lead to a variety of positive impacts at company level, including enhanced employee performance, reduced absenteeism levels, better recruitment and retention potential as well as greater overall efficiency. All of these can enhance the company's overall productivity and competitiveness.

This preceding discussion reveals that the working conditions for EMS employees are complex and have an adverse effect on their psychological well-being. Most importantly, evidence from literature shows that effects such as abuse of substances, poor relationships and even stress vulnerability are quite common. What Barker and Demerouti, 2006 are saying is that there should be a balance between hours of work and life in general. Individuals need to strike a balance between the two so that the other does not have an effect on the other and vice-versa. The individuals working in the EMS do not strike the balance between the two, work and their life in general. The first taking more priority because they would receive more money at the end of the month when they put in overtime. This as such affects their social lives because they tend to spend too much time at work instead of at home. They end up either separating from their partners or resorting to violent behavior because of the stress at work and thus end up presenting with stress vulnerability symptoms.

In the United States work-life programs have become popular in most companies. Parsons (2002: 2) came with a number of benefits that employees in the company enjoyed like flexitime which some companies allow their employees to come to work during the busiest times and stay longer and they can work for four days and not five. Further to this Parsons added Telecommuting which allows white collar employees to work from home linking them to the company system so they complete their work from home. Child care was added as a benefit to parents who had children. The benefit was that they had in-house child care so the parents are closer to their children. Not only parents with children benefited in the program but employees with elderly parents also benefited through the elderly care - having in-house care for the elderly.

Leave (e.g. paternity) was an added benefit which saw husbands whose wives gave birth enjoying the benefits of taking leave to be with the family and it lasted up to 12 weeks. They also

encouraged a culture of job sharing allowing employees to share tasks given to them to decrease the workload on another. Employees also benefited from the Employee Assistance Program (EAP) which was in-house and gave assistance when employees experience stress related ailments. In-house store/services to limit employees from going out and staying out longer, thereby having them return from lunch breaks on time and being more productive. Gym subsidies were also introduced and employees gym fees were subsidized and others build a gym in-house and all employees are discounted on gym fees. Most companies give additional vacation leave as a form of compensation so that employees become encouraged to rest and come back refreshed thereby increasing production. Work hours were limited to a 40 hour week and nothing more.

Drew and Murtagh (2005) conducted a study into work life balance and concluded that there should be balance between work-related life and home life as well. In their study they found that mostly males are inclined to tip the balance scale more towards work than at home. Women are inclined to balance the scale as they have the mothering nature in them. Women would prefer mostly to work flexi time to ensure that they spend enough time at home as well at work. The study also found that women are disadvantaged by WLB because they do not have the support structure that men have at home. Men do not often give women the support they get when they return from work thus women are disadvantaged. Drew and Murtagh (2005: 262) also discovered that the greatest obstacle into achieving WLB is seen as the “long hours” culture in which availing one of flexible options is incompatible with holding a senior management post. Many of the senior men have followed the “breadwinner model” by being able to delegate family and caring activities to their wives.

The Government of Consumer and Employment Protection in Australia (2006) published the benefits of work life balance initiatives on their website. They identified the following to be the benefits of work-life balance:

- Lower staff turnover meaning that they could keep many employees happy and thus they stayed within the company. Added to this was an increased return on training meaning that employees taken on training would come back with positive results and plough back into the company. The

training had positive outcomes in terms of their effectiveness and knowledge on the job. There was a remarked reduction in absenteeism and lateness as employees were enjoying coming to work and so most would come to work on time and there was minimal absenteeism in the company. This was caused by the change in the work environment and the balance between work and life in general. This means that there were happier employees hence the positive results.

The employer also realized improved employee morale and commitment due the balance between work and life in general. This was attributed to the fact that employees were involved in the decision making of how they are supposed to work and determining the balance. This meant that employees had more time to carry out other out-of-the-office tasks that had to do with their personal lives. This impacted on the improvement of productivity amongst the employees as well as a reduction in stress in the work place. This has a seen a development of a more flexible workforce that would determine their working times based on their workload. This meant that employees could work flexi-time. This put power into the employees hands therefore they were more productive. This further put power into the hand of the employer as they could recruit the best candidates based on the attractive working perks they offer. This is positive for the employer as they would find the best in the industry as not only money does motivate employees but better and flexible working conditions may be the leader in keeping employees positive and motivated.

This balance of work and life at home had a great potential for improved occupational health and safety, meaning that employees could look better after themselves and the environment they work in to ensure that this conforms to the OHS requirements. This further had a positive impact on the fulfillment of equal opportunity objectives by all employees which meant that employees were competitive and thus new ideas were developed that would see the company improve its business. All of these fostered good corporate citizenship and an enhanced corporate image. These benefits are not visible in the EMS employ hence the relevance of this study. The other matter that needs to needs to be looked at is the demand of resources in the workplace and how its unavailability would result in the development of work related stress and eventually leads to the development of burn-out syndrome.

There is evidence to support the case that innovative working time and work-life balance policies can lead to a variety of positive impacts at company level, including enhanced employee performance, reduced absenteeism levels, better recruitment and retention potential as well as greater overall time efficiency. Some or all of these benefits can in turn enhance a company's overall productivity and competitiveness, European Foundation (2006). The focal point that is relevant to EMS employees is employee performance and the absenteeism levels. What the European Foundation studied was the impact long working hours has on the performance of the employees. They further noted that long working hours has an impact on the employee's health and wellness. It is evident in the study that workers, who worked more than 45 hours per week, were more likely to report symptoms such as shoulder and neck pain, overall fatigue and stomach pain, as well as stress. It should be added that those working long working days on a regular basis are also more likely to report negative work-related health problems. What further exacerbates the problem is the night shift work and overtime that leads to the development of insomnia or sleeping problems and work-family conflict.

2.2.6 Work-family conflict

A normal working day for EMS employees in South Africa starts at 06h45 and end at 19h00 during the two-days day-shift and starts at 18h45 and ends at 07h00 during the two-nights night-shifts days. Then employees get a four days break and resume duty again on the fifth day. Emergency Medical Services employees just like any other employee have family responsibilities. Household maintenance is yet another aspect of family responsibilities, especially salient in societies with high rates of female employment and dual career family (Lu, Gilmour, Kao and Huang, 2006: 12). Men share the household chores with their partners and things are no longer like in the past when men used to provide and women stay at home and tend to family needs and looking after children. The responsibility is shared by the two because women are now occupying positions in the workplace and this leads to the children being cared for by the nannies or are taken to day care centers. The responsibility of looking after children continues after work as the parents now have to tend to them. With EMS employees it is different because they have to work a twelve hour shift which results in them being at work until late and getting home around eight in the evening considering travelling as well. This puts a

strain on the partner that is at home as he/she has to tend to many household chores. This is exacerbated by working overtime by employees instead of spending time with family and helping with household chores. Lu, *et al*(2006: 12) states that existing research has established connections between family demands (i.e. number of children, age of the youngest child, sharing of household chores, working spouses) and family-work-conflict. In the results of the research conducted by Lu, *et al*(2006: 16) it was discovered that working hours, workload and work demands positively correlated with work-family-conflict. The other matter that needs to be looked at is the work-life balance of employees and how this may influence the development of work-related stress.

What further exacerbates the working environment for EMS employees is that their working day does not have a standard tea and lunch break. They cannot afford to let patients wait and die while they are on an hour lunch like other employees. This makes most of them agitated and tired as they use most of the energy when treating and carrying these patients to the ambulance. The strict rules attached to work add to the stress because at times they get charged for stopping at a restaurant to buy food. This came into being because in the past employees used to abuse the ambulances to go and buy food or groceries. It portrays a negative image to stop in a public place in an ambulance unless the employees stops at a garage when they are filling up with fuel and then buy food at the convenience store if the filling station has one.

The other aspect that impacts on work-family relationships is the restrictions applied on taking vacation leave over holiday seasons. Most EMS employees are limited when it comes to taking leave over the holiday season. This is the time when more manpower is needed to ensure that there is maximum service delivery. This is done in order to cater for the increase in the number vehicles on the roads. Like any human being EMS employees also want to go on holiday with family but cannot because their work demands do not allow them. There is clearly no work-life balance in this kind of work as these employees spend more time at work than at home. They are from time-to-time required to assist not only during emergencies but during events in schools, churches, sports activities, fun runs, hospitals etc. This is the time when more manpower is required to increase the manpower on top of the employees that are on their normal shift. This means employees who are on their four days off period do not get to rest enough or at all.

2.2.7 Overtime work

The aspect that needs to be looked at is the impact that working overtime has on the EMS employees wellbeing. In EMS just like any other service where employees work shifts, it is a norm for employees to work overtime from time-to-time. EMS employees are given time off to rest after their four days of shift work. Some of the employees do not rest enough because during their four days break they are called to work overtime because of shortage of staff due to employees being on leave, be it sick leave or vacation leave, or employees being absent from work. Some employees are unfortunate because they end up working three days overtime and only get one day rest before they start their normal shift again. This is attributed to the fact that some employees refuse to work overtime as they claim that they are not being paid on time for having worked. According to the Basic Conditions of Employment Act no 75 of 1997, chapter two (10:2) an employer must pay an employee for the overtime worked and employees are aware of this clause and use it against their supervisors when they do not want to work overtime especially when they are not paid for the previous overtime worked. Personal experience has taught us that this puts more strain on the employees that work a lot of overtime because they do not get enough rest and thus come to work tired. This has an impact on their concentration span and some are involved in accidents due to fatigue while driving especially when they do long distance transfers. This is an additional stressor as they now have to face a disciplinary actions if they survive the accident or live with the guilt of killing either their colleagues or patients they were transferring. This also has a negative impact on their family lives as some have children to look after and their partners to spend time with.

Lu, *et al* (2006: 9) states that working overtime and shift work are related to the development of work-family-conflict. Lu, *et al*(2006: 12) further state that working hours and workload can also be expected as antecedents of family-work-conflict. One of the major causes of work or family stressors has to do with not having sufficient time to dedicate to both domains equally. This is the situation with EMS employees within the country. Most of the employees are often working overtime to supplement the meager salary they receive and thus end up spending more time at work than at home and this negatively affects their family life. Employees might not be aware of this and the fact that the overtime work brings in extra income leads to the family not

complaining. This has a bearing on the relationship of EMS employees and their families. Family demands mainly involve caring for children especially for the young and middle aged employees. The number of children and life stages of children is rather an objective indicator of the level of family demands (Lu, *et al*, 2006: 12). These days most employees start a family when they start having a stable income and get married early in the age.

Studnek & Fernandez (2008) on the other hand conducted a study on overtime work in EMS in the US. What they discovered is that 70% of EMTs worked some sort of overtime. Some worked voluntary overtime, some worked compulsory overtime and some worked both. This study was done over a seven days period where the researchers wanted to gather as to how much overtime was worked by an individual in a week. Most EMS providers are not forced to work overtime, but there's a lot of overtime being worked. We realize that overtime can be good for the checkbook, but it can also be disruptive to life in general (Studnek & Fernandez, 2008). This is true for EMS employees in SA and as mentioned before there should be a balance between life at work and life at home as well, otherwise it would disrupt family life.

A statement made by the Eastern Cape Department of Health in the Port Elizabeth area, responding to media allegations that funds have dried up and EMS employees cannot be paid for overtime work. The statement reads as follows:

“In Humansdorp, Grahamstown and Graaff Reinet, there is a contingency plan where employees are scheduled to work compulsory overtime to ensure that all ambulances are adequately crewed in order to sustain effective service delivery. Sick leave, leave and training are affecting our manning levels but the issue of excessive sick leave has the most negative effect and consequences. This situation is being managed and counseling sessions are being conducted. Currently the province has 1: 30 000 and the department is confident that by 2010 it will be in a position to meet this national targeted norm” (Eastern Cape Provincial Government, May 2007)”.

This is a statement which shows that overtime work is indeed worked in various parts of the world including SA. This statements also highlighted the causes of excessive overtime work

which is absenteeism from work in any form, be it leave or training related. It is clear that EMS in SA cannot run away from overtime work as all the services in the country are short staffed due to budgetary constraints.

For every overtime work done employees needs to be paid. The non-payment of overtime is one of the factors that influence morale of the employees especially in the service. Employees use the overtime to motivate them as it increase their take home salaries to afford them a better life. The reason being that EMS employees in the public sector are paid too little as compared to their counterparts in the private services or those that have gone to countries like Dubai, Saudi Arabia and Australia. Most EMS employees use this overtime money as a supplement to their low salaries and thus depend on it from month to month. According to the Basic Conditions of Employment Act, employees should be remunerated for time worked and this must be done a month after they have worked and should not exceed a period more than three months. Most employees know this and when they do not get their money on time, they become frustrated and thus some decide to stay away from work. This in itself increases the rate of absenteeism and also has a negative effect on the human resource capacity of EMS. It has a financial burden on the department in that employees have to called in for overtime work to supplement for the shortage. This has a snowball effect and some employees refuse to work overtime at times because they were not paid yet and this further causes a strain on the human resources capacity. Some employees end up taking leave more frequently and thus end up using up their vacation leave days. Some do not take their planned leave but instead stay away from work without any reason. The unplanned leave is then converted to unpaid leave which further adds to the financial burden the employee is already experiencing and affects the employee's morale and eventually his/her performance at work.

2.2.8 Sleep disturbances due to shift work

The category that is described as working conditions include the inevitable problems of shift work (such as sleep disruptions and being away from family) and working in a job that alternates between periods of boredom and fast paced work (Ward, Lombard and Gwebushe, 2006: 228). Emergency Medical Services employees work a shift system that disturbs their sleep cycle and

this has shown to make them irritable. The shift system that the employees are subjected to consist of a two-day day-shift and a two-day night-shift with four days' rest. This disrupts their pattern because when they are off they have normal sleeping hours unlike when they are on night duty. When they do night duty they are bound to sleep during the day, which they normally don't do when they are off, and this disrupts their sleeping routine. It has long been established that insomnia is one of the most common symptoms of both dysthymic disorder (mild to moderate form of depression) and major depressive disorder (a severe form of depression), (Spielman, 2008). For many years, it was assumed that insomnia was produced by depression or, in diagnostic parlance, secondary to the depressive disorder. A further research was then conducted in the 1980s that showed that individuals with insomnia and free of depression that were untreated were more frequently depressed one year later. Following this paradigm-shifting study, there have been seven other studies that have reached similar conclusions. It is now well established that insomnia is a risk factor for depression. This is the case with EMS employees as they experience sleep change patterns especially when they have to work night shift.

The other factor that leads to sleep disturbance is the change in the availability of food as is it purported that it changes the circadian cycle of humans especially those working shifts. A study conducted by Fuller, Lu and Saper (2008) found that they could shift animals' circadian rhythm or body clock by controlling food availability, suggesting that changing patterns of mealtimes might help humans adjust their body clock too, for instance to cope with jet lag or even shift work. If this statement is true then it is evident that the sleep disturbance due to the shift in the body clock leads to the development of depression. This is the direct result of employees who change their shifts regularly as can be seen with EMS employees. They are then subjected to eat at hours they normally don't eat. This disturbs their sleep cycle and thus leads to the development of stress in the long run. This is evident in EMS employees as they do not get enough sleep and thus experience mood changes that vary from withdrawn to aggressive.

2.3 Job Satisfaction in EMS

Locke (1976) in Gazioglu and Tansel (2002: 3) defines job satisfaction as the individual's subjective valuation of different aspects of their job. The Wikipedia Free Encyclopedia (2009)

describes job satisfaction as a pleasurable emotional state resulting from the appraisal of one's job, an affective reaction to one's job; and an attitude towards one's job. The Free Management Library (2008) defines job satisfaction in regard to one's feelings or state-of-mind regarding the nature of their work. Job satisfaction can be influenced by a variety of factors, eg, the quality of one's relationship with their supervisor, the quality of the physical environment in which they work, degree of fulfillment in their work. Bradley, Petrescu and Simmons (2004:5) did a study on job satisfaction and they have assigned various degrees of importance to sources of satisfaction, which can be classified as intrinsic and extrinsic. Intrinsic sources depend on the individual characteristics of an individual such as attitudes. Extrinsic sources are situational, and dependent on the environment such as workplace climate. The intrinsic factors can still be controlled by the individual whereas the extrinsic factors cannot be controlled. The external factors are determined by the environment and yet they have an effect on the individual performance. Bowron and Todd, (1999) conducted a study on job satisfaction among EMS employees. Their study suggests that job performance and job satisfaction are positively correlated and that it is important that EMS managers predict and identify the predictors of job satisfaction in order to maximize job performance among EMS employees. This study was conducted within a large EMS setting and focused on ALS employees and Emergency Medical Technicians (EMTs). Only ninety paramedics and EMT participated in the study and yielded the following results:

Job Satisfaction	% of respondents
Extremely satisfied	11%
Very satisfied	29%
Satisfying	45%
Not satisfying	15%

Table 2.1. Job satisfaction levels in EMS

From **table 2.1** above it is clear that there are some employees that are not satisfied with their job. It is possible that the group of employees that are not satisfied are those that entered into the service out of desperation or have been long in the service. The sample group that was used was very small and it would have been interesting to know what the whole EMS service responses

were going to be. Bowron and Todd (1999) states that the quality of career choice and interactions with physicians are predictive of global job satisfaction within EMS.

Chiu, *et al* (2005) also conducted a study into job satisfaction and what leads to the employee being dissatisfied at work. They conducted a study that comprised of 242 professionals across a wide range of departments of a large organization. The results indicated that global job satisfaction influences turnover intentions, and organizational commitment was more for internal than externals. Organisational commitment influenced turnover intentions similarly for both internals and externals. Furthermore, the influence of perceived job stress on job satisfaction and organizational commitment is stronger for externals than for internals. They also stated that leadership support influenced job satisfaction more for internals than for externals. In their recommendations they suggested that the employer should create an enhanced work environment that would strengthen leadership support of employees acting on their own expert judgment. Relieving job stress is essential for fostering job satisfaction and organizational commitment. Boosting job satisfaction and organizational commitment will ultimately lead to reduced staff turnover.

Gazioglu and Tansel (2002: 2) conducted research into job satisfaction in Britain and they state that job satisfaction is correlated with labor market behavior such as productivity, quits and absenteeism. A study by Gazioglu and Tansel (2002: 3) is further divided into the individual characteristics (age, sex, education and gender) and job characteristics (income, establishment size, hours of work and industrial composition). Gazioglu and Tansel, (2002: 3) further state that the results they obtained from their study is the same as of other researchers. The only difference is that married individuals have lower job satisfaction levels than the unmarried individuals as reflected in the data sets

Tyilana (2005: 47) states that job satisfaction is simply how people feel about their job and different aspects of their job. This assumes that if people like their jobs or certain aspects of their jobs then they will be satisfied or happy. If they don't like their jobs or certain aspects of their jobs then they will be unhappy or dissatisfied. Spector (1997:2) on the other hand states job satisfaction is simply how people feel about their jobs and different aspects of their jobs and it is

the extent to which people like or dislike their jobs. Gibson, *et al* (2000) also states that job satisfaction may be defined as an individual's expression of personal wellbeing associated with doing the job. Bateman and Snell (1999) concurs with the above and state that if people feel fairly treated from outcomes they receive, or the process used, they will be satisfied. However the authors hasten to caution that a satisfied worker is not necessarily more productive than a dissatisfied one; sometime people are happy with their jobs because they don't have to work hard.

Authors like Reece and Brandt (1996: 234) states that it is important that employees' emotions are taken into consideration at work. Employees' personal lives are does affect their attitudes and behaviors at the workplace (Kim and Garman, 2004:69). This was discovered when they examined the relationship between financial stress and work outcomes including pay satisfaction, work time use, and absenteeism. Results of their exploration showed that employees who had levels of financial stress had lower levels of satisfaction, were more likely to waste their work time and more frequently absent from work. Pinder (1998:82) argues that employees also have feelings about their work and at work as well. Emotions serve to communicate with one's self and others. Emotions also indicate your intentions or changes of intentions as can be evident with body language as well.

2.4 Characteristics of EMS employees

In EMS just like any other profession, there are employees with different characteristics. Historically EMS employed a certain race group, gender, nationality and they operated in certain areas only in a specific province. the services were predominantly focused on the white urban areas and often the black townships were neglected. Post apartheid era saw the change in the distribution of the services as well as accommodating difference ethnical groups and gender. This brought about a different characteristics of the services and thus this needs to be looked at as this would be beneficial for the study. For purposes of this study, the different characteristics that will be looked at include different age groups, different qualification levels, various ethnic groups and gender:

2.4.1 Age and Stress Vulnerability

What the study seeks to determine is whether different age groups has a significant bearing on the development of stress vulnerability among EMS employees meaning that different age groups are affected differently by stress vulnerability. There is reason to believe that there is correlation between age and stress vulnerability. This assumption is based on the researcher's personal experience and thus needed to be tested. The researcher has reason to believe that the longer one is in the service and the older one gets while in the service, the more is one exposed to the development of vulnerability to stress and that the symptoms become greater with increasing age. This is also bases on the fact that younger employees has not been exposed to stress factors like the older empoloyees because they have just started with their careers. Clarke (1995: 285) conducted a study on vulnerability to stress and age on 283 University students. His study revealed that only age and hardiness contributed significantly and minimally to variance in vulnerability. Young and hardy students had better health habits than old or less hardy ones. Researchers like Rudolf and Hammen (2003: 660) also conducted a study on age and gender as determinants of stress exposure. Their study revealed that consistent with predictions, age and gender-related patterns of life stress varied across the type and contexts of stressors. Most, notably adolescent girls experienced the highest level of interpersonal stress, especially stress and conflict that they associate with self-generated events. Robert, et al (1987: 1057) conducted a study on 159 children who were exposed to a sniper attack at their elementary playground. Studies conducted by Clarke (1995) and Rudolf and Hammen (2003) reveal that as one grows older and become more cognisant to stress, significant symptoms are seen because one has developed an understanding of the condition. Whereas Robert, et al (1987) conducted a study on elementary children which revealed that stress is not related to age because their cognisence to life and stressors has not fully developed yet.

However, Robert, *et al*(1987:12) confirms what the results from the analysis of data conclude that there is no difference with regards to different age groups being susceptible to stress. In other words, the fact that one is of a particular age does not necessarily mean that one gets exposed differently to affecters. It does not mean the one age group is affected differently to the other age groups. However, what needs to be noted is that any one age category must be dealt

with when doing psychological interventions within EMS and no group is to be left out as they get affected all the same because they are exposed to the same affecters. There is reason to believe that different age groups are exposed differently to stress factors due to their age within the services meaning that the longer one is in the service the likelihood that stress levels will be high especially where support structures are not available to deal with the condition. Further research needs to be conducted in EMS according to different age categories and the study must be ongoing in order to determine whether different age groups are affected differently to stressors or not.

2.4.2 Levels of training in EMS

According to the Wikipedia Encyclopedia (2008), EMS in South Africa has three levels of training, being the Basic Ambulance Assistance (BAA), Ambulance Emergency Assistant (AEA) and the Critical Care Assistant (CCA) and National Diploma (NDip) which are classified as Advanced Life Support (ALS). However Wikipedia Free Encyclopedia (2010) states that there are two new additional qualification added to the South African EMS qualifications band, namely: the Emergency Care Technician (ECT) and the Bachelor Degree Technology or bachelor Degree in Emergency Medical Care (BTech/MEMC).

The BAA training is a Basic Life Support (BLS) certification and is equivalent to an Emergency Medical Technician-Basic (EMT-B) in the United States (US). Training for this level takes about 160 hours that comprises of theory and practical simulations. The lectures cover basic anatomy and physiology, basic life support including Cardio Pulmonary Resuscitation (CPR) and first aid, emergency care, the use of ambulance equipment, including the Automatic External Defibrillator (AED) and various medico-legal issues.

The AEA training is an Intermediate Life Support (ILS) training that takes a period of 470 hours of training that encompasses theory and practical training. It is an equivalent of the EMT-I in the US, but with added skills. During training learners are taught how to perform various invasive procedures such as Intra-Venous (IV) therapy, needle Cricothyroidotomy, needle Thoracocentesis, Electro Cardio Gram (ECG) interpretation, manual external defibrillation, and

are allowed to administer various drugs as well thus their scope is slightly more broader than that of their counterparts in the US.

Critical Care Assistant (CCA) is an ALS certification and the duration is 1,200 hours for learners to qualify. They are exposed to theory and practical training. Learners can either choose the CCA route or go on training for three years to qualify with a National Diploma in Emergency Medical Care (NDip EMC) and then they can go on to complete another year of training to qualify with a Bachelor's Degree in pre-hospital care (B-Tech). An ALS is qualified to practice a large array of invasive procedures, can perform cardio-version and is allowed to administer analgesics and various other emergency medications. The Emergency Care Technician (ECT) takes two full of years of study at the designated college or university to complete. Practitioners who complete this training will exit a level above ILS but a level below ALS.

The National Diploma training takes a period of three years of college attendance to complete it is done on a full –time basis and this cannot be cut in the middle. Once qualified, practitioners can articulate into the B-Tech or MEMC and only do a year of study to qualify. This gives them extra scope of practice over and above what NDip provides. They can then be registered as Emergency Care Practitioners (ECPs) with the Health Professions Council of South Africa. Further opportunities exist for ECPs to articulate into various Masters studies like the M. EMC, Mphil.EM, MSc.EM and the Doctorate (DEMC).

Franks, Kocher and Chapman (2004: 2) conducted a study into the life and career path of EMS employees in California. According to their study, EMTs in California are divided into four qualification classes, which are:

- **The First Responder** – provides Basic Emergence care. Many firefighters, police officers and emergency workers are First Responders, because they are often the first people to arrive on the scene but they do not work in ambulances
- **EMT-I** – provides BLS, patient assessment, advanced first aid, the use of adjunctive breathing aids and administration of oxygen, automated external defibrillator, cardiopulmonary resuscitation (CPR), and transportation of the ill and injured.

- **EMT-II** – provides limited Advanced Life Support and all EMT-I skills, as well as ECG monitoring, defibrillation and cardioversion, antishock trousers, intravenous infusion, esophageal airway support, venous blood draws, and the administering of nine medications. Their scope of practice varies by area.
- **Paramedic** – provides ALS and all EMT-I and EMT-II skills, as well as endotracheal intubation, glucose measuring, needle thoracotomy, nasogastric intubations and administering up to twenty one medications HPCSA Protocol and Guidelines.

A career in EMS for most in South Africa starts at the age of eighteen. This is normally employees who have just completed matric and cannot go to university or cannot find a job. Personal experience has taught us that these employees enter into EMS because of the easy accessibility into the service. Some of the employees enter into EMS around the mid-twenties either because they do not enjoy where they are working or they are retrenched. Very few employees enter into the service because they are passionate about saving people's lives. The career starts with a four week Basic Ambulance Course (BAC). After obtaining the BAC certificate one can be employed as a Basic Life Support (BLS) employees. If you possess a BAC certificate and have a driver's license, you are employable in the service. The normal requirement is that one has to possess a driver's license with Professional Driver's Permit (PDP). However this can be accessed if one is above the age of 21 years as stipulated by National Road Traffic Act No. 93 of 1996, Chapter 4, section 32. Due to a high shortage of employees in the public health service to carry out EMS functions provinces throughout the country are forced to employ people less than 21 years. This then results in the relaxation of the employment criteria to accommodate employees as young as 18 years.

After completion of the BAC certificate one can be employed within the public sector in EMS and can do basic pre-hospital procedures that include stopping bleeding and bandaging patients to a full spinal immobilization for patients that were involved in accident. The Basic Life Support employees are also allowed to declare a patient dead as this is part of their training. Unfortunately the BAC scope is limited; they can only give the patient basic emergency treatment and have to either rely on back-up medical support from either Intermediate Life

Support (ILS) or Advanced Life Support (ALS) employees or taking the patient as quickly as possible to the hospital.

The next level of training is the Intermediate Life Support level. This level is more advanced than the BLS level. After obtaining an ILS certificate one can be employed as an Ambulance Emergency Assistant (AEA) or ILS. Employees who undergo this training can administer fluids to patients if needed as this is covered in their training. They can also administer basic medication like Aspirin for the patients suffering from chest pain due to an imminent heart attack. They are better off because they can at least save the patient to an extent better than what the BLS employees can. A employee has to complete thousand hours of rostered practical work and be currently registered as a practitioner with the Health Professions Council of South Africa (HPCSA) for six months as a BAC, before he/she can undertake this training. Mostly employees that undertake the ILS training are already employed in EMS. The employer normally pays for the studies as part of the Skills development program and that employees who are qualified are going to plough back into the service and increase the level of patient care within the provinces. Employees who wish to attend the ILS training have to be employed for at least a period of a year in EMS before they can go on this training. They are further subjected to evaluation and selection and upon successful completion of the selection process they are allowed to undergo ILS training. The duration of the course is four months which includes theory in class and practical training at the hospitals and in the ambulance to give them practical exposure. Upon successful completion of the course employees can then be promoted to a higher salary level and position.

The next level of training is the Advanced Life Support training. Upon completion of the course the employees are issued with a Critical Care Assistant certificate (CCA). The duration of the course is a year. It involves training in performing invasive procedures and employees must learn how to administer 27 emergency drugs in any emergency situation. They are also trained to administer medication as potent as Morphine Sulphate, which is a schedule 7 medication administered only by doctors in the hospital. This training is very intensive and demands a lot of study time so as to successfully complete it. The selection process follows that used in ILS

selection. Upon completion a employee is then promoted to a higher salary range and position of authority.

There is also National Diploma (NDip) training in Emergency medical care. The duration of the course is three years. It can be done by any employee that is 18 years and above and it covers BLS, ILS and ALS. The course starts with BLS training and other modules in the first year. Then follows the ILS training with other modules in the second year and the final year is the ALS training year with management modules. The last year of training involves training similar to CCA as mentioned above. Upon completion of the three year course they are then classified as ALS just like the CCA. The advantage with the NDip is that employees are trained on all three year courses without a break in between and this gives them better employment prospects than BLS, ILS and CCA as this is classified as a scarce skill in South Africa. These employees do not stay in the public sector for long as they believe that they are highly trained and are not going to work for a meager salary. They work for a short period of time just to gain experience and then leave the service. They opt to work for private companies or work for countries outside South Africa. This in itself creates a shortage of skills within SA.

The ALS is called when there are critically injured or ill patients. The South African public service is experiencing a high shortage of these qualified employees as many have moved to the private sector, like Netcare 911 and others have gone abroad as they are well paid there. This is a very scarce skill in South Africa and nothing is done to ensure that the employees do not leave the service and the country. Some of the provinces do not even pay these employees retention allowances like scarce skills allowance and rural allowance, thus the employees are leaving. Without these employees in any service, be it private sector or public sector, patient's lives are lost in huge numbers, especially those that are very critical and the BLS and ILS cannot treat because it is out of their scope of practice.

The reason the levels of training are highlighted in this study is for readers to have a clear picture of what levels of patient treatment are available. This was done to give the reader a clear understanding of how EMS functions. Life for the BLS and ILS employees in EMS is slightly difficult moreover when they come across patients that require ALS treatment and they cannot

administer it themselves as they are forced to work within their scope of practice by the HPCSA (see HPCSA manual). This is very frustrating for them because some blame themselves for the death of critical patients because they feel that they would have done something if they were ALS qualified and yet they could not. This contributes to an increase in the levels of stress vulnerability among ALS.

The researcher took this approach to highlight the frustrations EMS employees face based on their levels of qualification. Further to this, the levels of training will be used to determine if the different levels of training has an impact on the development of stress vulnerability. This in itself will assist the researcher to determine whether an employee at BLS level is affected the same or differently to employees at ILS and ALS levels when in relation to development of stress vulnerability. There are reasons to believe that employees at higher qualification categories can cope with work related stress better than employees at junior qualification levels. This is brought about by the fact that those in higher qualification level by assumption, have been in the service longer and can better cope with the work related stress. No previous research exist within the South African context that can prove this theory right or wrong.

2.4.3 Gender and Race

Historically EMS was a white male dominated service who used to perform dual functions being EMS and Fire services related functions. With the evolvement of the service, we have seen a mixed race culture in EMS. The majority race that is currently found in EMS is blacks as they had the opportunity to enter the market just after the 1994 election. During the apartheid era, the white race used to dominate the service and even hold higher positions. With the employment equity playing a role and the splitting of the services, where EMS separated from the Fire services, one has seen a majority of black officers occupying higher level positions. EMS was known to be a male dominated service because it needed muscle and strength to carry out. This was brought about by the fact that it was combined with the Fire services and thus it needed a strong person to carry out fire drills.

Currently EMS in the country employs about 50% of females and the majority is black and this is due to the employment equity that was put into place by the government of the day. EMS has seen the emergence of other race groups being Indians and Coloureds joining the service. The two race groups can be predominantly found in KZN and WC. In other provinces, blacks are the ones that dominate. Franks, Kocher and Chapman (2004: 3) conducted a study in EMS in California and came with findings that in the 1970s EMS was a male dominated service. This was due to the fact that many returning Vietnam War veterans, who had experience in flying wounded soldiers in helicopters returned to become EMTs/Paramedics. The other reason is that the Fire services played a major role in the development of EMS. Many localities chose the fire departments to be responsible for emergency care provision in the 1970s and fire department has traditionally been male dominated. Today there has been a concern raised regarding the male dominance in senior officer's positions. This is attributed to the fact that there are no adequately qualified females to become officers because they do not meet the criteria. The table below shows the amount of gender distribution in California (USA):

Gender	EMT	Population
Male	69%	48%
Female	31%	52%

Franks, Kocher and Chapman, 2004

Table 2.2 Gender, EMT/Paramedic and U.S. Population

What this table represents is the amount of males in the EMS population and the amount of males and females there is in the EMS population. It is clear from the table above that males are less in number in the entire California population as compared to females and yet when it comes to the employment in EMS, the males dominate the females. There is still inequality in gender in this service as most still believes that it is a male service and that there are less females who has shown interest in the service. The training as well, is such that women cannot cope and thus do not make it to qualify to become Emergency Care Practitioners (ECPs). . In terms of gender equity in South Africa, there is very little change, if any, in the EMS environment as women are not found in top management positions. Mary Polidori (2008:4) also confirms that EMS is a predominantly male dominated organisation and that women who enter the service has to prove

themselves as they are met with a struggle to create their own space within the profession. In an article written for Fire Africa Journal (Aug 2012: 48), few women were interviewed who are employed within the EMS environment.

“Vanessa Jackson had this to say – “I think it is very much a man’s job but there are a lot more women entering the industry. Emergency services background has always been predominately male driven, if you look at firefighters and paramedic”. Sandra du Rand also had this to say “A woman can definitely pursue a career as a paramedic, however she must be able to do exactly what is expected from men in the service. In other words, she must be physically strong enough to lift and carry patients and heavy equipment. She should not expect to be treated differently to the men or get special gender-based treatment.

It is evident in the statements from Vanessa Jackson and Sandra du Rand (Fire Africa Journal: Aug 2012) that EMS was a predominantly male orientated services which confirms what researcher has already mentioned based on personal experience. The type of physical work that was done prevented women from entering the sector but that has since changed even though having women poses several challenges. Women are now capable of carrying out the work that was meant for men and thus they manage to fit within this environment. Since the split of the Fire Services and the Ambulance Services, it has been easy for women to enter the EMS industry as they have to deal with only patient management. This means that they do not have to deal with the carrying of heavy rescue equipment but there are women who do rescue courses because they are passionate about the service. The service is slowly transforming to accommodate women which is positive step in the right direction.

2.5 Burn out or Job Stress

Bakker, Demerouti & Euwema (2005: 170) states that job stress or burnout develops irrespective of the type of job or occupation when certain job demands are high and when certain job resources are limited. Previous studies in several organizations have confirmed that badly designed jobs or high job demands exhaust employees’ mental and physical resources and therefore lead to the depletion of energy and to health problems, whereas the absence of job

resources undermines motivation and leads to cynicism and reduced extrarole performance (Bakker, Demerouti & Euwema, 2005: 170)

Bakker and Demerouti (2006: 309) further states that many studies have shown that job characteristics can have a profound impact on employee well-being (e.g. job strain, burnout, and work engagement). They state that job demands such as high work pressure, emotional demands, and role ambiguity may lead to sleeping problems, exhaustion and impaired health whereas job resources such as social support, performance feedback, and autonomy may instigate a motivational process leading to job-related learning, work engagement and organizational commitment. There have been several models used to determine the relation between job-resource demand and employee wellbeing. For puproses of this study burn out or job strain are used to highlight the difficulties under which EMS personnel are working and what they have to go through in their everyday life at work. The point of departure is that job strain is the result of a disturbance of the equilibrium between the demands employees are exposed to and the resources they have at their disposal.

EMS in South Africa is faced with a similar problem where they have a shortage of resources that they need to carry out their daily functions. The resources that EMS needs to function optimally include but not limited to the following:

- Basic support from management

The point mentioned above will be discussed in detail to look at how this affects EMS employees in their everyday life at work.

2.5.1 Basic support from managers

EMS employees are exposed to a number of factors in the work place that affect their social well-being. For them to function normally and optimally they need support from their managers. Their managers should give them support so that they can approach them when they have problem. Such is not the case currently as managers are very hostile towards the employees

because they are of the belief that every employee that comes to them with a problem, wants to laze around and not do work. It will be very beneficial if these managers could be taken for training so that they are able to deal with a diverse culture of individuals without breaking them down. This in itself can lead to the development of burnout in the workplace or lead to very aggressive behavior from the employees. This in turn would lead to the employees being charged either for subordination or failure to carry out a lawful instruction.

The Tema Conter Memorial Trust (2006) conducted a study into how peer and supervisor support may be critical as a coping strategy. The results of the study showed that EMS employees are more likely to recover from traumatic critical incidents if given brief time-out periods with peers and expression of support from supervisors (Tema Conter Memorial Trust: 2006). This is not the case with EMS employees as these services are not available to them and thus might lead to the development of a burnout syndrome and eventually PTSD. Some of the peers and even managers are too busy carrying out their tasks to focus on peer briefing sessions. What creates the problem is that employees are overworked and yet under staffed thus the problem exists. Managers are also not trained in counseling so that they can assist these employees when they approach them. Some want to assist and yet do not know where to start as they do not possess the skill to do counseling.

The Open Door Organization (2008) has published an article on the Employee Support Programme (ESP). They state that many companies are affected by ongoing changes such as restructuring, advances in technology, increased workload and loss of staff - often due to HIV/AIDS. In their statistics it shows that up to 25% of staff at any one given time are troubled at work due to issues with family, relationships, stress, anger, illnesses, addictions, domestic violence, loss, grief and bereavement. All these factors affect companies through increased absenteeism, low morale, workplace conflicts, decreased work performance, illnesses and even fatalities.

The Open Door Organization (2008) state that companies that use the ESP realize a significant return on investment through increased productivity and reduced absenteeism. This is true because every employee that is happy at work would not stay away for no reason. Most

employees spend most of their time at work and thus need to be well taken care of and they would in turn ensure that production levels are high and profits are maximized. EMS employees in SA are not well taken care of in one way or the other. This is what creates high turn-over rates and creates a lot of vacancies and poor service delivery. In the event of EMS the country cannot afford to have a lot of vacancies because this might lead to the demise of the patient resulting in death in some.

2.6 Additional stressors in EMS

Besides the constraints mentioned above, EMS employees also face harsh weather conditions as they have a duty to save lives no matter the circumstance. At times they sacrifice their safety out of obligation in order to assist patients. The worst trauma is when they are faced with a multiple casualty scene where they have to make a decision as to which patient gets the treatment and which do not. This decision is usually guided by triage which states that the most critical patients gets treatment first and that children will get first preference above the old people if they are in the same condition. According to Wikipedia Free Encyclopedia (2009) triage is a process of prioritizing patients according to the severity of their condition. This facilitates the ability to treat as many patients as possible when resources are insufficient for all to be treated immediately. Triage is used in hospital emergency rooms, on battlefields, and at disaster sites when limited medical resources must be allocated. What amplifies the problem is the lack of support system to help them vent out frustration they face in their everyday life at work. EMS employees do not have planned professional interventions which are fundamental to the maintenance of a healthy, caring organizational environment.

In some instances EMS employees are faced with challenges of having to park the ambulances at a distance from where the patients are and have to walk up the mountains to assist the patients. This is coupled with carrying the patients to the ambulance since protocol does not allow patients to walk to the ambulances. This leads to some of them suffering from lower back injuries which in turn results in high rates of absenteeism due to sick leave or be subjected to temporary incapacity leave.

The other frustration EMS employees face is having to treat criminals as contained in the Patient's Rights Charter in the HPCSA ALS Protocol booklet (2006: 120), that every patient have the right of access to health care services that includes receiving timely emergency care treatment. This usually happens when such criminals are assaulted by the community for their wrong doing and still have the responsibility to nurse them to good health. This is frustrating to them because protocol does not allow them to discriminate against any patient as each patient deserves treatment from them (NW EMS Policy, chapter 2, sub-section 3, par 11). They are also bound by the Professional pledge they take not to discriminate against patients regardless of race, color or creed, religion and or social standing. They have to face patients who refuse to be treated because of race differences. This impacts negatively on their performance because they become too emotional about the matter and as a result lose focus when treating other patients of the same race.

According to Ward, Lombard & Gwebushe, (2006) work-life balance of EMS employees needs attention as these employees have a life after work. There is a need to look at how work impacts on their lives at home and at work. During the past decades, studies have shown that job characteristics can have a profound impact on employee well-being (e.g. job strain, burnout, and work engagement). Research has also revealed that job demands such as high work pressure, emotional demands, and role ambiguity may lead to sleeping disorders (Baker and Demerouti, 2006). Employees that are stressed at work carry their burdens home and are prone to family violence. This results in them not being happy at home and at work thus the development of stress vulnerability.

Furthermore, in the study conducted by War, Lombard & Gwebushe (2006), on EMS employees in Cape Town the results confirmed that the majority of respondents mentioned working conditions as the most frequent stressor, with the characteristics of critical incidents mentioned as second most frequent. The work conditions that result in stress include the shift system comprising a two-day day shift and two-day night shift and four days' rest. This has been documented to disrupt sleep and being away from the family. They also work in a job that alternates between periods of boredom and fast paced work where there is a lot of adrenaline rush (Ward, Lombard & Gwebushe, 2006).

Other issues employees complained about were problems such as low salaries, lack of or having faulty equipment and still expected to treat patients to the best of their abilities. There is also a high rate of resignations within provinces where employees go to countries like Tanzania, Dubai and Saudi Arabia for better salaries. This leaves a gap where they were employed and the rate at which these posts are filled is rather slow. Even when the posts are filled, they are usually filled with employees that do not have much working experience and thus needs to be orientated. This places the burden on the department of health because while they are waiting to fill the posts, employees are subject to work overtime. This means that the very employees do not get enough rest and this adds more cost to the department. What adds to the stress is that the very employees that were working overtime are now expected to come to work and sometimes some of them working 16 days straight without rest. This has an impact on their level of concentration especially at night. At times they are expected to drive long distances to do transfers and this is when they get involved in accident. Such employees become too stressed as they have to pay for the damages to the state's vehicle and to pay for any third party claims on top of the very little salary that they are earning. In other areas like GP and KZN some employees experience hijackings as well and this on its own is a stressor and is very traumatic.

In addition to the above, EMS employees are exposed to traumatic stressors which are potentially an integral part of their job. Traumatic stressors, or critical incidents, are those in which employees are exposed to death or life threatening injury. In addition to the risk of mortality, serious mental health and behavioral problems are associated with such traumatic exposure. These include post traumatic stress disorder, anxiety, and depression (Ward, Lombard & Gwebushe, 2006).

EMS employees are sometimes exposed to physical assault. Younger employees in EMS are the ones prone to physical assault in association with critical incident exposure (Ward, Lombard & Gwebushe, 2006). The unruly patients are usually those that are drunk and very uncooperative and the bystanders would be the patient's friends or foes who do not want patients to be treated especially when they assaulted the patient. They only want the patients to die and therefore would not allow the patients to get treatment from EMS employees. At times the employees have

to treat patients at gunpoint or guarded by the mob. They also have to face the harsh realities of seeing patients die and there is nothing they can do to save them. The dangerous part is when they get emotionally involved as well and they cannot separate work from emotions. They get attached to the patient and mostly where children are involved. What add to the stressors is the fact of having to deal with shortage of equipment and resources. They at times have to go without vital equipment like oxygen cylinders or even bandages because there is either a shortage or non-delivery of these resources. They at times have to treat patients without giving them oxygen as the service provider was not paid due to the long procurement process or insufficient funds for the payment of the service provider. This impact negatively on the morale of the employees as they have to face the patients or any litigation brought against them by the HPCSA for failure to treat the patients according to their protocol.

2.7 Development of stress vulnerability in the workplace

AAETS, (2008) defines Post-Traumatic Stress Disorder or stress vulnerability as a debilitating condition that follows a terrifying event. Often, people with stress vulnerability have persistent frightening thoughts and memories of their ordeal and feel emotionally numb, especially with people they were once close to. This stressor may involve someone's actual death or a threat to the patient's or someone else's life, serious physical injury, or threat to physical and/or psychological integrity, to a degree that usual psychological defences are incapable of coping. In some cases it can also be from great emotional stress when someone has tinkered with their brain, but no one is actually hurt. Stress Vulnerability is a condition distinct from Traumatic stress, which is of less intensity and duration, and combat stress reaction, which is transitory. Stress Vulnerability has also been recognized in the past as shell shock, traumatic war neurosis, or post-traumatic stress syndrome (PTSS). Stress Vulnerability is believed to be caused by psychological trauma. Possible sources of trauma includes experiencing or witnessing childhood or adult physical, emotional or sexual abuse. In addition, experiencing or witnessing an event perceived as life-threatening such as physical assault, adult experiences of sexual assault, accidents, drug addiction, illnesses, medical complications, or the experience of, or employment in occupations exposed to war (such as soldiers) or disaster (such as emergency service workers). Many servicemen and women getting back from Iraq and Afghanistan suffer from stress

vulnerability. The Marines and the Army are much more likely to have it than the Air Force and Navy, because of their greater percentage of exposure to combat. In a preliminary study, it has been shown that mutations in a stress-related gene interact with child abuse to increase the risk of stress vulnerability in adults.

In studies conducted, stress vulnerability is an anxiety disorder that can develop after exposure to a terrifying event (earthquakes, airplane crashes, terrorist attacks, inner-city violence, domestic abuse, rape, war, genocide, and other disasters) or an ordeal in which grave physical harm occurred or was threatened. Traumatic disorders, as already mentioned earlier in the text, that can trigger stress vulnerability include violent personal assaults, natural or human-caused disasters, accidents, or military combat. People with stress vulnerability have frightening thoughts and memories of their ordeal and feel emotionally numb, especially with the people they were once close to. They may experience sleep problems; feel detached or numb, or easily startled. This is the case with the employees that are going to be part of the study as they are subjected to these kinds of conditions. As mentioned earlier in the text, patients and even family employees assault some and some are told to treat patients at gunpoint. This is trauma to the employees and needs to be researched to find a way in which to assist them to deal with the condition. Hereunder are the three categories of stress vulnerability:

Stress vulnerability usually appears three months after the trauma and it falls into three categories:

- Intrusion
- Avoidance
- Hyper arousal

With intrusion, the memories of the trauma reoccur unexpectedly, and episodes called “flashbacks” intrude into their current lives. This usually happens in sudden, vivid memories that are accompanied by painful emotions that take over the victim’s attention. This re-experience, or "flashback," of the trauma is a recollection. It may be so strong that individuals almost feel like they are actually experiencing the trauma again or seeing it unfold before their eyes and in nightmares. Avoidance symptoms affect relationships with others: The person often avoids close emotional ties with family, colleagues, and friends. At first, the person feels numb, has

diminished emotions, and can complete only routine, mechanical activities. Later, when re-experiencing the event, the individual may alternate between the flood of emotions caused by re-experiencing and the inability to feel or express emotions at all. The person with stress vulnerability avoids situations or activities that are reminders of the original traumatic event because such exposure may cause symptoms to worsen.

The inability of people with stress vulnerability to work out grief and anger over injury or loss during the traumatic event means the trauma can continue to affect their behaviour without their being aware of it. Depression is a common product of this inability to resolve painful feelings. Some people also feel guilty because they survived a disaster while others-particularly friends or family-did not. Stress vulnerability can cause those who have it to act as if they are constantly threatened by the trauma that caused their illness. They can become suddenly irritable or explosive, even when they are not provoked. They may have trouble concentrating or reemployeing current information, and, because of their terrifying nightmares, they may develop insomnia. This constant feeling that danger is near causes exaggerated startle reactions.

Finally, many people with stress vulnerability also attempt to rid themselves of their painful re-experiences, loneliness, and panic attacks by abusing alcohol or other drugs as a "self-medication" that helps them to blunt their pain and forget the trauma temporarily. A person with stress vulnerability may show poor control over his or her impulses and may be at risk for suicide.

Research has been conducted in different parts of the world and the outcomes were that:

Some studies show that debriefing people very soon after a catastrophic event may reduce some of the symptoms of stress vulnerability. A study of 12,000 schoolchildren who lived through a hurricane in Hawaii found that those who got counseling early on were doing much better two years later than those who did not. People with stress vulnerability tend to have abnormal levels of key hormones involved in response to stress. Cortisol levels are lower than normal and epinephrine and nor-epinephrine are higher than normal. Scientists have also found that people with this condition have

alterations in the function of the thyroid and in neurotransmitter activity involving serotonin and opiates.

When people are in danger, they produce high levels of natural opiates, which can temporarily mask pain. Scientists have found that people with stress vulnerability continue to produce those higher levels even after the danger has passed; this may lead to the blunted emotions associated with the condition. It used to be believed that people who tend to dissociate themselves from a trauma were showing a healthy response, but now some researchers suspect that people who experience dissociation may be more prone to stress vulnerability.

Animal studies show that the hippocampus, a part of the brain critical to emotion-laden memories, appears to be smaller in cases of stress vulnerability. Brain imaging studies indicate similar findings in humans. Scientists are investigating whether this is related to short-term memory problems. Changes in the hippocampus are thought to be responsible for intrusive memories and flashbacks that occur in people with this disorder. Research to understand the neurotransmitter system involved in memories of emotionally charged events may lead to discovery of drugs that, if given early, could block the development of stress vulnerability symptoms.

Levels of CRF or corticotrophin releasing factor--the ignition switch in the human stress response--seem to be elevated in people with stress vulnerability, which may account for the tendency to be easily startled. Because of this finding, scientists now want to determine whether drugs that reduce CRF activity are useful in treating the disorder.

Work context has been shown to be important in the experiences in the lives of employees (Bowron and Todd, 1999). It is known that work contexts in the rural and urban areas especially in South Africa are not the same as historically, resources have been shown to be more focused on urban areas. The present study obtains within a developing rural area in South Africa with the challenges of the availability of resources amongst them. The argument in this study is that EMS employees in the rural areas would not have easy access to psychological assistance in

comparison to those in urban areas and thus would have unique psychosocial experiences of their work context.

Some are involved in accidents while escorting patients and this increases their stress level in addition when the employees is found guilty during disciplinary hearing, they have to pay for the damages. The second factor that increases the stress is that employees face traumatic situations such as gruesome accidents where they have to facedying patients and they are not able to save their lives because it is either too late, or they are not sufficiently skilled or equipped to treat the patient further as the treatment required is beyond their scope of practice. Consequently, EMS employees have to live with a heavy burden of being unable to save a life as they have been trained and required to do. A body of literature also supports some of these observations made by the researcher such as Taylor and Frazer, (1982); Cydulka, Emerman, Shade and Kubincanek, (1997) Alexander and Klein, (2001).

Similar studies to the present one has been conducted in the United States by Taylor and Frazer, (1982). It has been shown that after critical incidents peers were regarded as either always or frequently supportive by 40 of the 90 respondents. How colleagues react to those who have had harrowing experience have a bearing on how well they adjust (e.g. Taylor and Frazer, (1982); Alexander and Wells, 1991). The survey by Taylor and Frazer (1982), suggest that peer support is much more likely to be available than support from seniors in relation to work-related stress (Alexander and Walker, 1994) and by nurses and doctors working in trauma units (Alexander and Atcheson, 1998). The situation is not the same in South Africa as the nurses and doctors do not have insight into what Emergency Care Practitioners (ECPs) do outside the hospital. This creates a situation where doctors and nurses cannot give the EMS employees the necessary support as they too are very busy treating patients or attending to other matters.

Cydulka et al. (1997) conducted a study on the stress levels in EMS employees in 1997 in the United States of America (USA). The study indicated that stress levels in the lives of EMS employees were very high. This manifested primarily as somatic distress, secondarily as organizational stress and job dissatisfaction and lastly as negative patient attitudes. Stress levels and subset manifestations of occupational stress among EMS employees varied depending on

gender, marital status, age, level of training and function, on salaries or volunteer status, length of time as an EMT, size of the organization, city and population served. Recommendations should be considered to address stresses peculiar to individuals in EMS system needs.

Eastham, Thompson and Ryan (1991) conducted a study on the life span of the ambulance employees especially those that were exposed to working with HIV/AIDS patients. Eastham, et al, (1991) found that respondents in another study, with higher AIDSTRESS scores were the Basic Life Support (BLS) providers, men, paid providers, employees with more than three years field experience, those working in urban areas, employees with no formal education beyond high school and those who stated that their HIV/AIDS training was inadequate. From this study it is evident that the impact of HIV/AIDS on the service providers is quite dramatic and some of the employees cannot handle what is required by given situations.

Tkach and Rumpf (1995) also conducted a study on surviving and excelling on the streets which was more focused on the life of the Emergency Medical Services. The study revealed that when EMS providers at both the BLS and Advanced Life Support levels (ALS) leave their training program, they are armed with newfound knowledge, but they usually lack the appropriate life experiences to excel and survive on the streets. As these providers enter the real world of EMS, they face the challenge of making life-and-death decisions in uncontrolled environments. This includes making appropriate decisions while functioning effectively even in potentially dangerous situations.

The employees usually suffer from burnout and high turn-over rates due to the stress levels of the job. This indicates that no matter what levels of training one receives, the employees are never prepared enough to deal with the situations that they come across, because the training is always different from the real life situations. During training employees are exposed to practicing patient treatment on training manikins and one can make as many mistakes as possible, but in real life and practical situations, they have to deal with real patients requiring appropriate responses and informed decisions. There is no training in the EMS context that can prepare one for situations that employees come across on a regular basis as real life situations involving patients are unique and different.

Bowron and Todd (1999) undertook a study into the job stressors and job satisfaction in a major metropolitan public EMS. The purpose of their study was to identify the job stressors that predict the level of job satisfaction among pre-hospital employees. It is important that EMS managers identify predictors of job satisfaction in order to maximize job performance among pre-hospital employees. This study was conducted within a large urban Emergency Medical Services performing approximately 60,000 Advanced Life Support (ALS) responses annually. Their study suggests that job satisfaction and job performance are positively correlated.

The consequences of working under stressful conditions have in some cases led to stress vulnerability according to National Institute for Mental Health study (2001). Stress vulnerability is an extremely debilitating condition that can occur after exposure to a terrifying event or ordeal in which grave physical harm occurred or was threatened. NIMH study states that traumatic events that can trigger stress vulnerability include violent personal assaults such as rape or mugging, natural or human-caused disasters, accidents, or military combat/. According to the study, military troops who served in Vietnam and Gulf Wars; rescue workers involved in the aftermath of the Oklahoma City Bombing; survivors of accidents, rape physical and sexual abuse, as well as other crimes; immigrants fleeing violence in their home countries; survivors of the 1994 California earthquake, the 1997 South Dakota floods, hurricanes Hugo and Andrew as well as people who witness traumatic events are among the people who may develop stress vulnerability. Families of victims can also develop the disorder. However, through research supported by the NIMH and the Department of Veterans Affairs (VA), effective treatment has been developed to help people with stress vulnerability. Research also helps scientists to gain improved understanding of the condition and how it affects the brain and the rest of the body.

In addition, NIMH has a special funding mechanism, called RAPID Grants, which allows researchers to immediately visit the scenes of disasters, such as plane crashes or floods and hurricanes, to study the acute effects of the event and the effectiveness of early intervention. Research by NIMH has shown that stress vulnerability alters a number of fundamental brain mechanisms; as a result abnormalities have been detected in brain chemicals that mediate coping behavior, learning and memory among people with the disorder. Recent brain imaging studies

have detected altered metabolism and blood flow as well as anatomical changes in people with stress vulnerability.

NIMH study (2001) has identified that many people with stress vulnerability repeatedly re-experience the ordeal in the form of flashback episodes and that they also have sad memories and nightmares. The other experiences are frightening thoughts especially when they are exposed to events or objects reminiscent of the trauma. Anniversaries of the events can also trigger symptoms and usually people with stress vulnerability also experience emotional numbness and sleep disturbances, depression, anxiety and irritability or outbursts of anger. Feelings of intense guilt are also common. Most people with stress vulnerability try to avoid any reminders or thoughts of the ordeal. Stress vulnerability is diagnosed when symptoms last more than one month.

According to the study by NIMH (2001) stress vulnerability can develop at any age, including in childhood. It does not have age restrictions as everyone experiences some form of trauma at some stage in one's life. Children experience trauma as a result of parental abuse and sibling abuse. Symptoms typically begin within three months of a traumatic event, although occasionally they do not begin until years later. Once stress vulnerability occurs, the severity and duration of the illness varies. Some people recover within six months, while others suffer much longer. Therefore, the research has demonstrated the effectiveness of cognitive-behavioral therapy, group therapy and exposure therapy, in which the patient repeatedly relives the frightening experience under controlled conditions to help him or her work through the trauma. In addition he or she receives medications that help ease the symptoms of depression and anxiety and help promote sleep. Scientists are attempting to determine which treatments work best for which type of trauma. There are other physical and emotional illnesses that tend to accompany stress vulnerability and they tend to make the condition worse in some patients. Co-occurring depression, alcohol or other substance abuse, or another anxiety disorders are not uncommon. The likelihood of treatment success is increased when these other conditions are appropriately diagnosed and treated as well.

Headaches, gastrointestinal complaints, immune system problems, dizziness, chest pain, or discomfort in other parts of the body are common. Often, doctors treat the symptoms without

being aware that they stem from stress vulnerability. NIMH study (2001) through its education programme, encourages primary care providers to ask patients about experiences with violence, recent losses and traumatic events, especially if symptoms keep recurring. When stress vulnerability is diagnosed, referral to a mental health professional that has had experience treating people with the disorder is recommended. People who have been abused as children or who have had other previous traumatic experiences are more likely to develop the disorder. This also involves people working in emergency services, army employees, the police as well as employees who have lost loved ones.

Other adverse effects of working under difficult conditions seem to be turnover intentions. A study conducted by Fisni, Vllaznim and Vyrtyt (2010) examined employees' level of work stress, job satisfaction and organizational commitment and the impact these workplace dimensions have in one another. It examined the pattern of relationships among stress, satisfaction, commitment and turnover intentions by employing structural equations analysis approach. Although findings showed a very committed and satisfied workforce, PTK and PIA should pay close attention to their level of work stress which is the case with EMS employees who might appear very satisfied with their work but the underlying stress vulnerability might take its toll on them. In addition, a reciprocal relationship exists between commitment and turnover intentions (lower commitment leads to greater intentions to quit which, in turn, further lowers commitment).

A similar study was conducted by a group from Taiwan (Chiu, Chien, Lin, Hsiao, 2005) on hospital employees to understand job stress and the turnover intentions. The results indicated that global job satisfaction influences turnover intentions and that organisational commitment is more for internals than externals. Organisational commitment influences turnover intentions similarly for both internals and externals. Furthermore, the influence of perceived job stress on job satisfaction and organizational commitment is stronger for externals than internals. Leadership support influences job satisfaction more for internals than externals.

It is also generally accepted that stress has a negative relationship with psychological well-being and is positively related to staff turnover, turnover intentions and the rates of workplace absence

As it is with the research conducted that there is a high rate of absenteeism as a result of lack of satisfaction at work or the work pressure becoming unbearable. The respondents then choose to stay away from work and replacements have to be called in and overtime was paid for that. This increases the expenditure for the Department of Health because the department has to pay for two people, the one payment is for overtime and the other payment goes to the employee who is not at work who is on leave.

2.8 Conclusion

It is very important to note what other researchers have researched and how this has an impact in EMS in South Africa. It is evident that work conditions of EMS employees is unique and thus cannot be replaced. There are some aspects that would need to be changed in order to improve the work conditions of EMS employees. The first would be the lack of resources that are very vital to perform life saving work as expected on a daily basis. Employees are performing a critical service that deals with life-threatening emergencies and the lack of resources impact negatively on the performance of their duties. Their duty is to save lives and leaves very little room for error as they are the first-line responders in any pre-hospital emergency. They function in uncontrolled environments and thus need to be sufficiently equipped and ready for any emergencies, be it resources, skills and/or capacity related. The second would be the human resource support that management needs to offer its employees because there is a high shortage of staff as confirmed in the study conducted by Bennet (2007) into the resources needed by EMS to function optimally. This is critical as huge shortages places a burden and strain on the employees and thus leads to frustration due to low salaries yet the work load is not decreasing. Bennet's study even though it was not conducted in South Africa, has relevance in the work environment of EMS personnel. The study bears relevance as EMS in South Africa has a huge shortage of personnel. This places a burden on the employees as there is a high use of personnel on overtime to supplement for the shortage which gives employees very little time to rest. This poses yet another risk for the EMS employees as little rest leads to fatigue and they have to work a full 12 hour shift, be it day or night, which has its own dynamics. A personel who functions under fatigue is bound to commit mistakes and this is the luxury that EMS employees do not have as the lives of those patients in emergency situations are dependent on them.

It is also clear from the literature that there are factors that affect the satisfaction of EMS employees. This would need to be thoroughly investigated to see if this can be rectified in one way or the other to ensure that South Africa does not lose skilled employees to other countries. There is also evidence that there is development of stress vulnerability within the EMS work environment. It is the researcher's aim to unearth that and to come up with measures to address this before it escalates to a point where it cannot be controlled. This will also further assist employees that are functioning with the South African Police Services (SAPS), South African Military Health Services (SAMHS), Forensic Pathology Services (FPS), Fire and Rescue Services and to a lesser extent the Safety and Security Services (Traffic Police). The services mentioned above are exposed to the same stressors as EMS in one way or the other and FPS and the SAMHS follow EMS very close as the functions they perform relate directly to patients as this is their core function. Fire Services, SAPS and Traffic Police are not directly exposed as this comes as secondary exposure to them when responding to victims of crime and accidents.

CHAPTER 3

THEORETICAL FRAMEWORK

3.1 Introduction

A review of literature is done to provide the theoretical framework of the research. In the preceding literature review chapter we have seen the mention of several theories that are recognized in the research environment. The theoretical framework in any study not necessarily limited to this study, relates to the philosophical basis on which the study takes place, and forms a link between the theoretical aspects and practical components of the research.

3.2. Research Objectives

The aim of the study is to investigate the work conditions and experiences of Emergency Medical Services employees and how this can lead to stress vulnerability. There are a four (4) research objectives that were identified within the literature review chapter. In this study for objectives were identified which seeks to describe the relationship between work conditions, work experiences and the stress vulnerability among EMS employees; to determine how life satisfaction affects stress vulnerability among EMS employees; to determine how job resources and conditions of EMS employees influence their satisfaction with life; to explore how stress vulnerability is impacted upon by different age groups, qualification levels, ethnic groups and gender and to devise methods and tools to be used to alleviate stress vulnerability in the EMS employee's workplace and to address the current situation

3.3 Theoretical Background

EMS in South Africa has gone through a transformation process up to where it is currently. Emergency services were predominantly white male dominated during the apartheid era and this has seen very less of other ethnic groups in the service. The situation changed tremendously after the 1994 South African Democratic election. This has seen other cultural groups entering

the emergency services and now the ratios have changed drastically. There are more Africans in the service than other ethnic groups and Coloureds and Indians being the lesser of the ethnic groups. Currently the service accommodates and employs people from all walks of life, and this includes women as well. One has to meet the employment criteria and possess the skills to be eligible for employment in the Emergency Services. This exposed the service to very young EMS practitioners entering the service. Some start their careers at the age of 18 or 19 years after the completion of the Basic Ambulance Assistance course which only 5 weeks long. This together with a code 10 driver's license with a Public Drivers Permit gives you entrance into the EMS environment to proactise at a basic level. This then means that some EMS employees are exposed to the grueling environment at an early stage in their lives. This proves to be a bit hostile in the lives of such practitioners as they get to face incidents or situations that need them to take life-or-death decisions. Normally an EMS practitioner would grow within the service and find some entering into the management positions in the early or late thirties depending how well qualified they are for the position. About 90% of employees remain in operations for most part of the working life and some go to pension while working in operations.

Most if not all get exposed to factors that lead to the development stress vulnerability within the workplace. This means that they would then require the service of a Social Worker/Psychologist or Chaplain at some point in the career life. EMS in the past used to have services of the pastor and psychologist to look after employees. Currently psychological services do not exist in most if not all the services within the country. Kriek (2008: 7) confirms that many if not most of the Emergency medical services personnel have never consulted a counsellor or a psychologist. In addition most of the South African Ems do not provide their employees with these crucial services and that when these services are provided, these are either on a ad hoc basis or he services are not utilized fo their full potential. The EAP services are currently based in the Department of Health and are meant to cater for all employees within the department and not only limited to EMS employees. This means that employees within EMS, just like any employee within the department must wait their turn to consult with these practitioners. When EMS practitioners are exposed to major incident they need debriefing immediately after the incidents and this cannot wait for the availability of EAP practitioners. This would require immediate intervention and referral to a psychologist. Some employees have to wait for days before they

can be seen and this exacerbates the condition. This has resulted in some employees not having faith in the effectiveness of the system. There are several theories that were developed by various authors that will be looked at in this chapter and their relevance in the study:

Francis Heylighen, 1992 developed a theory of needs. According to Maslow's Hierarchy there are different levels of needs in a person's life and they are outlined in a pyramid format. One cannot realize the next step if the previous one has not been realized and the individual is satisfied of the achievement. The figure below shows Maslow's Hierarchy of needs:

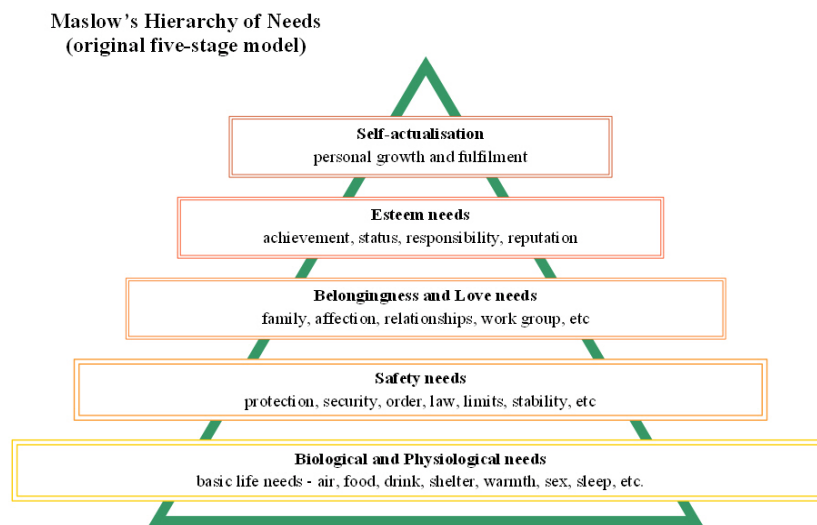


Fig 2.1. Maslows Hierachy of Needs

What Maslow believes is that a person will never move from one level to the next without having achieved the previous one, as the previous level has an impact on the next. He also stressed that education is very important as this paves a way to reaching the self-actualization level. When one reaches that level, then the individual will be satisfied with life. The level of needs can be coupled with stress vulnerability in EMS in a sense that this also plays a role in a person suffering from stress related illness. Most employees in EMS do not have a higher tertiary education. Most ended up with matric and thus only have a four or five week certificate course. This confines them only to the field of work and thus cannot work at other institutions as they are not qualified and will not meet the employment criteria. This means that they have to accept salaries that are pre-determined by their qualifications. Maslow states that the only reason that

people do not move forward is because of the hindrances society places in front of them and education is one of the hindrances. History has it that, when an EMS employee furthers his studies within the field, they would qualify for a placement in a higher rank therefore getting a higher salary. This is the case with EMS employees as some do not have the opportunity to study further and end up taking up employment in EMS at a low qualification level. The long term impact is that they eventually do not have a well balance work-life relationship. Most spend more time at work to work overtime in order to get more money to meet their needs. This puts a strain on their relationship with their loved ones at home, because they are never at home with them. The fights with the family employees also puts more strain on the individual as they are working hard to provide a better life and yet they do not meet the requirements. This, in a long term leads to the employees suffering from stress vulnerability as this has a psychological impact in their lives.

This is very evident in the North West province EMS as workers tend to work long hours in a form of overtime to compensate for the little salary they are getting. This in turn leads to them not resting enough to be ready for work when it is their time to be on shift again. The workers in EMS work a four day shift system (two days-day shift and two days-night shift) and then four days off. It is during these four days off time that employees come to work and put in overtime and overwork themselves. All this impacts negatively on their work, as some would either take constant sick leave or stay away from work because of fatigue. This has a snowball effect which ends up with the workers suffering from stress vulnerability.

In this study there were four hypothesis that are linked to Maslows theory of needs:

Hypothesis 1: is that life satisfaction is likely to impact on stress vulnerability

Hypothesis 2: Age group, Qualifications, Current position, Years of services, Smoking, Regularity of Smoking, Take alcohol, Exercise, Relation, Overtime, Affectors, New health, Impact of Life Events, New life satisfaction and Work Conditions in combination are likely to have an impact on stress vulnerability

Hypothesis 3: Age group, Qualifications, Current position, Years of services, Smoking, Regularity of Smoking, Take alcohol, Exercise, Relation, Overtime, Hours of overtime,

Affectors, New health, Impact of Life Events, New life satisfaction and Work Conditions in combination are likely to have an impact on stress vulnerability

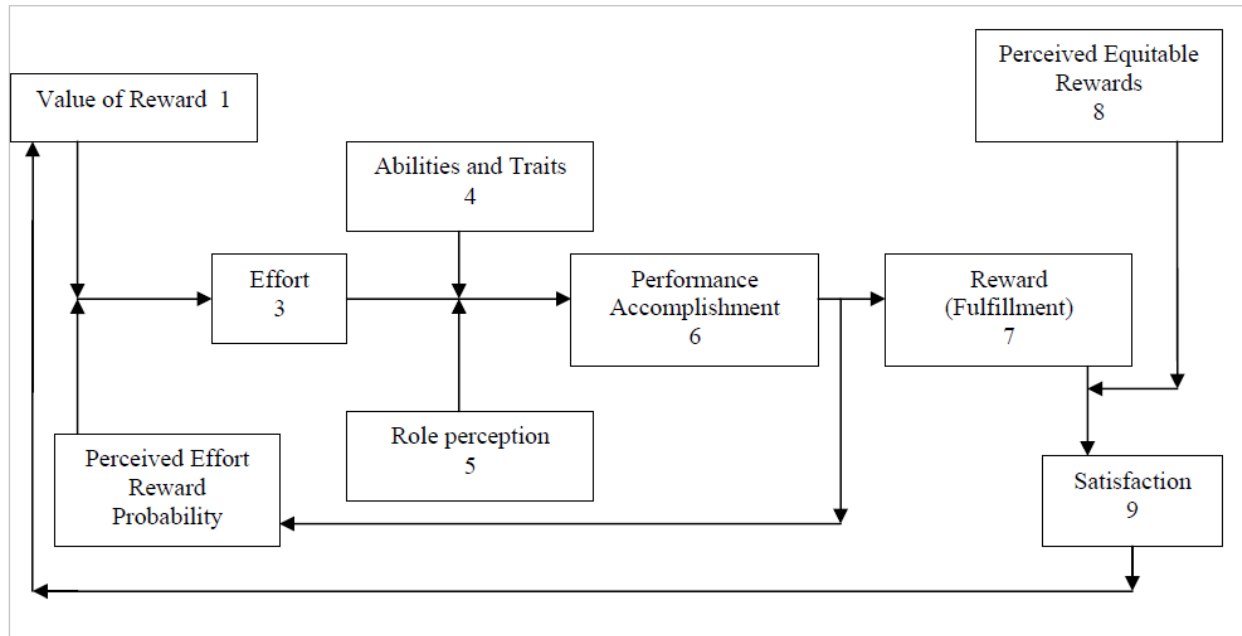
Hypothesis 4: Educational qualification differences are likely to have an impact on stress vulnerability

Further to the Maslows Theory of needs, the study identified other theories that proves to be relevant to this study in particular. There are different theories that focus on job satisfaction in the workplace. The researcher has highlighted the following and how they are related to the EMS work environment:

- The VIE Theory
- High performance cycle theory
- Opponent process theory
- Comparison Theory

3.3.1 The VIE Theory

Porter and Lawler (1998) came up with an expectancy theory model. In their theory they stated that there are three basic components namely; valence, instrumentality and expectancy and it also incorporates abilities and traits, role perceptions, intrinsic and extrinsic rewards and the perceived equity of the rewards. In the model it is indicated that for a person to perform at a desired level, the person must have the ability to perform and must understand the demands of the job. The model further acknowledges that people normally work for intrinsic results such as pride in the work done and a sense of accomplishment and the extrinsic rewards such as money and promotions. The model further assumes that the level of rewards that a person attains is influenced by the level of performance.



Adapted: Fig 2.2 The Porter-Lawler's (1968) Model of motivation and job satisfaction

The EMS environment does not allow for such as one is limited by red tapes and prescripts that governs the operations of the service. This puts a limit to the operations of EMS employees and therefore most feel that they are limited and cannot grow nor receive any rewards. This results in despondent employees who from time-to-time are involved in delinquent behavior which results in disciplinary actions that has undersired outcomes. This further impact on the morale of the employees and thus their performance is below par. This has a further impact on the satisfaction with the job for the employees as there is reason to believe that EMS employees are not satisfied with their work due to the low salaries that they earn and the work environment within which they operate. Further to this EMS employees cannot determine their roles in the environment as this is limited by protocols they ascribe to. This puts a limit on them and some feel that they perform better is such protocols did not exist. This puts them under constant pressure because they are aware what they are capable of and yet cannot exercise their capabilities because of the existing limitations.

As was the case with Maslows theory (1992) , there are hypotheses linked to the Vie theory. The following hypothesis best fit in this theory:

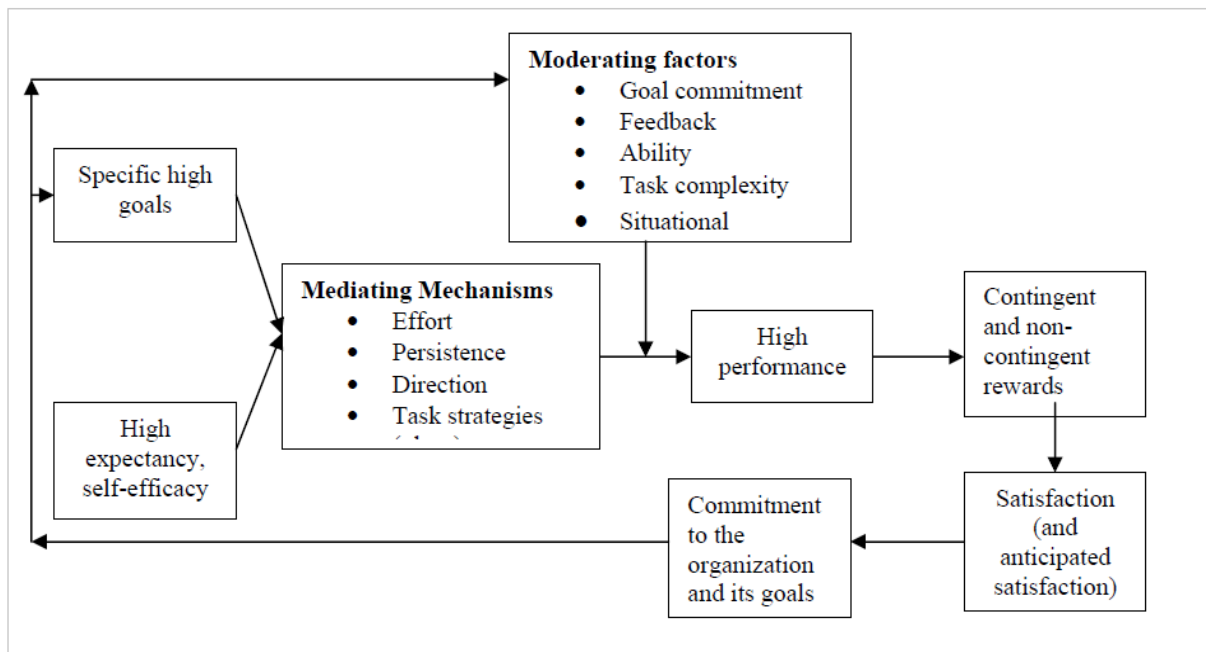
Hypothesis 1: work conditions and work experience are likely to impact on stress vulnerability

Hypothesis 2: Age, Race and Years of experience are likely to impact on stress vulnerability

Hypothesis 3: Educational qualification differences are likely to impact on stress vulnerability

3.3.2 High Performance Cycle Theory

The High Performance Cycle theory is an integration of job attitude and work motivation theories (Locke & Latham, 1990). This model uses the motivational framework of goal setting theory and predicts that high goals and high success expectations lead to high performance. High performance in turn produces rewards, satisfaction, and commitment to future goals. This model also considers the influence of personal and situational factors, such as ability and task complexity. Other authors raise the importance of emotions at work. Emotions determine whether employees will be satisfied or dissatisfied in a work setting Reece and Brandt (1996: 234). This goes against the notion held by many leaders that doing business is purely a rational or logical process, that doing business has nothing to do with employees' feelings.



Adapted: Figure 3.3 Locke and Latham's (1990) High Performance

This is the case with EMS employees, they are not satisfied with their salaries and their jobs. Due to the scarcity of work and the limitations put on them seeking employment elsewhere because they do not possess any other qualification except for the qualifications that guarantees them employment within EMS. This leaves them with no other options but to remain within EMS. What further exacerbates the situation is the lack of succession plans within the department that will put them in a better position for promotion. As a result, they are stuck in the same level qualification for a very long time and others goes on retirement being in the same position and employment category. With these being said, it is not expected that EMS employees will perform at their peak as most of them are demoralized. They function at an average level as per the Performance Management Development System (PMDS) requirements which is a system used to evaluate employee performance and give rewards such as pay progression and bonuses depending on the level of your achievement. They do not have the desire to work more than it is expected of them because there is no recognition of their outstanding performance. Differences between staff and management is the greater contributor to this situation. This does not motivate staff at all and thus most of them are not performing at a high peak. When conducting exit interviews with employees that resign, dissatisfaction with work is the most mentioned cause for resigning. This is evident that there is need to be motivated and satisfied in this field of work. For most employees that remain within the service, they end up suffering from stress vulnerability. This area needs improvement to ensure that employees are kept happy and that they can perform at their peak.

Hypothesis 1: work conditions and work experience are likely to impact on stress vulnerability

Hypothesis 2: Life satisfaction is likely to impact on stress vulnerability

Hypothesis 3: Age group, Qualifications, Current position, Years of services, Smoking, Regularity of Smoking, Take alcohol, Exercise, Relation, Overtime, Affectors, New health, Impact of Life Events, New life satisfaction and Work Conditions in combination are likely to have an impact on stress vulnerability

Hypothesis 4: Age group, Qualifications, Current position, Years of services, Smoking, Regularity of Smoking, Take alcohol, Exercise, Relation, Overtime, Hours of overtime, Affectors, New health, Impact of Life Events, New life satisfaction and Work Conditions in combination are likely to have an impact on stress vulnerability.

3.3.3 Opponent Process Theory

Landy, *et al* (2005) states that job attitudes emanate from a person's physiological state. This study examined the association of work attitudes (job satisfaction, organizational commitment, and job involvement) with job analysis ratings. The relation between work attitudes and job analysis ratings was examined relative to rating scale type (frequency and importance) and task discretion (low vs. high discretion tasks). Opponent process theory assumes that when you experience an extreme emotional state, the Central Nervous System (CNS) attempt to bring you back to a state of equilibrium or neutrality. In returning to neutrality, the emotional state may even surpass equilibrium and even progress to an opposite emotional state. Solomon (1980) developed a theory of motivation/emotion that views emotions as pairs of opposites (for example, fear-relief, pleasure-pain). The opponent process theory states that when one emotion is experienced, the other is suppressed (Solomon, 1980). For example, if you are frightened by a dog, the emotion of fear is expressed and relief is suppressed. If the fear-causing stimulus continues to be present, after a while the fear decreases and the relief intensifies.

This theory is applicable to an extent in the EMS environment as employees in most call outs, do not know what to expect until they arrive at the site of the incident. This brings out the anxiety mode with a lot of adrenalin pumping through the system as they do emergency response to the incident. This places a lot of pressure on the employees as they have to calm down and yet they are expected to save the lives of patients they find at the incident. This puts them in a anxious emotional state which might result in them making costly mistakes.

Hypothesis 1: Work conditions and work experience are likely to impact on stress vulnerability

3.3.4 Comparison Theory

Dipboye, Smith and Howell (2000) incorporated the concepts of attained versus desired needs in their model of facet satisfaction. The model they use is an extension of the Porter-Lawyer's model of motivation. It is a facet of a job such as supervision, pay or work itself. The model specifies that workers compare what their jobs should reward them, either in pay rise or a

promotion in comparison to what they currently receive in their jobs. However the simple need comparison theory is extended by also weighing the influence of certain worker characteristics such as skills, training and age and job characteristics such as degree of responsibility and difficulty of the job. Dipboye, Smith and Howell (2000: 149-150) states that in addition, the model draws concepts from the equity theory of motivation by assuming that workers ultimately determine their job satisfaction by comparing their relevant job inputs and outputs to others. It is reality in EMS as employees compare their salaries amongst themselves through all the provinces. With the provincialization of services from the Local Authorities, most of them came with high salaries as compared to those that were already employed within the provincial department. This created salary disparities amongst the employees whereas they perform the same functions or even on the same qualification bracket. This creates dissatisfaction and the decrease in morale of the employees who earn a lower salary because it is expected that the salaries should be almost on the same level. Job satisfaction takes a back seat in such circumstances and hence some employees end up absenting themselves from work. This creates an environment delinquency among the staff and disgruntlement due to the fact that they are employed to do the same job and yet they earn at different salary level. In some areas the department tried addressing the matter with some legislative restrictions, this did not bear any positive fruits. This was the result of the outflux of personnel from the public sector and joining the private sector. This left a gap with regards to higher skilled official because the department could not attract any higher skilled officials due to the low salaries offered by the public sector. All this is attributed to the fact that the employees are not satisfied with the salaries being offered hence no one took up employment within the public sector. Those that took up employment did so seeking experience and once they have gathered the necessary experience, they leave the public sector for more lucrative employment elsewhere.

Hypothesis 1: Age, race and years of experience are likely to impact on stress vulnerability

Hypothesis 2: Life satisfaction is likely to impact on stress vulnerability

Hypothesis 3: Age group, Qualifications, Current position, Years of services, Smoking, Regularity of Smoking, Take alcohol, Exercise, Relation, Overtime, Affectors, New health, Impact of Life Events, New life satisfaction and Work Conditions in combination are likely to have an impact on stress vulnerability

Hypothesis 4: Age group, Qualifications, Current position, Years of services, Smoking, Regularity of Smoking, Take alcohol, Exercise, Relation, Overtime, Hours of overtime, Affectors, New health, Impact of Life Events, New life satisfaction and Work Conditions in combination are likely to have an impact on stress vulnerability

Hypothesis 5: Age differences are likely to have an impact on stress vulnerability

Hypothesis 6: Educational qualification differences are likely to have an impact on stress vulnerability

Hypothesis 7: Different race groups are likely to have an impact on stress vulnerability

Hypothesis 8: Gender differences is likely to have an impact on stress vulnerability

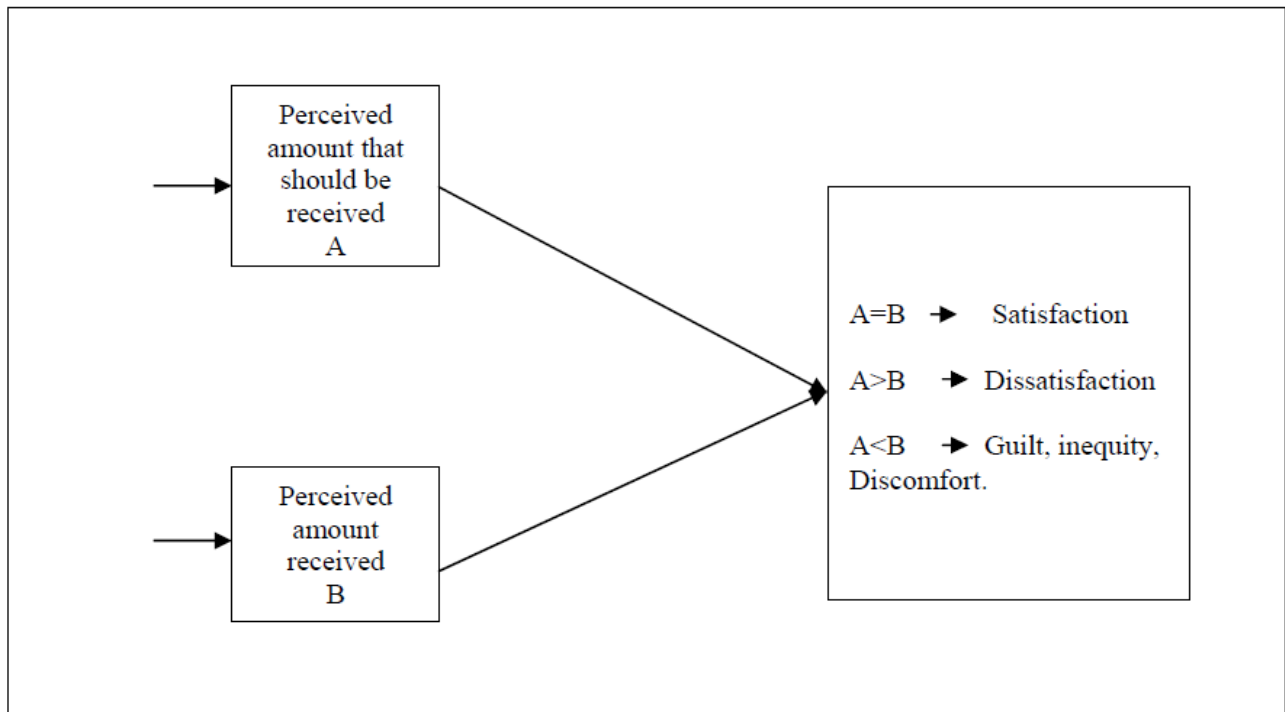


Fig 3.4 Lawler's (1973) Model of Facet Satisfaction

3.4 Environmental Factors Hypothesis

From the literature review it is very clear that there is lack of support from government within the South African context. In international countries where EMS exists to the fullest, there are support services for EMS employees regarding the scourge that trauma has on employees within the service.

3.4.1 Provincial Services vs Local Authority

The provincial services as already highlighted in the literature chapter used to have support service for the employees. This allowed for debriefing sessions with employees after traumatic incidents. Currently such services do not exist as there are neither funds nor champions for such services. The services died a slow death within the public sector, if any did exist. Some municipalities still have such services especially since the service started out within the municipalities before a decision to place them under provincial management. Tshepo Makola, Chief of City of Johannesburg Emergency Management Services was quoted in the Fire Africa Journal Vol 1 No 3 (2012:23) saying:

“due to developments in the industry and more focus on the human capital, we have seen a shift including professionals to help in the form of counseling by departmental psychologists. He further mentions that he encourages employees working in the field to talk about their daily experiences to feel better during debriefing sessions mainly after servicing incidents, but of course it’s not always possible due to the ever increasing volume of calls we deal with”.

It is very clear that the City of Johannesburg in Gauteng has such services and they are not extended to other services but only focused on employees within the city due to capacity issues. The Gauteng Provincial service on the other hand does not have such services and there are no debriefing sessions held at all.

Some of the local authorities with Gauteng like the City of Johannesburg and City of Ekurhuleni has employed services of a pastor and psychologist. This is for any eventuality should the need arise to access such services by employees. The challenge then becomes whether is it better to employ or contract such services. The option of contracting has its own disadvantages where (employees would not utilize the service optimally thereby rendering the practitioner absolute. The other problem is that employees do not want to access and utilize the service for fear of being labeled by their peers. The other disadvantage is that the practitioners would end up being too familiar to staff and this would render the services not as productive as it supposed to.

3.4.2 Government Support for EMS

The Emergency Medical Services is a service that is based in the public sector under the umbrella of the Department of Health both at National and Provincial level. Schedule 5A of the Constitution of the Republic of South Africa, Act No. 108 of 1996 accorded Ambulance Services to the Province as an area of exclusive Provincial Legislative competency. Further to this Section 25(2) (m) of the National Health Act No. 61 of 2003, states that it is the function of the Provincial Government to provide and co-ordinate Emergency Medical Services within the Provinces. This then means that the services are to be placed within the provincial government and not the Local Authorities as was the case prior to 1996. All provinces within the country has been working towards provincializing these services. This in itself confirmed that government needed to support the services as this is a provincial competency. The Department of Health Gauteng Province and North West Province are the custodians of EMS and thus has to manage and support it to carry out its function. This further means that all support necessary to make the service function optimally must be afforded and this includes but not limited to EAP functions. The funding of the service and even the training of its employees is the responsibility of the provincial department. The department has to ensure that all employees within its employ are taken care of and looked after and this includes the EMS employees. In Gauteng, 65% of the service is located in the local municipalities on an agency basis. The Gauteng Department of Health is providing the local municipalities with a subsidy to ensure that they carry out the services as per their mandate.

3.4.3 The Socio-economic barrier

Most of EMS employees do not earn a high salary for them to can afford to affiliate to a medical scheme and even afford the services of a psychologist. The different medical aid schemes offer different option in terms of the payment for psychological services. The socio economic barrier creates that separation between EMS employees within the Private EMS sector and the Public EMS sector. You would find that EMS employees in the public sector earns less as compared to the one in the private sector. This in itself contributes to the migration of the labour force thereby depleting the human resources within the public sector especially at the level of the scarce skills

category. Paramedics leave the public sector seeking higher salaries within the private sector and even in foreign countries who seek services of such paramedics. This is creating a drain in resources in the country and therefor leaves the responsibility of patient care to lower qualified categories of employees within the industry. This places more strain on the junior qualified employees as they now carry the burden and have to close the gap that was left by employees that left the public sector.

3.5 The Employee Assistance Programme

The Employee Assistance Programme (EAP) dates back as far as the 1960's as an in-house alcoholism program to assist recovering alcoholics according to Wikipedia Free Encyclopedia. It was established within the workplace to look after recovering alcoholics by workplace management to ensure that employees are assisted to recovery. There are EAP services within the department of health in all provinces that are meant to look after the employees within the department as attested to by the research conducted by R Pillay (2007:3) doing a comparative analysis between the Department of Health and Department of Education in Gauteng province. This is enough evidence to prove that the EAP services are available for the employees. As to whether the services are effective, this is something that would need to be further investigated and solutions be sought in order to strengthen this if it is lacking. The EAP practitioners are appointed not only for EMS staff but for the staff working within the department of health. North West and Gauteng province are not unique to this arrangement. The downside of the service is that there is one practitioner that looks after the whole district within the province. This rendered the service very difficult to access as it was on an appointment basis.

3.5.1 Perceived Usefulness

There is perception going around that the services are not as useful and effective. This stems from the fact that most believe that their privacy will be revealed and known by their peers who would then regard them as weaklings. This is most found among the males who always want to play macho and believe that they do not need social services to make them feel better. In studies conducted as far as the United States of America Selvik, *et al* (2004: 18 & 21) recorded a

significant improvement in employee wellbeing after the use of the EAP services. There was a reduction in employee absenteeism by 1.5 per case. They further went on to measure the employee health and found a decrease of 31 percent in cases of low health. This in itself is proof of the usefulness of the EAP services

3.5.2 Perceived Ease of Use

There is a perception going around that the use of EAP is easily accessible whereas at most times this proves to be difficult for EMS employees as the EAP practitioners work on an appointment basis and they are based on availability. This has proven to be somewhat both a stumbling block and a deterrent for EMS employees to access the services when they need it the most. The EMS environment is such that you need assistance immediately after the incident happens whereas the EAP practitioners on the other hand, as mentioned already, are only accessible when they are free to see other clients. EMS employees, due to the nature of their work needs counseling immediately after the incident and then follow up intervention that would then require an appointment. Now with the EAPs appointed for the department and not specifically for EMS this proves to be difficult to access to an extent that EMS employees perceive the service not to be helpful or working as they have difficulty accessing it when they need it mostly. This has proven not to be helpful for the employees and thus needs EAPs appointed specifically for EMS employees. This would mean that in North West province they would need four (4) EAPs and in Gauteng they would need to have six (6) EAPs that would be based in the district in the respective provinces as already stated earlier in the document.

3.5.3 Employees anxiety

Employees anxiety stems from the uncertainty of whether the intervention would be helpful or not. What further exacerbates the anxiety is the fact that employees are not certain of the process to follow simply because they were never inducted on how the process works and how they can access the services at any given when it needs be. Anxiety is an inherent reaction for every human being. Anxiety stems from being uncertain of what to expect when you get there and thus it makes some employees despondent which might exacerbate the condition because they would

not have received any help. Wikipedia Free Encyclopedia (2010) defines anxiety as a psychological and physiological state characterized by somatic, emotional, cognitive and behavioral components. It is the displeasing feeling of fear and concern. As is the case with EMS employees as most of them were never exposed to the services as they were non-existent for use by them, this creates that platform for anxiety episodes. EMS employees expect to receive help for they are experiencing and rather would not expect to get into yet another environment that evokes anxiety in them hence the process needs to spell out to them so that they understand what process to follow and ensure that they get assistance.

3.5.4 Relevance to the study

The relevance of the study is to unearth any indication that vulnerability to stress develops due to the work environment and work resources or the lack thereof. This study seeks to find manners in which the scourge can be alleviated to ensure that EMS employees are mentally sound and ready to treat patients as the lives of the patients is dependent of EMS employees. The study is not intended to change the world but rather seeks to come up with recommendation for the Department of Health in order for them to deal with the rise of vulnerability to stress in the workplace. Based on personal experience, the researcher is also going to share some recommendation that were implemented and worked to some certain extend due to lack of continuity. This study seeks to turn the situation around where the researcher wants to see all EMS employees emotional well and happy to come to work.

3.6 Organisation Factor Hypotheses

3.6.1 Availability of EAP

The availability of EAP practitioners within EMS is something that needs to be looked into as there are no practitioners appointed to serve EMS but they are appointed to serve within the department of health, if they are appointed, then only few is available to render services to EMS employees. This means that they are available for all the employees within the department even those that do not readily need the service. In the North West Department of Health there are

about four (04) EAP appointed that are based within the districts and at head office and in Gauteng there is 01 that was seconded to EMS. Access and availability to their service is based on an appointment basis and this proves challenging as they are at times not accessible especially when the personnel need them the most.

3.6.2 Organizational Support

It is very important that there is organizational support for the existence of the EAP. Organisation support is there for the use of EAP services in Gauteng Province and North West Province. The problem that exists is that there is very little support and this is due to the very little understanding of the EAP functions and benefits. The other problem is that most employees do not believe in using the service hence they do not access it often and management sees this as a waste of resources hence very little support is given to it. In Gauteng EMS there is only one person appointed to look after the entire staff within EMS. This in itself shows how very little support the program receives as some managers believe that the Social Workers are available within the department to deal with such matters.

3.6.3 Organizational Readiness

Gauteng and North West Department of Health is divided into district. Wikipedia Free Encyclopedia (2010) states that Gauteng has five districts (three metropolitan municipalities and two district municipalities). The district municipalities are in turn divided into seven local municipalities. The three metropolitan municipalities are City of Johannesburg Metro Municipality, City of Tshwane Metro Municipality and Ekurhuleni Metro Municipality. The two district municipalities are Sedibeng District Municipality and West Rand District Municipality. North West has four districts according to Wikipedia Free Encyclopedia (2010). The districts in the North West are Bojanala Platinum District Municipality, Dr Kenneth Kaunda District Municipality, Dr Rush Segomotso Mompoti District Municipality and Ngaka Modiri Molema District Municipality. Each of the districts in Gauteng and North West Province has sub-districts within them. The EAP practitioners are usually appointed at the district level to cater for employees within that specific district. The services are for all employees within the Department

of Health include those employees within EMS. What this simply means is that one EAP practitioner would be looking after employees within 6 to 7 sub-districts, which proves to be overwhelming and humanly impossible. This in itself means that the two departments are not ready enough to can deal with EMS employees hence the services need to be beefed up. This places a burden on the current EAP practitioners which result in not all employees receiving the services as they require them. This, to other employees is interpreted as ineffective services and they loose faith in them and no longer use them even when the service becomes available to them.

3.6.4 Top Management Support

There is very little if any support with regards to psychological or debriefing services within EMS in Gauteng and North West Provinces. One of the major contributory factors is that management does not understand the importance of such services and thus cannot emphasize the need to use it and the importance of its existence within the service. If there is any knowledge that exist within the department, it is either ignore or not taken serious enough. This result in employees believing that the service is either inefficient or not working hence they see no need to access and utilize the service. It is very important that management is exposed to the condition and the benefit of the program in order for them to give it the full support and ensure that the program is a success and it is utilized by all employees involved. Wikipedia Free Encyclopedia (2010) explains the EAP as services that are intended to deal with personal problems that might negatively impact on their work performance, their health and well-being. It further states that this include short-term counseling and referral services for employees and their household employees if need be.

3.7 Summary of Chapter

In this chapter we have discussed the development of the research model and associated hypotheses that helped the achievement of the research objectives and outlined the hypotheses regarding the study at hand. What was also discussed is the theoretical perspective of the study to highlight different theories that exist.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

4.1 Research Design

Research design refers to the framework which is used to collect and analyze data (Churchill 1992). Babbie (2007: 87) explains research design as a plan that helps a researcher determine what he/she is going to observe and analyze: the why and the how this is going to be done as well. Whereas Welman, Kruger and Mitchel (2005: 52) explain research design as a plan according to which we obtain research participants and collect information from them. The information collected will be used to describe what is going to be done with participants with a view to reaching conclusions about the research problem. All these researchers say the same thing only in different ways and different approaches. Research design is influenced by the type of research you are conducting whether observation, experimental or survey type. It is further influenced by the type of data you collect and what you aim from the data that is collected. The manner in which the data is collected also contributes to the type of research design should use in study. The type of study that is employed in this study is the survey research design.

4.2 Methodology

A methodology is the manner in which a researcher comes to a conclusion of a problem under investigation (Hofstee, 2006: 107). The method along with the problem statement is very vital for the success of the thesis. The results of the thesis can only be accepted, rejected, checked, replicated or even understood in the context of your methodology (Hofstee, 2006: 107). According to Salkind (2006) a research method in a manuscript describes how the study is conducted. It gives an outline of the study detail so that the reader can refer to this section and duplicate the study exactly as it was done. Wikipedia (2008) describes methodology as follows:

- the analysis of principles of methods, rules, and postulates employed by a discipline or
- the development of methods to be applied within a discipline
- A particular procedure or set of procedures.

Furthermore, methodology refers to more than a simple set of methods; rather it refers to the rationale and the philosophical assumptions that underlie a particular study.

Under the research methodology the following will be discussed:

- Quantitative research design
- Qualitative research design
- Population and sampling
- Data collection methods
- Data analysis

4.2.1 Quantitative research design

Quantitative research design is espoused in the positivist school of thought as it approximates social science with natural science and it uses statistics to quantify variables and determine measures (Nsingo, 2006). According to Wikipedia (2008), quantitative research is the systematic scientific investigation of properties and phenomena and their relationships. It is widely used in both the natural sciences and social sciences, from physics and biology to sociology and journalism. It is also used as a way to research different aspects of education. The objective of quantitative research is to develop and employ mathematical models, theories and hypotheses pertaining to natural phenomena (Wikipedia, 2008). The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships. According to Temane (2008) quantitative research is often linked with the positivist approach precisely because it demands for measurement, accuracy, standardized method and procedures.

According to Nsingo (2006) the advantages of quantitative research methods are as indicated below:

- Random sampling is possible
- Statistical analysis can be performed unlike with qualitative methods
- It is easy to quantify responses in numbers
- Large populations can be surveyed

- It is a relatively rapid or faster pace of research
- Attitudes are revealable, measured and compared
- Fewer problems with data collection since questions are well structured and close ended. This does not allow for respondents to give different narratives to the same questions.

The quantitative research method was employed in this study. It is chosen together with the qualitative method based on the following reasons:

- According to Nsingo (2006), it is scientific and social in nature because it looks at the effects the work conditions and experiences have on the wellbeing of employees.
- It is time saving and cost effective, and will not require a lot of funds to execute
- The method allows for the use of closed-ended questions rather than open-ended questions. If open-ended questions were to be used, there would be different responses from participants due to the narrative nature of the answers. This would make the data analysis a daunting task to execute and thus consume time and give different responses to a particular question. It would eventually make the interpretation of the answers relatively difficult and thus the desired results might not be achieved.
- Quantitative research is replicable and thus allow for other researchers to carry out further research into the subject being researched.
- Quantitative research designs allow for the use of self-administered questionnaires as compared to the qualitative method. This research will make use of a questionnaire to collect data from participants.

Nsingo (2006) also emphasizes the need for the use of quantitative research method as follows:

- It is the best way of measuring properties of social phenomena through quantification
- It allows for the use of variables in analyzing human behavior, for example; work motivation, job satisfaction and productivity.
- It allows for the use of controls to reduce errors
- Social science could be based on observable behavior of people only, if this methodology is employed.

4.2.2 Qualitative research design

Qualitative research design can be defined as a process of scientific enquiry undertaken in a natural setting to investigate human problems through an empirical process of collecting data, analysing it inductively and providing a detailed narrative of issues surrounding the observed phenomenon (Nsingo: 2006). Salkind, J (2006) defines qualitative research design as a research that involves the analysis of data such as words, pictures or objects. Wikipedia Free Encyclopedia (2008) defines Qualitative researcher's aim to gather an in-depth understanding of human behavior and the reasons that govern such behavior. The qualitative method investigates the **why** and **how** of decision making, not just what, where, when. Hence, smaller but focused samples are more often needed than large samples. Qualitative research methods are appropriate for particular types of research. They can convey a richness and intensity of detail in a way that quantitative research cannot. Qualitative research methods allow for much more detailed investigation of issues - answering questions of meaning, who is affected (by the issue), why, what factors are involved, do individuals react or respond differently to each other. Qualitative methods such as semi-structured interviews, case studies and narrative can ultimately reveal more about the effectiveness of a form of therapy on an individual.

With that being mentioned, qualitative research method was also be employed to answer those questions that were or could not be answered by the quantitative research method. All of the above are true and relevant to this study. The study measured variables and thus both the quantitative and qualitative methods were best suited.

4.3 Target Population

According to Welman, Kruger and Mitchel, (2005: 52) the population is the study object and consists of individuals, groups, organizations, human products and events, or the conditions to which they are exposed. Salkind (2006: 85) also states that a population is a group of potential participants to whom you want to generalize the results of the study. A research problem therefore relates to a specific population and the population encompasses the total collection of all units of analysis about which the researcher wishes to make specific conclusions. The

population of interest is the EMS employees in South Africa. South Africa is divided into nine provinces namely; North West, Gauteng, Free State, Kwa-Zulu Natal, Mpumalanga, Eastern Cape, Western Cape, Limpopo and Northern Cape. Our target population would therefore be EMS employees in the North West and Gauteng provinces. The two provinces were chosen because they are easy to access and the population within the services is enough to conduct a study of this nature as it is representative of the EMS population.

4.3.1 Unit of Analysis

The unit of analysis is chosen from the entire EMS population. The EMS population in the country consists of 9,382 employees. The two provinces that are chosen for the study are Gauteng (GP) and North West province (NW). The population in GP amounts to 1,656 and the population in the North West amounts to 693. The researcher chose participants that amounted to 20% of the population between GP and NW. This is done using the correct sampling procedure as stated further in the text and they are representative of the entire EMS population in the country.

Gauteng is predominantly urban whereas North West is predominantly rural. EMS in both provinces is characterized by different cultures and races. Blacks, Indians, Coloureds and Whites are found in the service in both provinces. The age of EMS employees ranges from 18 years as the entry year into the service, and goes up to the age 60, which is the pensionable year. Training is done at different levels, namely: Basic Life Support level (BLS), Intermediate Life Support level (ILS), Emergency Care Technician level (ECT) and Advanced Life Support level (ALS).

4.4 Sampling Design

A sample is a group of participants that are chosen from a population to take part in the study and represent the entire population as it is always impossible to study the entire population (Salkind, 2006: 85). It is thus very important for a researcher to do sampling properly from the beginning so that there is a good representativity of the population. Good sampling techniques

will assist any researcher in achieving the goal. As many researchers always ask how big their sample should be, Bless, Higson-Smith & Kagee (2006: 107), states that it depends on the kind of data analysis the researcher plans, on how accurate the sample has to be for the researcher's purposes, and on population characteristics. In this study elements/employees of the sample that participated consist of EMS employees from all walks of life and various age groups starting from age 18 years up to age 60 years. The two provinces that are chosen, each has a very large population and it is from this population that a sample is chosen. Before a sample can be chosen, a sample frame needs to be drawn up.

We can distinguish between probability sampling technique and non- probability sampling technique. In this study probability sampling is used to select the n . Welman, Kruger and Mitchell (2007: 56) state that in probability sampling we can determine the probability that any element or employee of the population will be included in the sample, i.e. all elements or employees of the population have an equal and known chance of being selected into the sample. The advantage of using probability sampling is that it enables us to indicate the probability with which the sample results deviate in differing degrees from the corresponding population values. Probability sampling also enables us to estimate sampling error and thus it is chosen above non-probability sampling.

4.4.1 Type of sampling design chosen

The stratified random sampling technique was employed in this study. It was chosen above all other methods because it is the ideal method to use in a study of this nature. According to Salkind (2006: 91) other types of random samplings work well if specific characteristics of the population (such as age, gender, ethnicity, ability group) are of no concern. In this case the individuals in the group are not equal and the researcher needs to ensure that the profile of the sample matches that of the population. This could be better achieved by creating a stratified sample (Salkind, 2006: 91). Welman, Kruger and Mitchell (2005: 62) state the advantages of stratified random sampling as follows:

- In a random sample from a normal population that is stratified in terms of gender, the probability of a sample consisting of employees of one gender is zero.
- In order to ensure that important strata are represented in the sample, stratified random sampling requires a smaller sample (involving less time and money) than simple random sampling. Stratified random sampling requires smaller samples than simple random sampling in order to obtain valid test results.

It is from this premise that the stratified random sampling technique was employed in this study. It is best suited for the study as per the information already mentioned in the text above. The other reason is that the EMS population was divided into different strata consisting of age, gender, years of service, ethnicity, location etc. These strata was very useful in obtaining data from the sample that participated in the study. Welman, Kruger and Mitchel (2005: 62) also supports the statement by saying that with stratified random sample we are ensured of a sample's representativeness, irrespective of sample size because it has been built into the sampling strategy right from the beginning.

The procedure was carried out by first dividing the sample into two provinces, i.e. North West and Gauteng. These provinces were further be divided into districts and then districts were then divided into sub-districts. This was done keeping in mind the representativity of the population by the sample. The researcher further ensured that the sub-districts that are chosen are representative of the area, i.e. rural and urban as correlation also needs to be done on this variable. It from this point forth that the sample was divided into different strata that will represent gender, age, years of service, and race. The researcher ensured that there is equal or sufficient representativity in the two provinces.

4.4.2 Sample Frame

A sample frame is a complete list in which each unit of analysis is mentioned only once (Welman, Kruger & Mitchell. 2007: 57). According to Barbie (2007: 199) a sample frame is the list or quasi list from which a probability sample is selected. For example, if a sample of students is selected from a student roster, the roster is the sampling frame. It is from this premise that the

researcher has obtained a name list of all EMS employees in both GP and NW province in order to draw up a sampling frame. The entire EMS population in GP is 1,656 and the population from the NW is 693 which make a total of 2349. The total EMS population in GP and NW is the sample frame and it is from this list that a sample was chosen using techniques that will be discussed later in the text.

4.4.3 Sample Size

As many researchers always ask how big their sample should be? Bless, Higson-Smith & Kagee (2006) states that it depends on the kind of data analysis the researcher plans, on how accurate the sample has to be for the researcher's purposes, and on population characteristics. They further state that a large sample can be more representative but more costly whereas on the other hand a small sample can be less accurate but more convenient. The determination of a sample size will not be difficult since the population for the study is well known to the researcher. The total population of the study is 2,349 which will be obtained from the two provinces. According to Brunt (1997) sample sizes of 20% and above in a population are generally taken to be reliable. The researcher will select 20% of the sample for the study because a very large sample is impractical and uneconomical to deal with. The selection of a sample is very important and thus the sample that a researcher chooses must be representative of the population. By representative it is implied that the sample must have the exact properties in the same proportions as the population from which it was drawn, but in a smaller number (Welman, Kruger & Mitchel 2005: 55).

A population of size N is divided into sub populations called strata. Sample of size n_i are drawn from the strata or sampling units N_i

Where: $n_1 + n_2 + n_3 + n_4 = N$ (Population size)

Where: $n_1/N_1 + n_2/N_2 + n_3/N_3 + n_4/N_4 = n/N$ (Proportional stratified sampling)

Where: n_i = sample size of EMS

N_i = population size of EMS

And: n/N = sampling fraction

$470/2349 = 20\%$

Province	Population size	Sampling fraction (% of population)	Actual Sample
Gauteng	1,656	20	331
North West	693	20	139
Total	<i>N</i>=2,349		<i>n</i>=470

Table 4.1. Sample size determination

Table 4.1 above clearly indicates that *n* amounts to 464 participants who adequately represent the EMS population from the two selected provinces and the country at large.

Salkind (2006: 96) on the other hand argues that if you send out questionnaires, count on increasing your sample size by 40% to 50% to account for lost questionnaires and non-responders. He further states that the less representative the sample is of the population, the more sampling error is present. Furthermore, Welman, Kruger and Mitchel (2005: 73) agree with Salkind that non responses are likely to occur in any study. It is therefore very important that the researcher considers these facts and cater for them by ensuring that the sample is increased. This was kept in mind when choosing a sample size in order to cater for a sampling error or avoid biasness. If this is not considered the objective of the study will not be reached.

4.4.4 Sampling procedure

The sample that was chosen as per the figures in the sample size discussion amounts to 464 in total. The researcher anticipates that half of this sample should be female and the other half males. This simply means that 50% of this sample which amounts to 232 is males and the other 50% is females. After this has been done, the researcher then determined what percentage of the chosen sample groups represents race, age and years of service.

4.5 Data Collection Methods

Data collection is when the researcher obtains information that will lead to the conclusion and results of the study. In this study the researcher used a set of questionnaires for the collection of

data. A composite questionnaire was delivered to the participants by the researcher. The reason why this approach was taken was the fact that it was less expensive given the vastness of the sample group. The researcher had contact sessions with the participants to explain the questionnaire and how to complete it. A covering letter with instruction was also attached to the questionnaire to clarify the completion of the questionnaire and indemnify the participants. The participants were given two days to complete the questionnaire whereupon the researcher went on his round to collect the completed questionnaire. This was done to ensure that there was at least a 98% return of the questionnaires which was a good representative of the sample. Welman, Kruger & Mitchell (2005: 153), states that survey questionnaires method is the least expensive and the likelihood of receiving a great response are high because they are mostly completed in anonymity and honesty as the questionnaire does not require any form of identification. This is true with relation to this study as the researcher managed to get 102% returns on the completed questionnaire which proved to be a sufficient response. This proves that the participants were eager to assist with the study as they saw the need for such a study to be conducted in EMS within the South African context.

4.5.1 Measuring Instruments

Questionnaires are used in connection with many modes of observation in social research (Barbie, 2007: 251). Structured questionnaires are essential and most directly associated with survey research (Barbie, 2007: 252). The composite questionnaire that consists of components was used in this study. The questionnaires were in a close-ended questionnaire format. A closed or pre-coded questionnaire is one which offers the respondent a range of answers to choose from, either verbally or from a show card. In the case of a self-completed questionnaire, a range of answers were set out in the questionnaire and the respondent were asked to tick appropriate boxes (Welman, Kruger and Mitchell, 2005: 174). In this study self-administered questionnaires were used where respondents were required to complete the questionnaires at their own time to afford them the privacy to avoid putting them under pressure. This has proven to be advantageous because respondents completed the questionnaire as truthful as possible to avoid the questionnaires being null and void. This assisted because it ensured that there was a high response from the respondents to avoid defeating the purpose of this study.

A noteworthy benefit of a structured questionnaire is that it helps keep respondents on the subjects, is less time consuming, relatively objective and, easy to tabulate and analyze (Best and Kahn, 1993: 231). The disadvantage of the structured questionnaire is that respondents cannot express themselves completely and is only limited to answering questions according to what the questionnaire requires. However for the qualitative part of the research a questionnaire that allows respondents to express themselves was used. The advantage of the questionnaire is that it allows respondents to express themselves and the responses differ thereby making the response multifaceted. With this approach the researcher is able to get different responses and views to the same questionnaire but can also look at commonalities where they existed and compare answers to formulate an opinion. Each completed questionnaire had a different response for the same question which provided different views to the questions in the questionnaire.

4.5.2 Components of the Questionnaire

Our measuring instrument was a questionnaire that consisted of the following:

4.5.2.1. The Biographical Questionnaire which was used to obtain general information about the participants but not disclosing their identity in order to maintain privacy. This questionnaire was used by Shaffer (1981) in the early identification of College Dropouts and it was found to be valid and reliable in obtaining information. Owens & Henry (1966) in Shaffer (1981: 4) states that biographical information can be very useful in studying the processes which lead to attrition. This questionnaire is reliable and thus valid for this research because it captures the general information of the participants and gives a clear picture about the participant.

4.5.2.2. The Life Satisfaction Questionnaire was developed by Diener, (*et al*) in 1985 as a measure of the judgemental component of subjective wellbeing. The scale was reviewed in 1993 by Pavet and Diener to assess the satisfaction with the respondent's life as a whole. It was recommended as a complement to scales that focus on psychopathology and well-being because it assesses an individuals' conscious evaluative judgement of his

or her life by using the person's own criteria. The scale was used to determine how EMS employees are satisfied with their lives, as the questionnaire was self-explanatory. The reason for using this scale was because it was used by NgTse (2003) to study the life satisfaction of Chinese women with Schizophrenia and it yielded the desired results. It was considered to be potentially effective for eliciting women's satisfaction with their life. It was also used by Carlsson, Hamrin & Lindqvist (1999) to do a comparison of randomized sample of Swedish women and those suffering from breast cancer. The study concluded that the LSQ has acceptable validity and reliability. It will greatly assist to determine the level of life satisfaction of EMS employees.

4.5.2.3. The Affectometer Questionnaire was used to measure how each employee is affected by the affectors in EMS. The Affectometer was used by Tennant, Joseph & Stewart-Brown (2006) to measure the positive mental health in UK populations. The Affectometer did not show a ceiling effect and thus met accepted criteria for validity and reliability in the representative UK population and demonstrated potential for use in monitoring positive mental health. It is very useful in EMS to evaluate the mental health of employees to try and determine to what extent they are affected by work conditions and experiences.

4.5.2.4. The Impact of Event Scale Questionnaire (IES) is used to measure the impact that events had on individuals. It has since been revised since its introduction by Dr Weiss (1996) and was used by Hyer & Brown (2008) to measure patient's response to trauma. Hyer and Brown (2008: 67) studied effects of trauma on elderly patients and found that the IES was valid and reliable for assessing the level in order to detect PTSD. Christianson and Marren (2008) also used the IES and found it to be reliable and valid in detecting the effects of trauma on patients. The IES was chosen by the researcher to detect the level of the effects of trauma on EMS employees as they are exposed to unsightly scenes that are not normal for any human being. The advantage of using the IES is that it is easy to use and quick to administer as it consist of 22 questions.

4.5.2.5. The General Health Questionnaire (GHQ) was used to measure the general health of employees. It was also used as a screening instrument by Kilic *et al*, (1997). The GHQ was found to be reliable by the researchers. Goldberg (2006) states that the GHQ is simple to administer, easy to complete and score and widely used in many studies of occupational wellbeing and it is widely used in occupational research. Jackson (2007) also confirms that the GHQ is simple to administer, easy to complete and score and widely used in many studies of (occupational) well-being. This made it relevant for this study as it was also looking at measuring the occupational wellbeing of EMS employees. Tait, Hulse and Robertson (2002) also used the questionnaire to review its validity in adolescent populations and found it to be reliable. Chan and Chan (1983) used the GHQ to measure reliability, validity and structure in a Chinese context and found the questionnaire to have internal consistency. The GHQ was a very useful tool in this research and thus the researcher also chose it to measure the health of EMS employees.

4.5.2.6. The Stress Vulnerability Questionnaire is normally used to measure how vulnerable an individual is to stress. Canner, *et al* (2007) used the questionnaire and found that it demonstrated good reliability and validity. This questionnaire was also useful in the EMS environment as it assisted in measuring how vulnerable EMS employees are to stress.

4.5.2.7. The Work Environment Questionnaire – used to measure various attitudes and opinions using 70 statements about the workplace. These statements measure employee attitudes about their job, sense of commitment, supervisor, coworkers, senior leaders, communication, health and safety, learning and development, compensation, workload, work-life balance and strategic plans (We Are: 2011-06). There is reason to believe that staff morale has a direct impact on the satisfaction level of the organization's primary external customers. This is clear that the employee needs to be satisfied on the job in order to keep the customers happy.

4.5.2.8. The Job Satisfaction Questionnaire - Job satisfaction is of a great importance to an effective organization and its employees as it has a great relevance for human health, considering that most people spend a large part of their working lives at work.

Furthermore, apart from its humanitarian value there is also a great interest in seeing whether job satisfaction is related to or not, to job related behaviors such as productivity, turnover and absenteeism (Squidoo: 2012).

All these components addressed all the research objectives and questions. They are very easy to administer and can be easily completed and do not take up much of the employee's time and thus would yield a high response from the participants.

4.5.3 Procedure

The questionnaires were self-administered. The researcher delivered the questionnaires to the provinces with a covering letter explaining what the questionnaire is all about and how it was supposed to be completed. The researcher expected the respondents to complete the questionnaires and hand them in to their respective managers whereupon they would be collected as arranged. After collection the questionnaires were coded before being entered into the analysis software for clean up and analysis. Each questionnaire was given a number and thus the number of questionnaires that went out was equal to the number of questionnaires that were returned. Barbie (2007: 260) states that, on the whole the research worker either delivers the questionnaire, picks it up or both, the completion rate seems higher than it is for straight-forward mail surveys.

4.5.4 Variables

Variables are logical sets of attributes, thus gender is a variable composed of the attributes male and female (Barbie: 2007; 136). Salkind (2006: 21) on the other hand states that a variable represents a class of outcomes that can take one or more than one value. For example, hair color is a variable that can take on values of red, brown, black, blond and just about any other combination of primary colors. There are different types of variables available, namely; dependent, independent, control, extraneous and moderator. This study focuses on two types of variables only being the independent and dependent variables. These two are the most relevant for this study as there are several variables that fall within these categories.

4.5.4.1 Independent variable

An **independent variable** is a variable that has an influence on other variables. Salkind (2006: 22) explains an independent variable as a variable that represents the treatment or condition that the researcher has either direct or indirect control over to test their effects on a particular outcome. Salkind further states that an independent variable is also known as a treatment variable. An independent variable is manipulated in the course of the experiment to understand the effects of this manipulation on the dependent variable (Salkind, 2006: 23). Salkind (2006: 24) further explains that the best independent variable is the one that is independent of any other variable in the same study. In this way the independent variable can contribute the maximum amount of understanding beyond what other independent variables can offer.

4.5.4.2 Dependent variable

A **dependent variable** is a variable that is influenced by other variables. Salkind (2006: 22) explains a dependent variable as a variable that represents a measure that reflects the outcome of a research study. Think of a dependent variable as the outcome that may depend on the experimental treatment or what the researcher changes or manipulates. Salkind (2006: 24) further states that the best dependent variable is one that is sensitive to changes in the different levels of the independent variable; otherwise, even if the treatment had an effect, it would not be visible.

There are a number variables in this study that need to be looked at and they are divided as follows:

(i) Independent Variables

- Age
- Years of service
- Gender
- Race
- Educational qualifications
- Life Satisfaction
- Work Conditions

- Work Experiences
- Smoking Regularly
- Job change
- Life Style
- Overtime/Hours of Overtime
- Relationship
- Current Position
- Use of Alcohol
- Exercise
- Relationship
- Health conditions
- New health condition
- Religiosity
- Use of Medication

(ii) Dependent Variables

- Stress Vulnerability

The researcher wants to evaluate the abovementioned variables to ascertain as to whether EMS employees are affected the same by affectors in their work environment. He further wants to establish if all the variables have an influence on the lives of EMS employees. The above mentioned variables are elaborated to ensure that there is a clear understanding why they are part of the study.

(a) Age

EMS employees enter into the service at the age of 18 years and some stay in the service up to the pensionable age of 60 years. Mostly employees who are in the mid-ages are the likely ones to suffer the most and thus ones that are nearing pension have either developed resilience against

the affecters such that the work conditions does not affect their health any more. Age is going to be used to establish as to which age group will be vastly affected.

(b) Years of Service

Years of service refers to the number of years that an employee has been employed in the service. Newly appointed employees will not have the same experiences as employees who has been in the service for a number of years especially if they were never exposed to the EMS working environment before. The years of service might have a large role to play in determining if EMS employees are affected similar by stress vulnerability or not. It is the researcher's belief that employees who enter into the service at a very young age might suffer from stress quicker and also depending on their exposure to various affecters. On the other hand employees who has been in the service longer might suffer from severe stress or not, depending as well on their exposure to affecters and how resilient these employees are and whether they can deal with stress or they have built up resistance to the development of stress.

(c) Gender distribution

Gender distribution is critical to look at because the service is no longer a male dominated service. Females are now found in large numbers within the service which changes the picture of the service from what it was in previous years. This study aims to find out how the affecters affect both males and females of any race and how each deals with the effects. My observation is that mostly males in the black population group tends to act macho and do not consider help when they develop the condition. Most prefer to deal with it personally because they are afraid that they would be regarded as feminine if they were to consult in order to receive professional help.

(d) Race distribution

Race is also used as the diverse culture in EMS includes all races. The services used to be a white male dominated service and currently all races are now found within the service. My

observation is that some races tend to be affected more by the affecter more than the other and thus this study aims and finding out the differences and if ever they do exist.

(e) Area (urban vs. rural)

The urban vs. rural plays a role when it comes to exposure to medical treatment as well as how the EMS population would react to affecters. Experience tells us that most of men especially blacks who are in the rural areas tend not to make use of professional services, firstly due to the unavailability of these services and they build resilience; secondly because they feel that they are macho enough to handle the condition and deal with it effectively. It would be interesting to learn how EMS employee working with the same affecters are affected differently due to the area in which they work.

(f) Work Conditions

The work conditions are the conditions that EMS employees are exposed to and work under. This includes but is not limited to all weather conditions that they have to face on a day-to-day basis as they do not operate from a built up area but from ambulances and response vehicles. They are at times exposed to dangerous situations like having to deal with hazardous materials and wreckages on highways, getting into swimming pools, dams and lakes to get people who have drowned.

(g) Work Experiences

Work experiences are the experiences that EMS employees experience in the everyday life at work. Work experience like work conditions include but are not limited to the trauma they have seen in their entire life since being employed in EMS. This includes very grueling sites were they have to witness decapitated bodies, severely burnt bodies even smashed bodies in motor vehicle wreckages. They have to face having to pull babies out of pit latrines or rescue them from dumping sites left there by their mothers to die. They have to watch people die knowing that they

could have done something to save them if they had the right equipment or have a higher training level to can afford the patient better treatment.

(h) Stress Vulnerability

With this dependant variable, the researcher wants to look at whether there is any development of stress vulnerability among EMS employees. The affectors that they are exposed to suggests that any person working in this environment is bound to be vulnerable to stress at some point in their career. Experience and exposure to this field has taught the researcher that stress vulnerability never used to exist in the past and if it did, it was to a lesser extent. This was due to the fact that EMS employees were exposed to psychological and pastoral service that assisted with the debriefing sessions. These services are no longer available to the employees and thus the need for this study to highlight the causes of stress vulnerability and actions that can be taken to avert this. This study aims at educating health workers and managers to be on the lookout for the development of stress vulnerability and also make EMS employees aware of what services are there for them to avert the development of stress vulnerability.

4.6 Data Analysis

According to Gay (1996: 96), the research plan, must include the description of the statistical technique or techniques that will be used to analyze data. As soon as all questionnaires were returned the researcher employed descriptive statistical method to analyze the data. The data was computed into categories and cleaned up before being fed into the SPSS for an analysis. Babbie (2007: 450) describes descriptive analysis as statistical computations describing either the characteristics of a sample or the relationship among variables in a sample. Descriptive statistics merely summarizes a set of sample observations. It is important to note that the years of experience vary from the age of the individual, some enter the service at the age of eighteen and others enter at various age groups and thus the years of service will not be consistent with the participant's age. The data was analyzed using the Software Package for Social Scientists (SPSS), version 20 as installed at the North West University's Statistics department.

There are different statistical techniques that are used to analyze data. This depends on whether the type of data is nominal, ordinal, interval or ratio level data. The data in this study is mostly nominal, ordinal and interval in nature. It is very important to determine the level at which the variables in this study are measured. The statistical technique that one chooses is informed by the type of questions that the study is asking. The Parametric statistics is a branch of statistics which assumes that the data have come from a type of probability distribution and makes inferences about the parameters of the distribution. Most well-known elementary statistical methods are parametric. The difference between parametric model and non-parametric model is that the former has a fixed number of parameters, while the latter grows the number of parameters with the amount of training data. In this study the following data analysis techniques falls within the Parametric statistical branch and thus will not be repeated:

- Correlation analysis
- Regression analysis
- Analysis of variance

Each of the techniques is briefly discussed to point out how relevant they are to this study.

4.6.1. Correlation analysis

Correlation refers to a broad class of statistical relationships involving dependence. Familiar examples of dependent phenomena include the correlation between the physical statures of parents and their offspring, and the correlation between the demand for a product and its price. Correlations are useful because they can indicate a predictive relationship that can be exploited in practice. Field (2005: 107) defines correlation as a measure of the linear relationship between variables. For example, a researcher might be interested in whether there is a relationship between the amounts of time spent reading a book and the reader's understanding of the contents. With correlation analysis there are several ways in which the variables can be related, be it positive or negative (Field, 2005: 107). Kachigan (1982: 117) also confirms what Field (2005) has stated. In his definition Kachigan states that whenever we measure objects on two variables, not only are we interested in measures of central tendency and variation of the individual variables, but also in an assessment of the association, if any, which exists between

the two variables. This is true for this study as all variables of concern are correlated with each other. To have a clearer statistical understanding of whether the variables are associated with one another, we looked at whether they covary. When we looked at covariation we were able to determine whether, when one variable deviates from its mean it would have a similar deviation on the other variable as well. In this study we looked at the correlation of the following variables:

- Age
- Years of service
- Gender
- Race/ethnicity
- Educational qualifications
- Stress Vulnerability
- Work conditions
- Work experiences
- Life satisfaction

4.6.2 Regression analysis

Regression analysis is a statistical process for estimating the relationships among variables. It includes many techniques for modeling and analysing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. Regression analysis is a method of determining the specific function relating Y to X (Barbie, 2007: 456). The general formula for describing the association between two variables is:

$$Y = f(X)$$

This formula is read “ Y is a function of X ”, meaning that values of Y can be explained in terms of variations in the value of X . Stated more strongly we might say that X causes Y , so the value of X determines the value of Y (Barbie, 2007: 455). This is true for this study as there are several independent variables that have influence over dependent variables. Independent variables and the dependent variables they influence are listed below together with their regression equations:

For example:

- To describe the relationship between work conditions, work experiences and the stress vulnerability among EMS employees

$$Y = a + b_1x_1 + b_2x_2 + e$$

Where: Y is Stress Vulnerability

x_1 is Work conditions

x_2 is Work experiences

e is Error

- The level of stress and how this affects their performance

$$Y = a + b_1x_1 + e$$

Where: Y is performance

x_1 is Level of stress

e is Error

From the above variables we are postulating that work conditions and work experiences might have an influence on stress vulnerability in the workplace. It is clear in the above variables that there was a need to do a multiple regression analysis as the dependent variable is affected by multivariate analysis. Very often, in social research, researchers find that a given dependent

variable is affected simultaneously by several independent variables; multiple regression analysis provides means of analyzing such situations (Barbie, 2007: 458). We therefore hypothesize that work conditions and work experience are likely to impact on stress vulnerability.

The other variable that was investigated is the age, race and years of service in relation to stress vulnerability in the workplace especially in the EMS environment.

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + e$$

Where: Y is vulnerability to stress

x_1 is Age

x_2 is Race

x_3 is Years of service

e is Error

The hypothesis is that age, race and Years of experience are likely to impact on stress vulnerability.

4.6.3 Analysis of variance

Analysis of variance (ANOVA) is a collection of statistical models used in order to analyze the differences among group means and their associated procedures (such as "variation" among and between groups). The observed variance in a particular variable is partitioned into components attributable to different sources of variation. In its simplest form, ANOVA provides a statistical test of whether or not the means of several groups are equal, and therefore generalizes the t -test to more than two groups. As doing multiple two-sample t -tests would result in an increased chance of committing a statistical type I error, ANOVA is useful in comparing (testing) three or more means (groups or variables) for statistical significance.

Analysis of variance (ANOVA) tells us how several independent variables interact with each other and what effects these interactions have on the dependent variable (Field, 2005: 309). According to Kachigan (1982: 195) ANOVA is a broad class of techniques for identifying and measuring the various sources of variation within a collection of data. This is true for this study as there are variables that interact and have an effect on the dependent variable. For example, age, years of service, and area of work (rural/urban) are just a few of the variables that interact and have an effect on the dependent variable. In most analysis of variance problems we are interested in the differences in the mean values of a criterion variable which are associated with different values of experimental or predictor variable. We should not be surprised as we must consider an appropriate sampling distribution to determine whether those sample means differ more than would be expected by pure chance (Kachigan, 1982: 195). In ANOVA we want to determine if two variables are related or not. This would give an indication whether the one variable has an effect on the other or not and to what extent.

4.7 Validity and Reliability

The researcher was not discouraged by the argument that it is not completely possible to attain the validity and reliability of research even if we do everything in our power to attain them (Mouton, 2001: 276). To ensure that validity was maintained, the draft questionnaire was submitted to the promoter for expert scrutiny regarding the relevance of each item. Before being administered to the actual respondents, a pilot study was conducted. The pilot questionnaire was administered to few randomly selected employees in EMS. This was done to ensure that they yield the desired results from the participants.

Reliability occurs when a test measures the same thing more than once and results in the same outcome (Salkind, 2006: 106). If two people ask the same question to one respondent, the response must be similar and not differ otherwise this renders the data unreliable. One can test the same sample over and over again and similar results must be yielded that are usable and reliable. In this study the test for validity and reliability was done by conducting a pilot study on a very small sample of EMS employees. When the questionnaires were returned from the pilot

study they were carefully examined to ensure that the desired results are achieved. The results were tested for validity and reliability and the questionnaire was found to meet the criteria hence it was used for this study. If there were any responses that were not satisfactory, then those questions would have to be reviewed and corrected. By doing this, the researcher avoids a review of the questionnaire at a later stage when the data collection and analysis is complete to try and rectify mistakes and this would save time and yield the desired results for the study. Actually Reliability test were conducted as reported in the analysis section.

4.8 Ethical Consideration

Babbie (2007: 61) describes ethics as conforming to the standards of conducts of a given profession or group. Those in the research field must know what ethical considerations are, for research to be conducted on participants and they must not cross the line. This assists the researcher never to cross certain humanitarian and ethical boundaries which might prove costly for the study for if they were crossed and it was reported, the study would be put on hold.

4.8.2 Voluntary participation

When a questionnaire is posted to the participants it simply means the intrusion of the participant's privacy and the participant has not requested for this and may require significant time and energy (Babbie, 2007: 62). This tends to disrupt the regular activity of the participants. The problem with social research is that it often requires the participants to reveal information about themselves that they never revealed to their friends or family. When doctors and lawyers require such information, it is justifiable because they need it to assist the person. Unlike with social research, the information may be required to complete a project and not necessarily be used to assist the participant and this is revealed to strangers in most cases. It is thus important that a researcher attach a covering letter to the questionnaire stating that the participation is solely at the discretion of the participant, meaning it is voluntary and no participant will be forced to take part in the research. This, more often than not, makes the completion of the questionnaire completely voluntary and honest and thus the non-disclosure of the person's personal details like: name, surname or identity number assist with the process. Most participants

will complete the questionnaire honestly knowing that their names would never be disclosed to anyone and thus their information is safe. It is rather true for this study as the researcher had briefing session with the participant to explain the completion of the questionnaire and to stress that the participation is on a voluntary basis and that none is forced to participate against their will. This yielded good results and the targeted amount of returned questionnaires was exceeded making the sample group more bigger.

4.8.3 No harm to the participants

Clearly in medical science research some participants may be harmed by the chemicals or medicines used in the research. This is also the case with social research as important information could embarrass the participants or endanger their home lives, friendship, jobs, and so forth (Babbie, 2007: 63). Some of the participants may be psychologically harmed and therefore a researcher must look for the subtlest danger and always guard against it. It is thus very important for a researcher to ensure that the information is kept from anyone who might have wrong ideas about the information so as to protect his participants. In this study the researcher ensured that no participant were harmed during the course of the study and any matter that would relate to participants being harmed, it would be dealt with promptly and professionally to protect the integrity of the research project. If any participant wishes to withdraw from the study because they feel that they have been harmed in one way or the other by the contents in the questionnaire or the method in which the researcher or any person involved in the study, they were afforded the freedom to withdraw without prejudice in advance by the researcher as was mentioned during the briefing sessions.

4.8.4 Anonymity and Confidentiality

The other most important aspect is the fact that participants remain anonymous and information provided to be treated with the strictest confidentiality. A research project guarantees anonymity when the researcher or any other person who reads the research project cannot pair a given response to any participants (Babbie, 2007: 64). The researcher used a questionnaire to collect data as mentioned earlier in the text. The questionnaire did not require the participants to provide

any form of identification and in that way the participants remained anonymous even to the researcher. This assisted the researcher in that he was able to obtain more volunteers taking part as participants.

Confidentiality can be guaranteed only when a researcher identifies a response and pair it with a participant but promises to never go public with the information (Babbie, 2007: 65). Confidentiality is ensured because it is necessary for the effectiveness of any data-gathering technique. Mouton (2001:157) suggests that one possible strategy to ensure confidentiality would be to emphasize the anonymity of responses and observation as much as possible. It is the researcher's responsibility to ensure that the participants are aware that their responses are treated with utmost confidentiality and ensure that the promise is kept. The researcher did not disclose any information to anyone except the supervisor, examiners and officials in positions of authority within the Department of Health. What is important to note is that no form of identification and as a result no pairing could be linked to the responses given by the participants.

4.8.5 Respect integrity of participants

Respect for human beings is recognition of their intrinsic value (NHMRC, 1999). In human research, this recognition includes abiding by the values of research merit and integrity, justice and beneficence. Respect also requires having due regard for the welfare, beliefs, perceptions, customs and cultural heritage, both individual and collective, of those involved in research. All researchers are required to respect the cultural sensitivities, privacy and confidentiality of all their participants. Any agreement entered into with the participant should be adhered to by the researcher. Respect also involves giving the participant the scope of the research to enable them to make their own decision regarding participating in the research. Emergency Medical Services in SA has a diversity of cultures and the researcher is aware of such. The researcher respected every participant in this study regardless of the cultural background. Every participant that was chosen for this study was very important for the success of the research. Hence, each and every one of the participants was afforded the respect he/she deserves and thus no complaints were received in this regard.

4.8.6 Freedom to withdraw

Participation in any research is voluntary (Babbie and Mouton, 2001: 521). The researcher is required to inform the participants of the study conducted and what the study aims to achieve. When a questionnaire is administered to participants, this is an intrusion of their privacy (Babbie, 2007: 62). Participants therefore have the freedom to participate freely in the study without feeling prejudiced in any way. As much as participation in any research is voluntary, participants must be given a fair opportunity to withdraw freely without any threat. Freedom can be explained as liberty, autonomy, lack of restrictions, independence, choice, free will and sovereignty. From the definition it is clear that freedom does not bind any participant to the research in any way but gives them the will to do as they please but within the limitations of the study. Freedom to withdraw simply refers to the freedom to be able to withdraw from the study without being prejudiced. A participant has the right to withdraw at any given time if he/she feel uncomfortable continuing with the study. The researcher did not in any way make the participants feel like they betrayed the study or is a coward or feel belittled by withdrawing from the study. The researcher permitted participants to withdraw from the study should a situation of this nature arise. However, what can be mentioned is that no participant withdrew from the study but instead more employees wanted to be used and they disgruntled because they did not form part of the study. This was going to be difficult and rather costly to add more participants as the sample was already pre-determined during the sample selection process. This gave an indication that a study of this nature is long overdue and needed to be done sooner.

4.8.7 Deception

It is very important that a researcher identifies himself/herself outright and never pose as someone else to avoid deceiving participants and colleagues in the research field (Babbie, 2007: 67). Sometimes researchers are compelled by the type of research they are conducting to deceive the participants in order for them to get the response they are looking for, this may be justifiable but in essence it is unethical. Researchers must avoid deceiving their participants if they can help it but may do so if this is justifiable. The researcher did not deceive participants but openly introduced himself to the participants and gave an outline why the research is conducted and thus

used the principle of voluntarism to get as many participants as possible. In this way participants knew exactly who they were dealing with and why the study was conducted and its importance. No participants were drawn into participation by giving false information regarding the study. The researcher was open and honest to the participants thereby giving the right to freely participate in the study and not feel coerced to do so.

4.8.8 Analysis and Reporting

In addition to the ethical obligations to participants researchers have an ethical obligation to their colleagues in the scientific community (Babbie, 2007: 68). These obligations concern the analysis of data and the way the results are reported. The researcher thus undertook and ensured that the data collected was analyzed as they were received and no information was altered to suit the research project and that the reporting of the results was done as a true reflection and not being altered in any way. The researcher did not jeopardize the research in any way and the outcome thereof.

In addition to the above the researcher undertook to be mindful of and uphold ethical principles that should not be ignored in research. Permission was first obtained from the relevant authorities to conduct the study. In addition to being honest and open, the researcher informed the participants that although their participation is valued, it is not mandatory (MacMillan and Schumacher, 1993:182). An undertaking was also made not to expose them to any danger, to respect any request for anonymity and avail research results to them. Participants were also informed of the reasons why this study is undertaken and were given the opportunity to voluntarily withdraw from the study if they so wished.

CHAPTER 5

DATA ANALYSIS AND PRESENTATION OF RESULTS

5.1 Introduction

In this chapter the analysis of data was discussed and the results of analysis presented. Both statistical and graphical analyses were employed to plot the outcomes of the study. This was achieved through the use of the SPSS v20 from the University of North West Mafikeng Campus' statistical unit with the help of a statistician, Mr Phemelo Seaketso. The statistician assisted with the capturing and sorting of data. Thereafter, followed with the data cleaning to eliminate all data that were regarded as unusable. The data was then segregated into various categories as per the variables and was sorted using an excel spreadsheet exercise. The data was then imported into the SPSS software to categorise, cross tabulate and calculate to give out results. Thereafter, the statistician assisted in understanding and interpreting the data in order for the researcher to put them into understandable data. Wikipedia Free Encyclopedia defines data analysis as process of inspecting, cleaning, transforming, and modeling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making. Data analysis has a multiple facets and approaches, encompassing diverse techniques under a variety of names, in different business, science and social science domains.

5.2 Source of Data

Data was sourced from two Provinces, viz. Gauteng and North-West Provinces. The target population was employes within the Emergency Medical Service (EMS) in both provinces. The Units of Analysis are the very EMS employees. The two provinces were chosen because of the ease of access to information and their proximity of each other. What further assisted in choosing the two provinces is their dynamic layout and the characteristics of it personnel compared to other provinces in the country.

5.3 Research Instrument

Data collection instruments were developed incorporating Demographic, Life styling and Life Satisfaction scale, Affectometer Inventory, Impact of Events scale, a General Health Questionnaire and Stress Vulnerability test for the Quantitative research and for the Qualitative part of the study, the Job Satisfaction Questionnaire was used.

5.3.1 Reliability Tests

These instruments were subjected to reliability tests, viz. Cronbach's Alpha and Split-Half reliability tests.

5.3.1.1 Reliability Test of Measuring Instruments using Cronbach's Alpha(α)

According to Santos (1999), Cronbach's Alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability. It is based on the "internal consistency" of a test. It is based on the average correlation of items within a test, if the items are standardized to a standard deviation of 1; or on the average covariance among items on a scale, if the items are not standardized. "It is assumed that the items on a scale are positively correlated with each other because they are measuring, to a certain extent, common entity". An alpha test was, therefore, conducted on Life Satisfaction questionnaire, Affectometer Inventory, Impact of Events scale, a General Health Questionnaire and Stress vulnerability test. The resultant Cronbach's reliability coefficients for the above were: .490, .536, .929, .947 and .812, respectively (Table 5.1 to 5.5).

5.3.1.2 Reliability Test of Measuring Instruments using Split-Half reliability test

Here, the scale is split into two parts and looking at the correlation between the two parts. A Split-half test was also conducted on Life Satisfaction, Affectometer Inventory, Impact of Events scale, a General Health Questionnaire and Stress vulnerability test. The following Guttman Split-half coefficients were yielded for the above measuring instruments: -.019, .557, .878, .843, and

.690, respectively (**Table 5.1 to 5.5**). We conclude that the measuring instruments used to collect data in this study are reliable. Both the Cronbach's Alpha and the Split-half reliability tests attest to this fact as evidenced by the reliability coefficients produced.

Table 5.1 : Tests of Reliability using both the Cronbach's Alpha and the Split-half reliability tests
Reliability Statistics

Cronbach's Alpha				Split-half reliability Test				
Name of Scale	Alpa (α)	No. of items	Comment			No. of items	Value	Comment
1. Life Satisfaction	$\alpha = .490$	5	Low	Cronbach's Alpha	Part 1	3^a	.814	High
					Part 2	2^b	.220	Low
					Total No. of items	5		
					Correlation Between Forms		-.010	
					Spearman-Brown Length Coefficient	Equal	-.020 ^c	
	Unequal Length		-.019					
			Guttman Split-half Coefficient					

a. The items are: LSatis1, LSatis2, LSatis3

b. The items are: LSatis4, LSatis5

c. The correlation between forms (halves) of the test is negative. This violates reliability model assumptions. Statistics which are functions of this value may have estimates outside theoretically possible ranges.

Table 5. 2: Tests of Reliability using both the Cronbach's Alpha and the Split-half reliability tests (Continued)
Reliability Statistics

Cronbach's Alpha			Split-half reliability Test					
Name of Scale	Alpa (α)	No. of items	Comment			No. of items	Value	Comment
2. Affectometer	$\alpha = .536$	20	Low	Cronbach's Alpha	Part 1	10^a	.310	Low
					Part 2	10^b	.373	Low
					Total No. of items	20		
					Correlation Between Forms		.408	
					Spearman-Brown Equal Length Coefficient		.580	
	Unequal Length		.577					
				Guttman Split-half Coefficient				

- a. The items are: Lifeontrack, Changelife, Futgood, Bestyearsover, Likemysself, Wrongwithme, Handleanyproblem, Feellikefailure, Feellovedtrusted, Leftalone
- b. The items are: Felclosetopeople, Lostinterestpeople, CandowhatIwant, Lifestuck, Havenergytospare, Cannotbotherd, Smilelaughalot, Notfunanymore, Thinkclearly, Thoughtuseles

Table 5. 3: Tests of Reliability using both the Cronbach’s Alpha and the Split-half reliability tests (Continued)
Reliability Statistics

Cronbach’s Alpha				Split-half reliability Test				
Name of Scale	Alpa (α)	No. of items	Comment			No. of items	Value	Comment
3. Impact of Stressful Life Events	$\alpha = .929$	22	High	Cronbach’s Alpha	Part 1	11 ^a	.859	High
					Part 2	11 ^b	.893	High
					Total No. of items	22		
					Correlation Between Forms		.789	
					Spearman-Brown Length Coefficient	Equal	.882	
	Unequal Length		.878					
				Guttman Split-half Coefficient				

a. The items are: Remindfeelings, Troubleasleep, Keptmethink, Feltirritable, Avoidupset, Didnotmeanit, Nothappened, Away4rminders, Poppedintomind, jumpyeasystartled, Nottothinkabout

b. The items are: Lotoffeelingsabout, Feelingskindnumb, Actfelingswasback, Troublefallingasleep, Wavestrongfeeling, Remove4rmemory, Troubleconcentng, Causedphysicalrections, Haddreamsaboutit, Watchfulonguard, TGriednottalkaboutit

Table 5. 4: Tests of Reliability using both the Cronbach’s Alpha and the Split-half reliability tests (Continued)
Reliability Statistics

Cronbach’s Alpha				Split-half reliability Test				
Name of Scale	Alpa (α)	No. of items	Comment			No. of items	Value	Comment
4. General Health	$\alpha = .947$	28	High	Cronbach’s Alpha	Part 1	14 ^a	.928	High
					Part 2	14 ^b	.898	High
					Total No. of items	28		
					Correlation Between Forms		.736	
					Spearman-Brown Coefficient	Equal Length	.848	
		Unequal Length	.843					
			Guttman Split-half Coefficient					

- a. The items are: Perfectlygoodhealth, Neegootonic, Rundown, Feltyouareill, Gettingpains, Feelingoftight, Hotcoldspel, Genhealth8, Difficultasleep, Underrstrain, Badtempered, Scaerdpanicky, Gettontopofyou, Nervousstungup.
- b. The items are: Busyoccup, Takinglonger, Doingthingswell, Satiswithdotask, Usefulpart, Capabmakingdec, Enjoynornday, Thinkworthless, Entirelywothles, Lifenotworthl, Awaywithlife, Nervetoobad, Wishweredead, takinglifekeptcome.

Table 5. 5: Tests of Reliability using both the Cronbach’s Alpha and the Split-half reliability tests (Continued)
Reliability Statistics

Cronbach’s Alpha			Split-half reliability Test					
Name of Scale	Alpa (α)	No. of items	Comment			No. of items	Value	Comment
5. Stress vulnerability	$\alpha = .812$	20	High	Cronbach’s Alpha	Part 1	10 ^a	.667	Moderately High
					Part 2	10 ^b	.772	Moderately High
					Total No. of items	20		
					Correlation Between Forms		.528	
					Spearman-Brown Length Coefficient	Equal	.691	
		Unequal Length	.690					
		Guttman Split-half Coefficient						

- a. The items are: Balancedmeal, Hrssofsleep, GiverecAffection, Relativerelyon, Exerciseweek, Limitcigarette, Alcoldrinks, Incomeadequa, Appropweight, Strenrelgbelief.
- b. The items are:Strenrelgbelief, Attedclubs, Networkfriends, Friednsconfide, Goodhelth, Speakfeelings, Domesproblems, Funonaweek, Orgtimeeffectively,DrinkcupcoffeeStrenrelgbelief..

5.4 ASSUMPTIONS FOR REGRESSION ANALYSIS AND ANALYSIS OF VARIANCE

5.4.1 Assumption of Linearity, normality and homoscedasticity

The assumption of **linearity** presupposes that the relationship between the independent and dependent variables can best be expressed or summarized with a straight line. As Fox (1997, p113) asserts, when an expected value of the dependent variable is a linear function of the independent variable: $\mu_i \equiv E(Y_i) \equiv E(Y | x_i) = E(\alpha + \beta x_i + \varepsilon_i)$.

$$\begin{aligned} &= \alpha + \beta x_i + E(\varepsilon_i) \\ &= \alpha + \beta x_i + 0 \\ &= \alpha + \beta x_i \end{aligned}$$

Fox (1997) further maintains that, we can remove $\alpha + \beta x_i$ from the expectation operator because α and β are fixed parameters, while the value of X is conditionally fixed to x_i . Kerlinger and Padhuzur (1973, p.309) on the other hand maintain that the relations among the variables in the model are linear, additive, and causal. Taking the above into account, the data in this study was then evaluated and the assumption of linearity was therefore tested as illustrated in appendices: 4.2. It is evident from an examination of the Normal P-P Regression Standardized Residual Plot, with Stress Vulnerability as dependent variable that scores are clustered around the regression line in a linear form. This tells us that departure from linearity has not occurred in this data. **(Figure 5.1, Annexure 1)**

The assumption of linearity presupposes that the relationship between the independent and dependent variables can be best summarized with a straight line function. Here, according to Kerlinger and Pedhazur (1973: 303) in Maaga (1987: 164), the relation among variables in the model is linear, additive and causal. The assumption of normality on the other hand indicates that the Y scores are normally distributed at each value of X , or that each array of Y for a given X is normal.

Assumption of Normality on the other hand presupposes that the Y scores are normally distributed at each value of X , or each array of Y for any given X is normal. In other words, the least-squares coefficients A and B are the maximum-likelihood estimators of α and β . Hair, JR;

et al. (1995: 64) asserts that the most fundamental assumption in multivariate analysis is the normality of the data. In **Annexure 5.3** a histogram used to determine as to whether the assumption of normality has been violated is presented. The histogram superimposed on the normal curve does not exactly follow the normal curve. It is however not extremely skewed which then leads us to conclude that departure from normality is not extreme. (**Figure 5.2, Annexure 2**)

Assumption of Homoscedasticity as indicated by Hair, JR; et al. (1995), is an assumption primarily focusing on dependence relationships between variables. In other words, it refers to a situation in which the dependent variable(s) exhibit equal levels of variance across the range of predictor variables. On the other hand Gujarati, (1978, p. 193) maintains that homoscedasticity refers to a situation in which the variance of each disturbance term μ_i conditional on the chosen values of the explanatory variables, is some constant number equal to the population variance. Homoscedasticity refers to a situation in which the variance of each disturbance term U_i conditional on the chosen values of the explanatory variables is some constant number equal to the population variance. This may be stated as meaning that the variance of Y on all other levels of X is the same as the variance of Y on all other levels of X (Damodai Gujarati, 1978: 193) in Maaga (1987: 164). In other words, the variance of any array of Y , on any array of X at a given level of X , is the same as the variance of Y on all other levels of X . To test whether this assumption is violated, the predicted Y (viz. Stress vulnerability) was plotted against the residuals of the prediction of Stress vulnerability by explanatory variables in the model. As Gujarati, 1978; Bohrenstedt and Carter, 1971 assert, small departures from linearity, normality and homoscedasticity will not affect the results of the study conducted using the data. Berry and Feldman (1985) and Tabachnick and Fidell (1996) also maintain that slight heteroscedasticity has little effect on significance tests. However, when heteroscedasticity is marked or extreme it can lead to serious distortion of findings and seriously weaken the analysis thus increasing the possibility of a Type I error. This error occurs when the researcher rejects a true hypothesis, while the Type II error occurs when we fail to reject a false hypothesis. In cases of extreme violations of the assumption, this would result in a situation in which the estimate of the dependent variable will be inefficient and consequently, this estimate when used will result in

incorrect statistical tests and confidence intervals. (**Figure 3, Annexure 3**) Stress Vulnerability was plotted against standardized predicted values. We have a situation of homoscedasticity.

To test whether these assumptions have been violated, the predicted Y (stress vulnerability) was plotted against the residuals of the prediction of the vulnerability to stress by the models' explanatory variables. For requirements of these assumptions to be met there should be no relationship between predicted Y (stress vulnerability) and the residuals. That is, there should be no systematic pattern reflected by the plots. If 68% of the scores are distributed within plus 1 and minus 1 standard deviations, 95% between plus 2 and minus 2 standard deviations, and 98% between plus 3 and minus 3 standard deviations around zero point on the Y -axis and running parallel to the X -axis then linearity, normality and homoscedasticity are not violated. Another way of determining whether the assumptions are not violated is that one should be able to draw a rectangle around the plots such that 98% of the scores are within the rectangle.

Small departures from linearity, normality and homoscedasticity will not affect the results of the study conducted using data. However, extreme violations of the assumptions do affect the results. For instance, violation of the assumption of linearity will result in lack of fit. This is exemplified by a situation in which data fitting non-linear models (such as curvilinear models) are imposed on linear models. Serious departures from normality will make it difficult for one to use the standard formulas for the t and the f distribution to perform tests of significance since these statistics themselves are based on the normal distribution. Substantial departures from these assumptions will also affect the ability to obtain the best linear unbiased estimations (BLUE) in conducting tests of significance. Additionally, extreme violations will result in unequal error variance, the consequences of which will be large standard errors. Large standard errors may result in unreliable parameter estimations, i.e. parameter generated using this data may vary from study to study. This tie in with the consequences of violating the assumptions of homoscedasticity. Extreme violations of these assumptions would result in a situation in which the estimate of the dependent variable will be inefficient and this estimate when used will result in incorrect statistical tests and confidence intervals (Gujarati, 1978; Bohrenstedt and Carter, 1971) in Maaga (1987; 166).

Gujarati (1978) in Maaga (1987: 166) further points out that heteroscedasticity do, however, not destroy the unbiasedness and consistency properties of the usual ordinary least square estimators. However, these estimators as a result of heteroscedasticity are no longer minimum variance or efficient. That is, they are no longer best linear unbiased estimators (BLUE). The best linear unbiased estimators are provided by the method of weighted least squares, not the OLS. Because of the fact that variance is no longer minimum, confidence intervals based on it will be unnecessarily wide and tests of significance less powerful. Also, because of inefficient estimators when in fact they are not, confidence intervals for the parameters will be narrower (giving an impression of great precision) when in fact they are much wider. Unbiasness

As Bohrenstedt and Carter (1971, pp. 123-128) in Maaga (1987: 169), stated that even if these assumptions are seriously violated, this would not affect the results of the study drastically when the data violating the assumptions are used. It is, therefore, concluded that when using my study data, the assumptions of linearity, normality and homoscedasticity will not be extremely violated. Thus, parameter estimations are more reliable.

5.4.2 Multicollinearity

In the following **Table 5.6, results of a model tested with fifteen explanatory or independent variables and one dependent** variable are presented and these were used to evaluate whether the assumption of multicollinearity was violated or not. Multicollinearity is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated. It is further maintained that in this situation of multicollinearity the coefficient estimates may change erratically in response to small changes in the model or data. We have perfect multicollinearity if the correlation between two independent variables is equal to 1. In this particular data, the assumption of multicollinearity was tested. The results of this test are reported In **Table 5.6** and the statistical information that would help us determine the extent of collinearity in this data are presented. One way of determining the absence or presence of multicollinearity is a close examination of the collinearity statistics. In **Table 5.6** these statistics are given. The criterion against which we measure or determine the absence or presence of multicollinearity is that when tolerance is close to “1” this means that there is little multicollinearity. On the other hand, a value of “0” would suggest that multicollinearity may be

a threat. It should also be noted that, the greater the standard errors the greater the multicollinearity. However, on inspection of the statistics in this table it is evident that, except for the standard error of the constant, standard errors of the independent variables vary from .107 to 5.613. These standard errors, it is observed, are not big.

It can be argued that even if multicollinearity exists it is not of an extreme kind. Tolerance statistics also vary from .448 to .843 with the majority of tolerance statistics veering towards or close to “1”. As indicated earlier, tolerance close to “1” means that there is little multicollinearity, while values close to “0” suggest that multicollinearity may be a threat. Tolerance statistics as indicated in the table are not closer to “1”. We conclude therefore that multicollinearity in the case of the data used in this study is not much of a threat. Solace should be derived from the fact that even extreme multicollinearity (so long as it is not perfect, i.e. equal to “1”) does not violate Ordinary Least Square (OLS) assumptions. OLS estimates are still unbiased and BLUE (Best Linear Unbiased Estimates).

This is one of the classical linear regression model assumptions. Here it is assumed that the independent variables are not highly correlated. According to Asher (1976) in Maaga (1987: 186) highly correlated independent variables may result in large standard errors of the estimated regression coefficients. The consequence of this is that, if another sample from the population were to be drawn and the equation re-estimated, the new estimates might be substantially different – despite the fact that in both cases they had the desirable properties of regression estimates. Therefore, multicollinearity would make it very difficult to infer causality since the regression estimates can differ dramatically from one sample to another.

Asher (1979) in Maaga (1987: 186) maintains that multicollinearity might more likely be a problem with aggregate data than with survey data. This is so because in aggregating observations, “the random measurement error component of the scores is likely to be cancelled, whereas in survey data random measurement error attenuates correlation coefficients, thereby making the problem of collinearity less likely” Asher, (1979: 48-59) in Maaga (1987: 186). Since the data used in this study is not aggregate data, this problem will not occur in this study. Deegan (1972) in Maaga (1987: 186) reinforces the point by asserting that large sample sizes can reduce

the impact of collinearity, thus making collinearity less worrisome in survey data than in aggregate data. In this study sample size is 469, therefore, the problem of collinearity should, therefore, not be a serious problem here.

5.4.3 Interval Level Data

One of the assumptions of ANOVA and regression analysis is interval level data. In this particular study the data is not interval in nature. It is, at best ordinal and nominal in nature. This assumption states that the variables in the study should be measured at the interval level. This makes allowance for the manipulation of data such that one can add, subtract, multiply or divide the data. The data used in this study does not meet the requirements of this assumption since some variables are measured at the ordinal level.

There are instances in the sociological research when ordinal and nominal level data are used with regression analysis or parametric statistics as a whole. There is, however, according to Asher (1979) in Maaga (1987: 186) a controversy as to the advisability of using non-interval level data with parametric statistics. For instance, Wilson (1971) in Maaga (1987: 186) maintains that using ordinal-based data when interval level data is required may render the results inconclusive “since some legitimate transformations of the ordinal observations will reverse the conclusions reached” (Asher 1979:64 in Maaga, 1987: 187).

However, Bohrnstedt and Carter (1971); Labovitz (1976, 1970); Asher (1979) in Maaga (1987: 187), contend that non-interval data should not prevent researchers from proceeding with model testing and parameter estimation. The reason they provide for treating ordinal data as though it were interval is that this allows them to use the more powerful and sophisticated statistical techniques and this can be done without serious distortions or violations. Asher (1979: 66) in Maaga (1987: 187) maintains that “while it is certainly correct applying the appropriate transformation to one’s data, it seems that one should not automatically assume that it is the most pathological of situations that one is confronting. Although some transformation could not alter one’s results, this does not mean that the results obtained are incorrect or off the mark. There has been ample Monte Carlo work that suggests that in many instances the violation of the interval

assumption is not very consequential". Based on the arguments presented above, it is concluded that the fact that some variables in our data are not measured at the interval level will not affect the results drastically.

5.4.4 Assumption of recursiveness

The requirements of this assumption are that there should not be any reciprocal causation in the variables, and thus paths are therefore, unidirectional. This means that there are no two-way causal flows in the system or feedback loops resulting in X_i and Y_i and in Y_i causing X_i . Heise (1969) in Maaga (1987: 169) contends that this requirement is necessary to assure that this requirement is necessary to assure that the underlying mathematical model consists of a set of recursive equations. These types of models allow for the variations of few key variables to be input that produce variability or effects in the rest of the variable in the system and thus may affect these directly or indirectly through intermediary variables. The direction of these effects as stated above are always outward or as Heise would put it, centrifugal, away from the central input variables. An inspection of the four models in this study shows that causation is unidirectional; therefore, the models are recursive.

5.4.5 Assumption of specification and identification

(i) Specification

Here it is presumed that causal priorities among variables are well specified and undebatable. Heise (1969) in Maaga (1987: 170) maintains that the causal laws governing the system of causal relationships should be sufficiently established to specify that causal priorities among variables in a way that is undebatable. He further argues that, it is noteworthy that this requirement is not for a full-scale theory in the sense of specifying every causal path, but rather a partial theory which simply permits ordering variables in terms of causal priorities.

It is important to note what Heise (1969) in Maaga (1987: 173) pointed out with respect to ordering of variables. According to him, in a system of ten variables there are, for instance, more

than three million different orderings possible. For this reason the requirements of this assumption demand that there be a large amount of valid theoretical information. He further contends that the implications of this assumption in, e.g. regression analysis and causal inference procedures are simply not feasible in many of sociology in which theory is not yet advanced enough to provide undebatable rankings of variables in terms of their causal priorities. On the other hand Heise (1969) in Maaga (1987:174) maintains that the requirement does not eliminate the use of these procedures completely. There are, for instance, problems in which causal priorities are mostly specified by one universally accepted metatheoretical law, i.e. events are not caused by other events that occur later in time. The models used in this study satisfy the prerequisite that model building in regression analysis are adequately specified and undebatable.

(ii) Identification

The assumption of identification involves the estimation of unknown coefficients in a model using empirical data. If there are M variables in a model, for instance, there should be $M(m-1)/2$ correlations (Heise, 1969 in Maaga, 1987: 174); Kerlinger and Pedhazur, (1973). Heise (1969) in Maaga (1987: 174) also contends that in the absence of controlled experiments or longitudinal data, the only information one has for estimating unknowns are measurements of degree how variables covary in a natural population. Heise maintains that one hopes to make some inferences about how much change in one variable is produced by change in another. He further observes that, when one has cross-sectional data only, a fact of considerable consequence is that all empirical information about relationships between variables is summarized in the table of empirical correlations. What is implied here is that the amount of information available for estimating unknowns in a model is determined strictly in terms of the number of variables one is considering (Maaga, 1987: 175).

A further implication according to Heise (1969) in Maaga (1987: 175) is that there are no significant differences in the identification problem of one collected observations on 1,000 or 5,000 cases, except that in the latter case the correlations would be more reliable. In the present study, data will be collected on 469 participants, who would therefore, make correlation more reliable.

A model may be under identified, over identified or just identified. An instance of under identification occurs when there are more unknowns than normal equations. Under these circumstances the model “contains insufficient information for the purpose of obtaining a determinate solution of parameter estimation” (Pedhazur, 1982 in Maaga 1987: 175). The consequences of this is a situation in which an infinite number of solutions may be obtained

An over identification model according to Pedhazur (1982) and Asher (1976) in Maaga (1987: 176) is one in which equations are more than the unknown. That is, the equations are more than necessary for the purpose of parameter estimation. According to Asher (1976) there are a number of estimation strategies available for dealing with over identification models.

5.4.6 Assumption of uncorrelated disturbance

Under this assumption, the residual variables are uncorrelated with one another, and with any independent variable directly affecting the dependent variable upon which they act. According to Heise (1969) in Maaga (1987: 178) the fact that disturbance terms are uncorrelated with one another or with inputs presupposes that all system inputs are explicitly included into the analysis. This presupposes that variables that affect two or more inputs may be ignored, provided that they also do not affect the disturbances of the dependent variable. The implication made here is that inputs may themselves be correlated. The problem that is addressed here is that of spurious correlations and/or spurious relationships.

Heise further asserts that when considering only two variables any assumption that a non-zero correlation indicates some causal relationship between the two variables is based on a priori notion that there are no outside variables, besides those posited to be related, that affect the relationship. A similar argument holds in the case where one assumes uncorrelated disturbances to solve for the causal parameters of a model. Here one assumes that the correlations are not spurious in that they are a function of the variables being considered, and therefore not due to the mutual dependencies of some variables on other variables (Maaga, 1987).

5.4.7 Assumption of independent and random sample

Under this assumption each respondent in the population has to have a known and equal chance of being selected into the sample. The sampling design for this study is a stratified, probability design from one independently drawn national area sample. Each respondent in the sample had a known, non-zero selection probability therefore; the requirements of this assumption are met.

5.4.8 Assumption of reliability

Here it is assumed that the measuring instruments used to obtain empirical data are highly reliable. Heise (1969) in Maaga (1987: 188) maintains that in the construction of estimation models unreliability of measurement may enter as a nuisance factor, making efficient estimates more difficult. He further contends that it is generally not an overwhelming barrier, except when estimating the parameters of a structural model. When such problems are encountered, using such data will give wrong estimations of regression coefficients and could also bring misconceptions and therefore, interfere with both explanation and simulation uses of the model. Heise further points out that the problem may cumulate in that when considering equations with several variables, one variable measured with low reliability can affect the estimate of one or several regression coefficients (Heise, 1989:57-58 in Maaga, 1987: 189).

Table 5.6: Coefficients used for testing collinearity
Coefficients*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig	Correlations ¹			Collenearity Statistics	
	B	Sts. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF**
Constant	95.472	24.419		3.910	.000					
Agegroup	-1.967	2.522	-.100	-.780	.439	-.017	-.100	-.074	.554	1.804
Qualification	3.133	2.004	.210	1.563	.123	.044	.198	.149	.501	1.998
CurrentPosition	-5.034	5.076	-.113	-.992	.325	-.019	-.127	-.094	.698	1.432
Yearsof service	-.036	2.585	-.002	-.014	.989	.039	-.002	-.001	.567	1.764
Smoking	8.520	6.859	.129	1.242	.219	.209	.158	.118	.843	1.186
Regsmoke	-1.266	1.592	-.087	-.795	.430	-.020	-.102	-.076	.759	1.318
TakeAlco	-9.663	4.473	-.238	-2.160	.035	-.158	-.269	-.205	.743	1.345
Exercise	-5.152	4.157	-.131	-1.239	.220	-.260	-.158	-.118	.807	1.239
Relation	-6.451	2.330	-.322	-2.768	.007	-.427	-.337	-.263	.668	1.496
Overtime	-6.100	5.613	-.127	-1.087	.281	-.143	-.139	-.103	.667	1.500
Affectors	.374	.190	.214	1.965	.054	.272	.246	.187	.764	1.309
Newhealthcond	-.209	.118	-.246	-1.770	.082	-.386	-.223	-.168	.468	2.135
Impactlifeevents	-.085	.107	-.113	-.795	.430	-.253	-.102	-.076	.448	2.234
NewLifesatis	.207	.358	.062	.579	.565	.268	.074	.055	.782	1.278
Workconditions	-1.015	1.348	-.098	-.752	.455	.104	-.097	-.072	.535	1.868

*Dependent Variable: Stress vulnerability

**VIF: Variance Inflation Factor.

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \beta_{11} x_{11} + \beta_{12} x_{12} + \beta_{13} x_{13} + \beta_{14} x_{14} + \beta_{15} x_{15} + e$$

Equation 1:

(Where α = constant; x_1 = Agegroup; x_2 = Qualification; x_3 = Current position; x_4 = Years of service; x_5 = Smoking; x_6 = Regularity of smoking; x_7 = Take Alcohol; x_8 = Exercise; x_9 = Relation; x_{10} = Over Time; x_{11} = Affectors; x_{12} = Newhealth condition; x_{13} = Impact of life events; x_{14} = New life satisfaction; x_{15} = Work conditions).

5.5 Independent and random sample

Fox (1997, p113) asserts that independence means that the observations are sampled independently. Further to this is that, any pair of errors ε_i and ε_j (or, equivalently, of conditional dependent-variable values, Y_i and Y_j) are independent for $i \neq j$. The assumption of independence needs to be justified by the procedures of data collection. In this particular study, the sample was randomly and independently drawn from a large population. This therefore means that the assumption of independence was met to a close approximation. The sample technique used is a Stratified Random Sampling and therefore, we can assume that the assumption has not been violated because the respondents or units of analysis had each an equal and a known chance of being selected into the sample.

5.6 Independence of the Error Terms

This assumption presupposes that each predicted value is independent. By this, according to Hair JR, (et. al; (1995), is meant that the predicted value is not related to any other prediction, that is, they are not sequenced by any variable (or influence each other). According to Fox (1997, p.113), depending on the design of the study, the values of the independent variable may be fixed in advance of data collection or they may be sampled along with the dependent variable. In experimental research, the value of the independent variable is usually fixed and under the direct control of the researcher. In social science research, as is the case in our study, the X -values are sampled, not fixed by design. Under these circumstances, as Fox (1997) would argue, we assume that the independent variables and the error are independent in the population from which the sample is drawn. This means that error has the same distribution $[N(0, \sigma_\varepsilon^2)]$ for every value of X in the population. In the study, since the sampling technique used to select respondents is the stratified random technique, we assume that the assumption is not violated.

5.7 Homogeneity of variance or equality of variance

What this assumption entails is that the variances between samples are equal, i.e. we have to achieve homogeneity of variance. According to Hair, JR; et.al (1995, p.275) F tests in ANOVA

are robust with regard to these assumptions except in extreme cases. We therefore conclude that this assumption is not violated.

5.8 Summary

Without belaboring the fact, it is the view of the researcher that the majority, if not all assumptions, were minimally or not extremely violated. This then means that estimations of the dependent variable will generally not be inefficient. These estimates when used will not result in incorrect statistical tests and confidence intervals.

5.9 DESCRIPTIVE ANALYSIS

5.9.1 Socio-Demographic and Employment Status Profile and Characteristics of EMS Employees in the study.

The purpose of this section was to describe the socio-demographic and employment status profiles of EMS employees and to also examine their characteristics. In the South African context it is very important to understand the extent to which demographics relate to people's lives and their individual or group characteristics within work environments. It is for this reason that this kind of analysis is necessary. Descriptive analysis was used in this study mainly to determine the demographic profiles of respondents or Emergency Medical Services employees and their characteristics within the area in which they operate. The units of analysis are the Emergency Medical Services employees in both Gauteng and the North-West provinces. These are individuals about whom we are making pronouncements and draw conclusions.

In **Figure 5.1** a comparison of EMS participants in the study is made with respect to their province of operation. Out of a total number of participants or respondents amounting to 501, 66.5% are from the Gauteng Province while 33.5% are from the North-West Province. The fact that Gauteng Province has a higher percentage of respondents might suggest that the Province has more EMS professionals than the North-West province and this is mainly due to the staffing norms as per the population ratios.

Furthermore, percentage distribution and comparisons were made with regard to respondents' gender. In **Figure 5.2** gender distributions are presented. A close examination of the figure indicates that 65.7% are males while 34.3% are females. This suggests that the profession seem to be dominated by males.

Figure 5.1: Percentage Distribution of EMS Employees in the Area of Research Focus

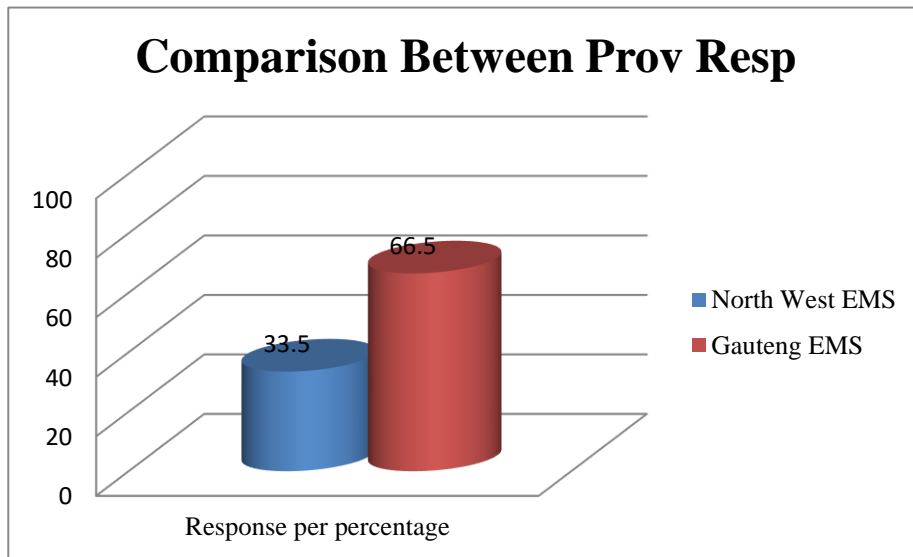
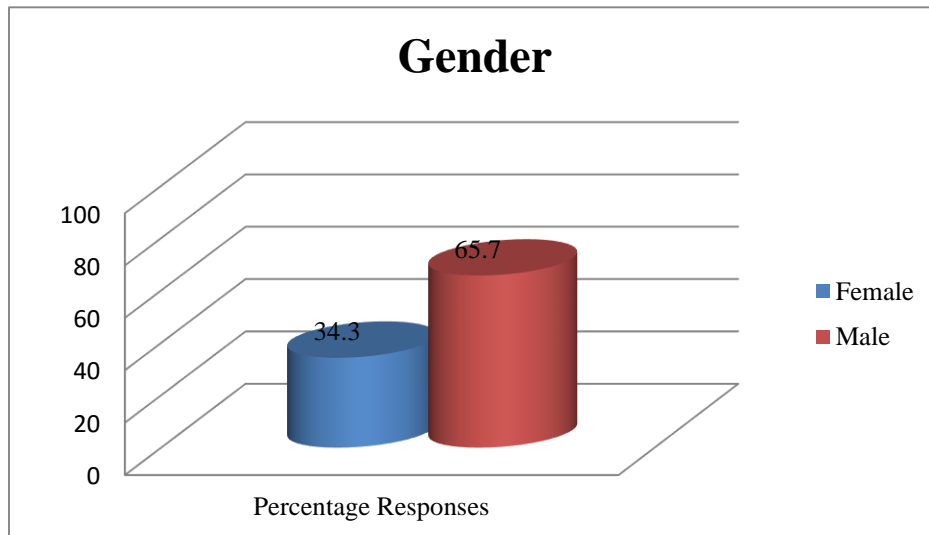


Figure 5.2: Percentage Gender Distribution of EMS Employees in the Study.



In **Table 5.7** a distribution of EMS Employees by gender, race and years of service is presented. From this table it is evident that Africans, in all categories constituting years of service, i.e. 1-8 yrs; 9-16 yrs; 17-34 yrs, in general are in the majority with a representation of 87.44%.

Furthermore it is males in these categories who predominate as opposed to females. Males constitute 54.93% of employees with the longest service in all categories, while females constitute 32.29%. *It might be of interest in future studies to examine why females are generally under-represented in the EMS work force in various categories of work within these provinces.*

Table 5.7: Distribution of EMS Employees by Gender, Race and Years of Service

Years of Service	Gender	Race				Total
		African	Coloured	White	Indian	
(1-8yrs)	Male	164	1	14	0	179 (40.13%)
	Female	109	6	2	2	119 (26.68%)
	Not Ascertained	1				1 (00.22%)
	Total	274	7	16	2	299 (67.40%)
(9-16yrs)	Male	67	3	13	1	84 (18.83%)
	Female	34	0	0	0	34 (07.62%)
	Total	101	3	13	1	118 (26.46%)
(17-34yrs)	Male	14	2	6	2	24 (05.38%)
	Female	1	2	0	0	3 (00.67%)
	Total	15	4	6	2	27 (06.05%)
(35+ yrs)	Male	0	0	2	0	2 (00.45%)
	Female	0	0	0	0	0
	Total	0	0	2	0	2 (00.45%)
Total	Male	245	6	35	3	289 (64.80%)
	Female	144	8	2	2	156 (34.97%)
	Not Ascertained	1	0	0	0	1 (00.22%)
	Grand Total	390 (87.44%)	14 (03.14%)	37 (08.30%)	5 (01.12%)	446 (100%)

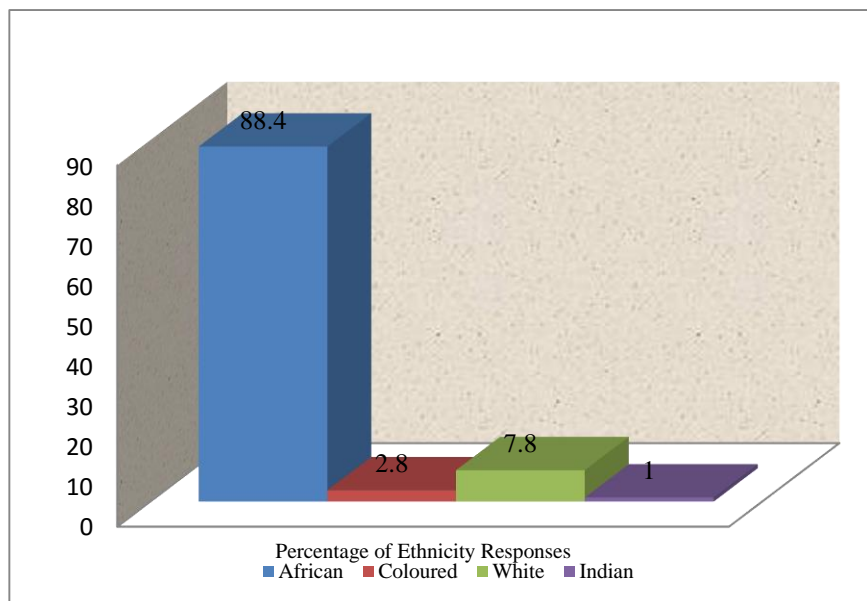
NB: 55 respondents did not disclose their years of service.

Further analysis of **Table 5.7** reveals that the remaining racial groups are minimally represented, with Whites constituting 7.8%, Coloureds 2.8%, and Indians 1%. The coloured, White and Indian employees constitute only 12.56% of the entire EMS population. It is not immediately evident, however, as to what accounts for low representation of other racial groups with respect to longevity at work or long service. This might probably be a function of their relatively low intake at the outset. An examination of the first category of 1-8 yrs of service shows that Coloureds, Whites and Indians have only an 8.39% representation as opposed to 91.6% representation recorded by Africans. *This result is, however, not conclusive since no specific question was asked regarding their entry level problems or challenges. When we look at the*

years of service among employees, it is clear that those with 1yr to 16yrs of service are in the majority with 93.5% representation. Since we did not deliberately examine the reasons for such differential representation among racial groups, it might be instructive in the future to determine what accounts for such disparities.

In **Figure 5.3** a percentage distribution of racial groups who participated in the study is presented. Still the overwhelming majority are Africans with 88.4% participation, followed by Whites with a 7.8%, Coloureds with a 2.8% and Indians representing a 1% of participation. *It is very difficult to determine or even conclude whether the differences in representation are a function of the differences in the total population or whether there are other factors at play.*

Figure 5.3: Percentage Distribution of Racial Groups Who Participated In the Study
Racial Groups

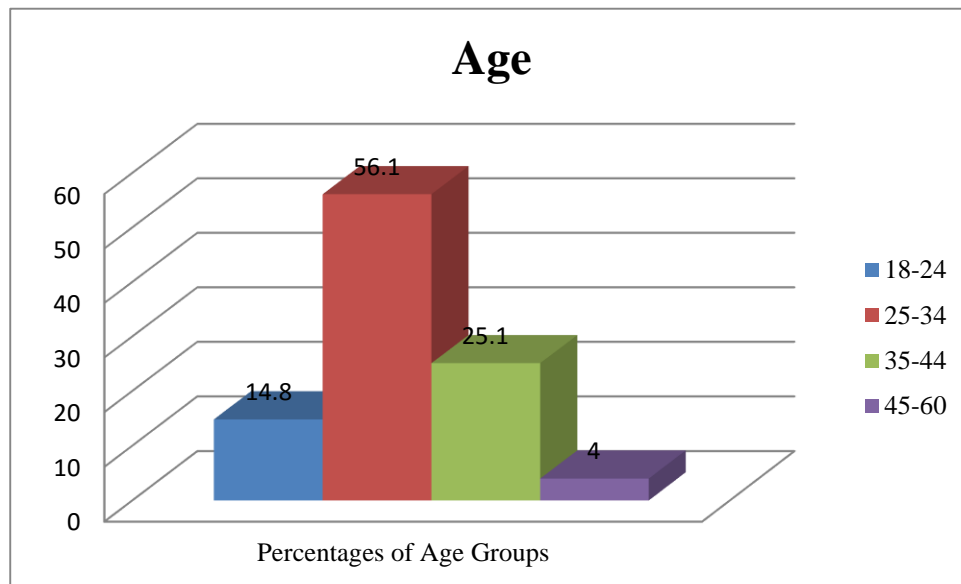


Further analysis was made and the results are reported in **Figure 5.4** where a distribution of age groups among EMS employees is presented. The majority of employees are between 25 and 44 years of age. However, the 25 to 34 age group is predominant. *This goes to show that the EMS employees is generally constituted by youth.*

In **Table 5.8** distribution of EMS employees is reported, taking into account their gender, race and age groups. Here the concern is to determine how various race and gender groups are

represented in the entire EMS workforce in the study area. Four age groups are the focus of interest. Again, representation among EMS employees with regard to these age groups is skewed in favour of Africans. The age group which is minimally represented is the 45 to 60+ years. In this age category Africans constitute 2.99% of the work force, while Coloureds, Whites and Indians constitute 0.39%, 0.59% and 0%, respectively. This means that, employees in the service who reach the official retirement age are small in numbers. This might be attributed to the fact that most EMS employees exit the service at some point to pursue other avenues and seek for different employment or starting up businesses.

Figure 5.4 Percentage Distributions of EMS Employees by Age



The highest representation among the groups is the 25yrs to 34 yrs age group with 56.1% representation, followed by the 35 to 44 years age group constituting 25.1% representation. The 18yrs to 24yrs age group is constituted by a complement of 14.8%. The 45 to 60 years group only amounts to 4%. It is evident that the majority of EMS employees is composed of youth with ages ranging from 18 to 34 years and constituting 70.86% of the EMS work force. This is attributed by the fact that they enter the service at an early age as already mentioned. The reason for the 45 to 60 age group to be so small, is historically based on the fact that the service does not have white professionals in the services anymore, as most of them have resigned/retired or went to seek employment elsewhere.

In **Table 5.9** comparisons between age groups and years of service among employees is also made. Here the interest is on how age groups are represented with regard to their years of service. Years of service could be used as a proxy for work experience. Only two (2) persons in the age group 45-60+, have years of service of 35+ years which accounts for only 0.45% of the work force. Twenty seven (6.05%) in all age groups have years of service between 17yrs and 34 years, the majority of whom are in the 25-34 and 35 to 44 age groups. Two age groups, i.e. the 25yrs to 34yrs and the 35yrs to 44yrs constitute the majority of those who are new entrants, viz. the 1 to 8 years-service category. These two groups account for 53.36% of the entire EMS work force. On the other hand a total of 145 (32.51%) have years of service between 9yrs and 34 years. It is evident that over all, the EMS employees is constituted by 69.73% youth, the middle aged account for 26.23% while 04.4% are the 45 to 60+ age group. An interesting group is the 45 to 60+ age group which has 2 (00.45%) in the 1yr to 8yrs service category and 2 (00.45%) in the 35+ years-service category.

Age group	Gender	Race				Total
		African	Coloured	White	Indian	
(18-24)	Male	39	0	8	0	47 (09.38%)
	Female	22	5	0	0	27 (05.39%)
	Total	61 (12.18%)	5 (00.99%)	8 (01.59%)	0	74 (14.77%)
(25-34)	Male	168	1	17	1	187 (37.33%)
	Female	90	1	2	0	93 (18.56%)
	Not Ascertained	1	0	0	0	1 (00.19%)
	Total	259 (51.70%)	2 (00.39%)	19 (03.79%)	1 (00.19%)	281 (56.09%)
(35-44)	Male	63	3	9	2	77 (15.37%)
	Female	45	2	0	2	49 (09.78%)
	Total	108 (21.56%)	5 (00.99%)	9 (01.79%)	4	126 (25.15%)
(45-60+)	Male	13	2	3	0	18 (3.59%)
	Female	2	0	0	0	2 (0.40%)
	Total	15 (2.99%)	2 (00.39%)	3 (00.59%)	0	20 (3.99%)
Total	Male	283	6	37	3	329 (65.67%)
	Female	159	8	2	2	171 (34.13%)
	Not Ascertained	1	0	0	0	1 (00.19%)
	Grand Total	443 (88.42%)	14 (2.79%)	39 (7.78%)	5 (0.99%)	501

Table 5.8: Distribution of EMS Employees by Gender, Race and Age group

The next set of results are presented in **Table 5.9**, where a distribution of EMS employees is examined with respect to their qualifications, years of service and current position within their work environment. This determination was done to do a comparison between the different age groups per race. It is evident from a close examination of the table that the majority of employees whose current position is in the operational sphere have the lowest qualification, i.e. Emergency Care Practitioners –Basic (ECP-B). Employees of this category of workers constitute 53.30% of the work force. They are followed by those who have acquired an Emergency Care Practitioner Intermediate (ECP-I) qualification with a 25.96% representation. On the other hand the employees with an Emergency Care Technician (ECT) qualification constitute 09.34% of the workforce, while the highest qualification i.e. Emergency Care Practitioner- Advanced (ACP-A) has been acquired by 01.59% of staff.

Table 5.9: Distribution of EMS Employees by Age group and Years of Service

Age group	Years of Service				Total
	(1-8 yrs)	(9-16yrs)	(17-34 yrs)	(35+ yrs)	
(18-24)	59 (13.23%)	0	0	0	59 (13.23%)
(25-34)	193 (43.27%)	54 (12.11%)	5 (01.12%)	0	252 (56.50%)
(35-44)	45 (10.09%)	56 (12.56%)	16 (03.59%)	0	117 (26.23%)
(45-60+)	2 (00.45%)	8 (01.94%)	6 (01.35%)	2 (00.45%)	18 (04.04%)
Total	299 (67.04%)	118 (26.46%)	27 (6.05%)	2 (00.45%)	446

NB: 55 respondents did not disclose their years of service.

Table 5.10: Distribution of EMS Employees by Current Position, Qualification and Years of Service.

Current Position	Qualification*		Years of Service				Total
			(1-8 yrs)	(9-16 yrs)	(17-34 yrs)	(35+ yrs)	
Operational		ECP-B	178	48	8	0	234 (53.30%)
		ECP-I	60	46	8	0	114 (25.96%)
		ECT	33	8	0	0	41 (09.34%)
		ECP-A	1	4	2	0	7 (01.59%)
	Total		272 (61.95%)	106(24.15%)	18(4.10%)	0	396(90.20%)
Management		ECP-I	6	1	3	0	10 (02.28%)
		ECT	8	3	2	0	13 (02.96%)
		ECP-A	3	3	4	2	12 (02.73%)
	Total		17 (3.87%)	7 (1.59%)	9 (2.05%)	2	35 (07.97%)
3(Not Ascertained)		ECP-I	0	2	0	0	2 (00.46%)
		ECT	3	2	0	0	5 (01.14%)
	Total		3	4	0	0	7 (01.59%)
4(Not Ascertained)		ECT	0	1	0	0	1 (00.23%)
	Total		0	1		0	1 (00.23%)
		ECP-B	178	48	8	0	234 (53.30%)
		ECP-I	66	49	11	0	126 (28.70%)
		ECT	44	14	2	0	60 (13.67%)
		ECP-A	4	7	6	2	19 (4.33%)
Grand Total			292	118	27	2	439

*Where ECP-B = Emergency Care Practitioners - Basic; ECP-I = Emergency Care Practitioners - Intermediate ; ECT = Emergency Care Technician; and ECP-A = Emergency Care Practitioners- Advanced.

Further analysis indicates that staff employees in EMS, who hold current position as managers, are a total of 35 which is 07.97% of the whole workforce. For instance, 10 (2.28%) have an ECP-1 qualification, and 13 (2.96%) have an ECT qualification, while 12 (2.73%) have acquired an ECP-A qualification. It is, however, interesting to find that 17 (3.87%) out of a total number of 35 (07.97%) managers have only 1 to 8 years of experience as opposed to 18 workers whose years of service are between 9 and 35+ years. From this table, it is evident that many of those with relatively less years of service are in managerial positions. This might mean that employees in managerial positions are generally recruited from outside the service as opposed to being promoted from within the ranks.

Focus is again on the distribution of EMS employees by current position, race and years of service. This is reported in **Table 5.11**. Here the interest was to determine whether there is a relationship between racial groups with respect to positions they hold as well as the extent to which they are given positions of responsibility as a result of their years of service. There seem to be equitable spread of races in the operational category of employment in relation to their representation in the total workforce. However, disparities are present in the managerial category. The majority of those in management are Africans with a 4.33% representation as against a total African staff complement of 383, which constitute 87% of the total workforce. Whites on the other hand constitute 02.51% in management in relation to a White staff complement of 37, i.e. 43%.

Table 5.11: Distribution of EMS Employees by Current Position, Race and Years of Service

Race	Current Position	Years of Service				Total
		(1-8yrs)	(9-16yrs)	(17-34yrs)	(35+ yrs)	
African	Operational	250 (56.94%)	94 (21.41%)	13 (2.96%)	0	357 (81.32%)
	Management	14 (3.19%)	3(0.68%)	2(0.46%)	0	19 (04.33%)
	3 (Not Ascertained)	3 (0.68%)	3(0.68%)	0	0	6 (1.36%)
	4 (Not Ascertained)	0	1(0.23%)	0	0	1 (0.23%)
	Total	267 (60.82%)	101 (23.01%)	15 (3.42%)	0	383 (87.24%)
Coloured	Operational	7 (1.60%)	2(0.46%)	2 (0.46%)	0	11 (02.51%)
	Management	0	1(0.23%)	2 (0.46%)	0	3 (00.68%)
	Total	7 (1.60%)	3 (0.68%)	4 (0.911%)	0	14 (3.19%)
White	Operational	15 (3.42%)	10 (2.28%)	1 (0.23%)	0	26 (05.92%)
	Management	1 (0.23%)	3 (0.68%)	5 (1.14%)	2 (0.46%)	11 (02.51%)
	Total	18 (4.10%)	13 (2.96%)	6 (1.36%)	2 (0.46%)	37 (8.43%)
Indian	Operational	0	0	2 (0.46%)	0	2 (00.46%)
	Management	2 (0.46%)	0	0	0	2 (00.46%)
	3 (Not Ascertained)	0	1 (0.23%)	0	0	1 (0.23%)
	Total	2 (0.46%)	1 (0.23%)	2 (0.46%)	0	5 (1.14%)
Total	Operational	272 (61.95%)	106 (24.15%)	18 (4.100%)	0	396 (90.21%)
	Management	17 (3.87%)	7 (1.60%)	9 (2.05%)	2 (0.46%)	35 (07.97%)
	3 (Not Ascertained)	3 (0.68%)	4 (0.911%)	0	0	7 (1.60%)
	4 (Not Ascertained)	0	1 (0.23%)	0	0	1 (0.23%)
	Grand Total	292 (66.51%)	118 (26.88%)	27 (6.15%)	2 (00.46%)	439

NB: 55 respondents did not disclose their years of service.

The reason for this kind of disparity was not determined in this study, nor did we seek to establish why it exists. Coloureds in management are 3, constituting 0.68% of the staff complement, while there is only one (1) Indian in management, i.e. 0.23%. One interesting observation is that among Africans who hold management position, it is those with 1 to 8 years of service who are in the majority, while the majority of Whites in management have service between 9 years and 34 years of service. This seems to suggest that Whites who are in management have been recruited to management positions from within the ranks as opposed to recruitment from outside.

Table 5.12: Distribution of EMS Employees by Current Position, Gender and Years of Service

Gender	Current Position	Years of Service				Total
		(1-8yrs)	(9-16yrs)	(17-34yrs)	(35+ yrs)	
Male	Operational Management	165 (37.58%)	76 (7.31%)	17 (3.87%)	0	258 (58.77%)
	3 (Not Ascertained)	10 (2.28%)	6 (1.36%)	7 (1.60%)	2(0.46%)	25 (5.69%)
	1(0.23%)	2 (0.46%)	0	0	3 (0.68%)	
	Total	176 (40.09%)	84 (19.13%)	24 (5.47%)	2 (0.46%)	286 (65.15%)
Female	Operational Management	106 (24.15%)	30 (6.83%)	1 (0.23%)	0	137 (31.21%)
	3 (Not Ascertained)	7 (01.60%)	1 (0.23%)	2 (0.46%)	0	10 (2.28%)
	4 (Not Ascertained)	2 (0.46%)	2 (0.46%)	0	0	4 (0.911%)
	Total	115 (26.19%)	34 (7.74%)	3(0.68%)	0	152 (34.62%)
Not Ascertained	Operational Management	1 (0.23%)	0	0	0	1(0.23%)
	Total	1 (0.23%)	0	0	0	1 (0.235)
Total	Operational Management	272 (61.95%)	106 (24.15%)	18 (4.10%)	0	396 (90.20%)
	3 (Not Ascertained)	17 (3.87%)	7 (1.60%)	9 (2.05%)	2 (0.46%)	35 (7.97%)
	4 (Not Ascertained)	3(0.68%)	4 (0.91%)	0	0	7(1.60%)
	Grand Total	292 (66.51%)	118 (26.88%)	27 (6.15%)	2 (0.46%)	439

The last focus of interest was on the distribution of staff with regard to their current positions, gender and years of service. This is presented in **Table 5.12**. The variable of interest is gender where we want to establish as to whether there are any differentials between the two gender groups with respect to years of service as they relate to current position in the service. The total number of males in the operational sphere is 258, i.e. 58.77%, while 25, i.e. 5.69% are in

management. On the other hand females in the operational category are 137, i.e. 31.21%, while those in management are 10, i.e. 2.28%. It is evident from this table that those with 1 to 8 years of service constitute the majority in the management category. Males again predominate in this category.

5.10 MULTIVARIATE ANALYSIS

When conducting analyses, the parametric statistical approach will be used for the study as it is relevant for Correlation analysis, Regression analysis and Analysis of Variance. Parametric statistics assumes that the data comes from probability distribution and makes inferences about the parameters of the distribution. The most known and used statistical methods are parametric. For the benefit of this study, the parametric method will not be mentioned further in the study.

5.10.1 Correlation Analysis

In **Table 5.13**, a complete correlation matrix is presented in which variables in the study were correlated in order to establish whether there might be possible relations between and among them. A preliminary analysis of these variables will assist in choosing variables that could be included in regression models. These variables would be included in such models where correlation is sufficiently high. It is evident from an examination of the correlation below that, except for the correlation between the variables: *New Health Condition* and *Impact of Life events* which is .60, the rest of the correlation range from .023 to - .298. Much as these correlation coefficients are relatively low, it is evident that the majority of them are significant as indicated in the table. A close look at **Table 5.8** reflects significant coefficients at both the ≤ 0.01 and ≤ 0.05 levels of significance ranging from -.098 and .601. While these relatively low coefficients might be substantively low on inspection, they are, however, statistically significant. These would help us in developing regression models as is the case below:

TABLE 5.13: Correlation of Variables in the Study

	Gender	Race	Age group	Qualification	Current Position	Years of Serv	Smoking	Reg Smoke	Take Alco	Church Att	Religious Person	Religiosity	Exercise	Ofte Exercise	Relation	Overtime
Gender	1	-.127**	-.033	-.078	.035	-.172**	.218**	-.080	.182**	-.180**	-.110*	.060	.190**	-.198**	.017	.005
Race	-.127**	1	.046	.207**	.227**	.263**	-.194**	.332**	-.192**	.023	.021	.034	-.061	.027	.038	-.058
Agegroup	-.033	.046	1	.124**	.150**	.516**	-.029	.360**	.168**	-.070	-.078	.069	.154**	.003	-.004	-.060
Qualification	-.078	.207**	.124*	1	.439**	.233**	-.087	.168	-.140**	.073	-.013	-.012	-.138**	.298**	.026	.384**
Current Position	.035	.227**	.150**	.439	1	.197**	-.006	-.020	.004	-.026	-.062	.095*	-.108*	.099	.031	.064
Years Of Serv	-.172**	.263	.516**	.233**	.197**	1	-.189**	.348**	-.059	-.032	.044	.037	.060	.002	.093*	.016
Smoking	.218**	-.194	-.029	-.087	-.006	-.189**	1	.025	.389**	-.197**	-.194**	.147**	-.017	.061	-.114*	-.011
Reg Smoke	-.080	.332**	.360**	.168	-.020	.348**	.025	1	.008	.151	-.040	.217**	-.027	-.052	-.100	.000
Take Alco	-.185**	-.192**	.168**	-.140**	.004	-.059	.389**	.008	1	-.185**	-.159**	.212**	.027	.000	-.157**	-.046
ChurchAtt	-.185**	.023	-.070	.073	-.026	-.032	-.197**	.151	-.185**	1	.505**	-.425**	.113*	.039	.026	.008
Religious Person	-.159**	.021	-.078	-.013	-.062	.044	-.194**	-.040	-.159**	.505**	1	-.490**	.184**	.024	.096*	-.006
Religiosity	.212**	.034	.069	-.012	.095*	.037	.147**	.217*	.212**	-.425**	-.490**	1	-.172**	.015	-.088*	.000
Exercise	.027	-.061	.159**	-.138**	-.108*	.060	-.017	-.027	.027	.113*	.184**	-.172**	1	.036	.090*	-.097*
OfteXercise	.002	.027	.003	.298**	.099	.002	.061	-.052	.000	.039	.024	.015	.036	1	-.038	.190**
Relation	-.157**	.038	-.004	.026	.031	.093*	-.114*	-.100	-.157**	.026	.096*	-.088*	.090*	-.038	1	.067
Overtime	-.046	-.058	-.060	.384**	.064	.016	-.011	.000	-.046	.008	-.006	-.006	.000	.190**	.067	1

**Correlation is significant at the 0.01 * Correlation is significant at the 0.05

TABLE 5.13: Correlation of Variables in the Study (Continued)

	Gender	Race	Agegroup	Qualification	Current Position	Years of Serv	Smoking	Reg Smoke	Take Alco	Church Att	Religious Person	Religiosity	Exercise	Often	Relation	Over Time
HrsOvertime	.049	-.013	-.142**	-.194**	-.097	.001	.020	-.213	.024	-.087	.065	.010	.041	-.050	.069	-.043
OvertimeVol	-.004	-.162**	.063	-.150**	-.129*	-.149**	.246**	-.012	.273**	-.029	-.068	.060	.010	-.118*	-.167**	.078
Oveetmoney	-.069	.004	.078	.064	.041	-.001	.008	.172	.064	.017	-.091	-.006	-.036	.073	-.082	.232**
Medication	.018	-.063	-.115*	-.011	-.052	-.160**	.096*	-.025	.008	.006	.025	-.003	-.021	.028	-.074	.058
AlcoJob	.050	.029	.063	-.015	-.001	-.101*	.136**	-.015	.196**	-.098*	-.185**	.144**	-.049	-.033	-.109*	-.045
ExperAtwork	-.048	-.098*	.085	-.042	-.010	.053	-.004	-.057	.006	-.126**	-.033	.062	-.014	-.010	.146**	-.120**
SatisLevel	-.140**	.298**	-.047	.126**	.036	.016	-.044	.049	-.060	.020	-.068	.019	-.004	.123*	-.118**	.001
JobChange	.043	.187**	-.087	.153**	.053	-.061	-.039	.041	-.017	-.006	-.067	.057	.032	.025	-.188*	.055
Workconditions	-.030	.164**	-.033	.111*	.019	-.128*	.066	.033	.095	-.041	-.161**	.066	.007	.073	-.210**	.221**
Lifesatisfaction2	.073	.002	-.005	-.099*	-.012	.016	.093*	.021	.052	-.048	-.084	-.017	-.021	-.045	-.230**	-.083
Impactlifeevents	.077	-.060	.111*	-.058	-.038	.057	-.009	.103	.013	.004	.021	-.006	.085	-.061	.160*	-.071
Newhealthcond	.067	.014	.070	-.008	.016	.023	-.049	.038	-.004	.017	.031	-.032	.097*	-.086	.214**	-.049
Affectors	.009	-.033	.054	-.136**	-.028	.075	.031	-.107	.055	-.060	-.059	-.005	.041	.015	-.093*	-.125**
Stressvulnerability	-.073	-.057	-.045	.049	.055	.026	.041	-.075	-.036	-.045	-.029	.016	-.160**	.124*	-.211**	.064
Lifestyle	-.056	.088	.228**	.492**	.309**	.385**	.047	.414**	.168**	.039	.067	.249**	.107**	.303**	.366**	.399**
Lifesatisfactionnew	.049	.042	.001	-.082	-.013	.033	.111*	.044	.053	-.0763	-.106*	.001	-.042	-.029	-.235**	-.070
Affectonnew	.011	-.038	.068	-.135**	-.036	.070	.030	-.092	.047	-.048	-.046	-.017	.063	.014	-.061	-.121**
Impactonlifenew	.079	-.070	.111*	-.066	-.047	.052	-.010	.103	.009	.006	.023	-.015	.086	-.057	.162**	-.068
GenhealthN	.067	.014	.068	-.007	.016	.022	-.047	.043	-.004	.017	.031	-.032	.095*	-.086	-.213**	-.048

Stressvulnew 2	-.092*	-.029	-.038	.053	.058	.024	.040	-.081	-.043	-.049	-.035	.018	- .175**	.119*	-.209**	.059
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****Correlation is significant at the 0.01 * Correlation is significant at the 0.05**

TABLE 5.13: Correlation of Variables in the Study (Continued)

	HrsOver Time	Overtime Vol	Overt Money	Medication	AlcoJob	Exper Atwork	Satis Level	Job Change	Work conditions	Lifesatis faction2	Impact Livevents	Gen healthcond	Affectors	Stress vulnera	Lifestyle
Gender	.049	-.004	-.069	.018	.050	-.048	- .140**	.043	-.030	.073	.079	.099	.009	-.073	-.056
Race	-.013	-.162**	.004	-.063	.029	-.098*	.298**	.187**	.164**	.002	-.060	.014	-.033	-.057	.088
Agegroup	-.142**	.063	.078	-.115*	.063	.085	-.047	-.087	-.033	-.005	.111*	.070	.054	-.045	.228**
Qualifi Cation	-.194**	-.150**	.064	-.011	-.015	-.042	.126**	.153**	.111*	-.099*	-.058	-.008	-.136**	.049	.492**
Current Position	-.097	-.129*	.041	-.052	-.001	-.010	.036	.053	.019	-.012	-.038	.016	-.028	.055	.309**
Years Of Serv	.001	-.149**	-.001	-.160**	-.101*	.053	.016	-.061	-.128*	.016	.057	.023	.075	.026	.385**
Smoking	.020	.246**	.008	.096*	.136**	-.004	-.044	-.039	.066	.093*	-.009	-.049	.031	.041	.047
Reg Smoke	-.213	-.012	.172	-.025	-.015	-.057	.049	.041	.033	.021	.103	.038	-.107	-.075	.414**
Take Alco	.024	.273**	.064	.008	.196**	.066	-.060	-.017	.095	.052	.013	-.004	.055	-.035	.168**
ChurchAtt	-.087	-.029	.017	.006	-.098*	-.126**	.020	-.006	-.041	-.048	.004	.017	-.060	-.045	.039
Religious Person	.065	-.068	-.091	.025	-.185**	-.033	-.068	-.067	-.161**	-.084	.021	.031	-.059	-.029	.067
Religiosity	.019	.060	-.006	-.003	.144**	.062	.019	.057	.066	-.017	-.006	-.032	-.005	.016	.249**
Exercise	.041	.010	-.036	-.021	-.049	-.014	-.004	.032	.007	-.021	.085	.097*	.041	-.160**	.107*
OfteXercise	-.050	-.118**	.073	.028	-.033	-.010	.123*	.025	.073	-.045	-.061	-.086	.015	.124*	.371**
Relation	.069	-.167**	-.082	-.074	-.109*	.146**	- .118**	-.188**	-.210**	-.230**	.160**	.214**	-.093*	-.211**	.303**
Overtime	-.043	.078	.232**	.058	-.045	-.120**	.001	.055	.221**	-.083	-.071	-.049	-.125**	.064	.366**

****Correlation is significant at the 0.01**

*** Correlation is significant at the 0.05**

TABLE 5.13: Correlation of Variables in the Study (Continued)

	HrsOver Time	Overtime Vol	Overt Money	Medication	AlcoJob	ExperAtwork	Satis Level	Job Change	Work conditions	Lifesatisfaction2	Impactliveevents	Gen Healthcond	Affectors	Stress Vulnera	Lifestyle
HrsOvertime	1	-.086	-.212**	.127*	.043	.139**	.143**	.136*	.051	.102	-.064	-.107*	-.017	-.049	.399**
OvertimeVol	-.086	1	.174**	-.015	.088	-.017	-.103*	-.054	.329**	.008	.049	.064	.138**	.065	.056
Overtmoney	-.212**	.174**	1	.045	.058	-.058	-.018	.068	.469**	-.033	-.066	-.098	-.076	.062	.160*8
Medication	.127*	-.015	.045	1	.225**	-.136**	.111*	.082	.334**	.040	-.130**	-.179**	-.035	.062	.078
AlcoJob	.043	.88	.058	.225**	1	-.119**	.098*	.134**	.294**	.152**	-.033	-.030	.000	.045	.059
ExperAtwork	.139**	-.017	-.058	-.136**	-.119**	1	-.104*	-.089*	-.174**	-.012	.090*	.063	.026	-.066	.375**
SatisLevel	.143**	-.103*	-.018	.111*	.098*	-.104*	1	.469**	.656**	.185**	-.200**	-.231**	.046	.089	.049
JobChange	.136*	-.054	.068	.082	.134**	-.089*	.469**	1	.633**	.190**	-.176**	-.230**	-.018	.072	.072
Workconditions	.051	.329*	.469**	.334**	.294**	-.174**	.656**	.633**	1	.164**	-.251**	-.298**	.023	.141**	.146**
Lifesatisfaction2	.102	.008	-.033	.040	.152**	-.012	.185**	.190**	.164**	1	-.131**	-.225**	.243**	.236**	-.091*
Impactliveevents	-.064	.049	-.066	-.130**	-.033	.090*	-.200**	-.176**	-.251**	-.131**	1	.601**	.143**	-.113*	.017
Newhealthcond	-.107*	.064	-.098	-.179**	-.030	.063	-.231**	-.230	-.298**	-.225**	.601**	1	.050	-.249**	.012
Affectors	-.017	.138*	-.076	-.035	.000	.026	.046	-.018	.023	.243**	.143**	.050	1	.259**	-.085
Stressvulnerability	-.049	.065	.062	.062	.045	-.066	.089	.072	.141**	.236**	-.113*	-.249**	.259**	1	-.037
Lifestyle	.399**	.056	.160**	.078	.192	.375**	.049	.072	.146**	-.091*	.017	.012	-.085	-.037	1
Lifesatisfacion New	.110*	.009	-.028	.059	.149**	-.036	.318**	.244**	.254**	.991**	-.168**	-.258**	.246**	.239**	-.079
Affectonew	-.033	.152*	-.072	-.052	-.014	.043	.008	-.057	-.011	.193**	.195**	.111*	.988	.224**	-.077
Impactonlifew	-.064	.052	-.062	-.131**	-.034	.086	-.201**	-.178**	-.251**	-.135**	1.000**	.602**	.146**	-.112*	.011
GenhealthN	-.109*	.065	-.097	-.179**	-.030	.063	-.231**	-.230**	-.298**	-.226**	.602**	1.000**	.049	-.248**	.010
Stressvulnew2	-.056	.053	.054	.062	.053	-.068	.070	.070	.127*	.239**	-.124**	-.253**	.253**	.995**	-.042

****Correlation is significant at the 0.01**

*** Correlation is significant at the 0.05**

TABLE 5.13: Correlation of Variables in the Study (Continued)

	Lifesatisfaction New	Affectonew	Impacton lifeneu	General health	Stressvul new2
Gender	.073	.011	.079	.067	-.092*
Race	.042	-.038	-.070	.014	-.029
Agegroup	.001	.068	.111*	.068	-.038
Qualification	-.082	-.135**	-.066	-.007	.053
Current Position	-.013	-.036	-.047	.016	.058
Years Of Serv	.033	.070	.052	.022	.024
Smoking	.111*	.030	-.010	-.047	.040
Reg Smoke	.044	-.092	.103	.043	-.081
Take Alco	.053	.047	.009	-.004	-.043
ChurchAtt	-.063	-.048	.006	.017	-.049
Religious Person	-.106*	-.045	.023	.031	-.035
Religiosity	.001	-.017	-.015	-.032	.018
Exercise	-.042	.063	.086	.095*	-.175**
OfteXercise	-.029	.014	-.057	-.086	.119*
Relation	-.235**	-.061	.162**	.213**	-.209**
Overtime	-.070	-.121**	-.068	-.048	.059

**Correlation is significant at the 0.01

* Correlation is significant at the 0.05

TABLE 5.13: Correlation of Variables in the Study (Continued)

	Lifesatis factionnew	Affectonew	Impacton lifeneu	General health	Stressvul new2
HrsOvertime	.110*	-.033	-.064	-.109*	-.056
OvertimeVol	.009	.152**	.052	.065	.053
Overtmoney	-.028	-.072	-.062	-.097	.054
Medication	.059	-.052	-.131**	-.179**	.062
AlcoJob	.149**	-.014	-.034	-.030	.053
ExperAtwork	-.036	.043	.086	.063	-.068
SatisLevel	.318**	.008	-.201**	-.231**	.091*
JobChange	.244*	-.057	-.178**	-.230**	.070
Workconditions	.254**	-.011	-.251**	-.298**	.127*

Lifesatisfaction2	.991**	.193**	-.135**	-.226**	.239**
Impactlifeevents	-.168**	.195**	1.000**	.602**	-.124**
Newhealthcond	-.258**	.111*	.602**	1.000**	-.253**
Affectors	.246**	.988**	.146**	.049	.253**
Stressvulnerability	.239**	.224*	-.112*	-.248**	.995**
Lifestyle	-.079	-.077	.011	.010	-.042
Lifesatisfacion New	1	.193	-.172**	-.259**	.243**
Affectonew	.193**	1	.199**	.111*	.216**
Impactonlifefew	-.172**	.199**	1	.603**	-.124**
GenhealthN	-.259**	.111*	.603**	1	-.253**
Stressvulnew2	.243**	.216**	-.124**	-.253**	1

****Correlation is significant at the 0.01**

*** Correlation is significant at the 0.05**

5.11 Regression Analysis and Analysis of Variance

In this section data was analysed using more powerful statistics to determine the extent to which Stress is affected by various factors among the EMS employees in the Gauteng and North-West Provinces.

5.11.1 The Impact of Life Satisfaction on Vulnerability to Stress

Several models were tested to determine the extent to which variance in the dependent variable (Stress vulnerability) is explained by the independent variables in the study. What we sought to achieve was to find the model that would yield the best fit under the circumstances. Both simple regression and multiple regression models were postulated to determine this fact. Furthermore, Analysis of Variance was employed to further examine the relation between independent variables and the dependent variable with a specific aim of finding whether groups are differentially affected with respect to susceptibility to stress.

Hypothesis

The first model postulates that *life Satisfaction* among workers would have an impact on *Stress Vulnerability*. The general regression model was:

$$y = \alpha + \beta_1 x_1 + e. \quad \text{Equation 1}$$

$$\text{Stress Vulnerability} = \alpha + \beta_1 \text{Life Satisfaction} + e.$$

In this model it is postulated or hypothesized that variance or differences in vulnerability to stress is a function of the extent of satisfaction one has in life. The model was tested and the results of regression of *Stress Vulnerability* on *Life Satisfaction* are reported in **Tables 5.14; 5.15 and 5.16** below.

TABLE 5.14: Regression Analysis of Stress Vulnerability On Independent Variable: Life Satisfaction

Model Summary ^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.243 ^a	.059	.057	.646	.059	31.436	1	499	.000

5.12 Predictors: (Constant), Life satisfaction

5.13 Dependent Variable: Stress Vulnerability

A close examination of **Table 5.14** reflects a correlation coefficient equal to .243 and an R^2 of .059, which is the explained variance in the dependent variable - Stress Vulnerability. The **F** coefficient is equal to .000, indicating that the amount of explained variance in the dependent variable: Stress Vulnerability explained by *Life Satisfaction* is significant. Regression here provides several measures of how well the model (see equation 1 above) fits the data. The multiple R, which is a generalization of the correlation coefficient is the first to be considered. In this particular case we have a single predictor variable (Life Satisfaction), therefore the multiple R is merely an unsigned (positive) correlation between *Life Satisfaction* and *Stress Vulnerability*, which is equal to .243 as reported in the table. The rule of thumb used in determining whether the model fits is that the closer the multiple R is to 1, the better the fit. This is, however, not the case in our data. Next, to consider is the R-square. Our reported r-square is .059, indicating that the amount of explained variance in the dependent variable (Stress Vulnerability) accounted for by Life Satisfaction is .059, i.e. 6%. This, of course, is far from perfect prediction.

TABLE 5.15

ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	13.129	1	13.129	31.436	.000 ^b
Residual	208.413	499	.418		
Total	221.543	500			

a. Dependent variable: Stress Vulnerability

b. Predictors: Constant, Life satisfaction

While in **Table 5.15** we wanted to establish the extent to which or how well we could expect to predict the dependent variable and how well the line fits the data, we could not tell whether there is a statistically significant relationship between the dependent and independent variables. This is reported in the Analysis of Variance **Table 5.16**, where the technical summaries represented by sums of squares and mean squares are presented. It is here where we establish the variation accounted for by the prediction equation. The main interest is to determine whether there is a statistically significant (non-zero) linear relation between the dependent variable (*Stress Vulnerability*) and the independent variable (*Life Satisfaction*). We observe that the sum of squares due to regression (13.129) is much less than the sum of squares due to residuals (208.413). This suggests that the explained variance in the dependent variable is less accounted for by variables in the model, as opposed to those which were not included in the regression model. The significance value: (.000) accompanying the F test value: 31.436, gives us the probability that we could obtain one or more sample slopes coefficients (which measures the straight line relationships) as far from zero as what was obtained, if there were no linear relationships in the population. The result obtained as reflected in **Table 5.14** is highly significant, with a significance probability less than .0005 or 5 chances in 10,000. Even though the relationship between *Stress Vulnerability* and *Life Satisfaction* does not seem to be substantively strong, it is, however, statistically significant. We, therefore conclude that there is a significant relationship between *Stress Vulnerability* and *Life Satisfaction*. We have seen, as indicated above, that even though the variance (the extent of variability) in Stress Vulnerability as a consequence of one's life satisfaction is minimal, it is however very important statistically. This means that the extent to which one is satisfied in life has a significant impact in ones vulnerability to stress.

Table 5.16: Regression Coefficients of Regression of Stress Vulnerability on Life Satisfaction

Model 1	Unstandardized Coefficients		Standardized Coefficients	t	(Prob. of t) Sig.
	B	Std. Error	Beta		
(Constant)	2.415	.124		19.448	.000
Life Satisfaction	.179	.032	.243	5.607	.000

- a. Dependent variable: Stress Vulnerability
- b. Predictors: Constant, Life satisfaction

In **Table 5.15** regression coefficients are reported. For instance, Life Satisfaction has a regression coefficient equal to .179, a Beta equal to .243, a *t* value of 19.448 and a prob. *t* or significance value of 0.000. If the level at which this statistic is tested, i.e. ≤ 0.05 level of significance, a 0.000 level of significance obtained as reflected in **Table 5.15** above indicates, therefore, that the contribution made by Life satisfaction in explaining the variance in Stress Vulnerability, even though it is substantively low it is, however, statistically significant. Also, taking into account that the F value of 31.436 and a sig. of 0.000 reported in **Table 5.14**, indicates statistical significance in the variance accounted for by Life Satisfaction, we conclude, therefore, that Stress Vulnerability is among others, a function of the extent to which one is happy in life.

5.11.2 Stress Vulnerability as a function of fifteen Independent variables^a

Further analysis is made where a substantial number of explanatory variables are incorporated in the regression model. The **second** model used is, therefore, a much complex regression model postulating fifteen independent variables as having an impact on stress vulnerability. Here we hypothesize that these independent variables (Age group, Qualifications, Current position, Years of services, Smoking, Regularity of Smoking, Take alcohol, Exercise, Relation, Overtime, Affectors, New health, Impact of Life Events, New life satisfaction and Work Conditions), in combination, would account for the variance in the dependent variable. The following is the regression model postulated:

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \beta_{11} x_{11} + \beta_{12} x_{12} + \beta_{13} x_{13} + \beta_{14} x_{14} + \beta_{15} x_{15} + e \quad \text{Equation 2}$$

a. (Where $\alpha = \text{constant}$;

$x_1 = \text{Age group}$; $x_2 = \text{Qualification}$; $x_3 = \text{Current position}$; $x_4 = \text{Years of service}$; $x_5 = \text{Smoking}$; $x_6 = \text{Regularity of smoking}$; $x_7 = \text{Take Alcohol}$; $x_8 = \text{Exercise}$; $x_9 = \text{Relation}$; $x_{10} = \text{Over Time}$; $x_{11} = \text{Affectors}$; $x_{12} = \text{Newhealth condition}$; $x_{13} = \text{Impact of life events}$; $x_{14} = \text{New life satisfaction}$; $x_{15} = \text{Work conditions}$).

b. Dependent Variable: Stress Vulnerability

The results yielded in testing this model are reported in **Table 5.17**. The **fifteen** variables were entered using the backward method of inclusion in the regression equation. After several of the independent variables were excluded from the model, the biggest R-square amounting to .474 was yielded as reflected in Model 1 indicating that 47% of the variance in Stress Vulnerability is accounted for by the remaining independent variables

TABLE 5.17: REGRESSION ANALYSIS OF INDEPENDENT VARIABLES: AGGROU, QUALIF, CURRPOS, YRSOFSEV, SMOKING, REGSMOKE, TAKEALCO, EXERCISE, RELATION, OVERTIME, OVERTIMEWORKED, AFFECTORS, GEHHEALTHCOND, IMPACTLIFEEVENTS, LIFESATISFACTION2, WORK CONDITIONS ON STRESSVULNERABILITY

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.689	.474	.321	12.387	.474	3.100	16	55	.001	1.816
2	.689	.474	.333	12.277	.000	.016	1	55	.900	
3	.688	.474	.344	12.175	.000	.050	1	56	.824	
4	.686	.470	.351	12.110	-.004	.384	1	57	.538	
5	.682	.465	.357	12.060	-.005	.519	1	58	.474	
6	.679	.461	.362	12.006	-.004	.456	1	59	.502	
7	.672	.451	.361	12.014	-.010	1.087	1	60	.301	
8	.665	.442	.361	12.021	-.010	1.069	1	61	.305	
9	.656	.430	.358	12.051	-.012	1.312	1	62	.256	
10	.645	.417	.353	12.095	-.013	1.477	1	63	.229	
11	.641	.411	.357	12.057	-.005	.593	1	64	.444	
12	.634	.402	.356	12.062	-.010	1.054	1	65	.308	
13	.616	.379	.342	12.195	-.023	2.484	1	66	.120	

- a. Predictors: Constant, Age group; Qualification; Current position; Years of service; Smoking; Regular Smoking; Take Alco; Exercise; Relation; Overtime; Overtime worked; Affectors; General healthcond; Impact of life event; New Life satisfaction; Work conditions
- b. Stress Vulnerability

In **Table 5.18** on the other hand, the results yielded by ANOVA are reported. As indicated earlier, here we want to establish the extent to which or how well we could expect to predict the dependent variable and how well the line fits the data. In examining **Table 5.17** we could not tell with certainty whether there is a statistically significant relationship between the dependent and

independent variables. This is determined and reported in the Analysis of Variance **Table 5.18**, where the technical summaries represented by sums of squares and mean squares are presented. It is here where we establish the variance accounted for by the prediction equation. The main interest is to determine whether there is a statistically significant (non-zero) linear relation between the dependent variable (*Stress Vulnerability*) and the fifteen independent variables. We observe that the sum of squares due to regression in all the thirteen models, are less than the sum of squares due to residuals. This suggests that the explained variance in the dependent variable is accounted for more by variables that were not included in the model. However, an examination of the F values reported in each of the thirteen models shows that the variables included in these models are statistically significant in explaining the variance in Stress Vulnerability. Except for the significance value in model 1 which is .001, the rest of the twelve models yielded significance values of .000.

TABLE 5.18

ANOVA^a

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1.	Regression	7610.433	16	475.652	3.100	.001 ^b
	Residual	8438.678	55	153.431		
	Total	16049.111	71			
2.	Regression	7607.986	15	507.199	3.365	.000 ^c
	Residual	8441.125	56	150.734		
	Total	16049.111	71			
3.	Regression	7600.459	14	542.890	3.663	.000 ^d
	Residual	8448.653	57	148.222		
	Total	16049.111	71			
4.	Regression	7543.551	13	580.273	3.957	.000 ^e
	Residual	8505.561	58	146.648		
	Total	16049.111	71			
5.	Regression	7467.414	12	622.284	4.278	.000 ^f
	Residual	8581.697	59	145.452		
	Total	16049.111	71			
6.	Regression	7401.065	11	672.824	4.668	.000 ^g
	Residual	8648.046	60	144.134		
	Total	16049.111	71			
7.	Regression	7244.333	10	724.433	5.019	.000 ^h
	Residual	8804.778	61	144.341		
	Total	16049.111	71			
8.	Regression	7090.043	9	787.783	5.452	.000 ⁱ
	Residual	8959.068	62	144.501		
	Total	16049.111	71			
9.	Regression	6900.495	8	862.562	5.940	.000 ^j
	Residual	9148.616	63	145.216		
	Total	16049.111	71			
10.	Regression	6686.019	7	955.146	6.529	.000 ^k
	Residual	9363.092	64	146.298		
	Total	16049.111	71			
11.	Regression	6599.306	6	1099.884	7.565	.000 ^l
	Residual	9449.805	65	145.382		
	Total	16049.111	71			
12.	Regression	6446.081	5	1289.216	8.861	.000 ^m
	Residual	9603.030	66	145.500		
	Total	16049.111	71			
13.	Regression	6084.599	4	1521.150	10.228	.000 ⁿ
	Residual	9964.512	67	148.724		
	Total	16049.111	71			

a. Dependent variable: Stress Vulnerability

b. Predictors: Constant, Age group; Qualification; Current position; Years of service; Smoking; Regular Smoking; Take Alco; Exercise; Relation; Overtime; Overtime worked; Affectors; General healthcond; Impact of life event; New Life satisfaction; Work conditions.

Further analysis is made and reported in **Table 5.19** where regression coefficients of variables in the model are presented. Regression coefficients, Betas, t values and significance values are reported. It should be noted that the level of significance against which we test significance is ≤ 0.05 . An examination of the table indicates that only two variables have significantly contributed to the variance in Stress Vulnerability. These are **Relation** with a Beta of -0.320, a t value of -2.624 and a significance value of 0.011, while **TakeAlco** (How often do you take alcohol) has a Beta of -0.249, a t value of -2.161 and a significance value of 0.035. Even though the contributions to variance seem to be substantively low, they are statistically significant. As indicated earlier, the overall variance explained by the variables in the model is .47 or 47%. We hypothesize that Age group, Qualifications, Current position, Years of services, Smoking, Regularity of Smoking, Take alcohol, Exercise, Relation, Overtime, Hours of overtime, Affectors, New health, Impact of Life Events, New life satisfaction and Work Conditions in combination are likely to have an impact on stress vulnerability. With these, we therefore, conclude that a substantive change or variance in one's susceptibility to stress is mainly explained by these variables in combination.

Table 5.19: Regression Coefficients of the Regression of Stress Vulnerability on Independent Variables

Model 1	Unstandardized Coefficients		Standardized Coefficients		t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta				Lower Bound	Upper Bound
(Constant)	96.621	25.849			3.699	0.001	43.818	147.424
Age Group	-2.061	2.726	-0.105		-0.746	0.459	-7.596	3.473
Qualification	3.301	2.237	0.216		1.476	0.146	-1.182	7.784
Current Position	-8.023	5.809	-0.163		-1.381	0.173	-19.663	3.618
Years of Service	0.562	2.959	0.027		0.190	0.850	-5.367	6.492
Smoking	8.003	7.116	0.123		1.125	0.266	-6.258	22.264
Regsmoke	-2.020	1.725	-0.135		-1.171	0.247	-5.478	1.438
TakeAlco	-9.979	4.618	-0.249		-2.161	0.035	-19.234	-0.724
Exercise	-3.793	4.648	-0.091		-0.816	0.418	-13.107	5.521
Relation	-6.367	2.426	-0.320		-2.624	0.011	-11.229	-1.505
Overtime	-6.168	7.728	-0.095		-0.793	0.431	-21.764	9.429
HrsOvertime	0.189	1.499	0.015		0.126	0.900	-2.816	3.194
Affetors	0.363	0.193	0.210		1.874	0.066	-0.028	0.750
Newhealthcond	-0.195	0.123	-0.229		-1.581	0.120	-0.441	0.052
Impactlifeevents	-0.106	0.111	-0.139		-0.956	0.343	-0.329	0.117
Newlifesatisfaction	0.266	0.370	0.080		0.718	0.476	-0.476	1.008
Workconditions	-0.777	1.413	-0.070		-0.550	0.585	-3.608	2.054

After several attempts to find a model that has the best fit the following turned to be the model which seem to yield the best fit, the most potent model was the following:

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \beta_{11} x_{11} + \beta_{12} x_{12} + \beta_{13} x_{13} + \beta_{14} x_{14} + \beta_{15} x_{15} + \beta_{16} e \quad \text{Equation 3}$$

a. Where $\alpha = \text{constant}$;

$x_1 = \text{Agegroup}$; $x_2 = \text{Qualification}$; $x_3 = \text{Current position}$; $x_4 = \text{Years of service}$; $x_5 = \text{Smoking}$; $x_6 = \text{Regularity of smoking}$; $x_7 = \text{Take Alcohol}$; $x_8 = \text{Exercise}$; $x_9 = \text{Relation}$; $x_{10} = \text{Over Time}$; $x_{11} = \text{HrsOvertime}$; $x_{12} = \text{Affectors}$; $x_{13} = \text{Newhealth condition}$; $x_{14} = \text{Impact of life events}$; $x_{15} = \text{New life satisfaction}$; $x_{16} = \text{Work conditions}$)

b. Dependent Variable: Stress Vulnerability

In **Table 5.20** the results of this model are presented. This model yields the best fit with a multiple R equal to .748, while the coefficient of determination is $R^2 = .559$, i.e. 56%. All the variables in the model in combination account for 56% of the variance in Stress Vulnerability. It should be noted that the level of significance against which we test the significance is ≤ 0.05 . A close examination of the model as reported in **Table 5.20** indicates that the sum of squares due to regression, viz. 8280.571 is greater than the sum of square due to residuals, i.e. 6529.659. That is the variance accounted for by variables in the model is greater than variance accounted for by variables not in the model. Since we assume $\alpha = 0.05$ as the criterion or level of significance against which we determine significant contribution to the variance in the dependent variable, our obtained F of 2.737, with a significance level of .003 is \leq than the 0.05 level of significance, we therefore conclude that the contribution by the variables in the model, in combination is significant in accounting for variance in Stress Vulnerability. Comparatively, this is the best fitting model.

Table 5.20: Regression Analysis Of Stress Vulnerability On Independent Variables: Aggrou, Qualif, Currpos, Yrsofsev, Smoking, Regsmoke, Takealco, Exercise, Relation, Overtime, Affectors, Gehhealthcond, Impactlifeevents, Lifesatisfaction2, Work Conditions model Summary ^b

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.748 ^a	.559	.355	12.620	.559	2.737	19	41	.003	1.879

a. Predictors (**Constant**) : Work conditions; ChurchAtt, Regular Smoking; New healthconditions; Current position; Smoking; New Life satisfaction; Overtime; HrsOvertime; Take Alco; OfteXercise; Relation; Years of service; Affectors; Exercise; Age group; Impact of life events; Qualification; Religious person; Religiosity.

b. Dependent Variable: Stress Vulnerability

In **Table 5.21** Regression coefficients of variables in the model are presented, viz. Betas, t values and significance values. It should be noted that the level of significance against which we test significance is ≤ 0.05 . An examination of the table indicates that only one variable significantly contributed to the variance in Stress Vulnerability. This is **Relation** with a Beta of -.485, a t value of -3.408 and a significance value of 0.001. The rest have Betas ranging from .000 to -.208 and t values between .002 and -3.408. Since **Relation** is the only variable that has a significant contribution with a significance level of .001, as indicated earlier, the overall variance explained by the variables in combination explain .559 or 56% of variance in Stress Vulnerability.

Table 5.21: ANOVA Results when Stress Vulnerability is regressed on the fifteen Variables^b
ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	8280.571	19	435.820	2.737	.003 ^b
Residual	6529.659	41	159.260		
Total	14810.230	60			

a. Dependent Variable: Stress Vulnerability

b. Predictors (**Constant**) : Work conditions; Affectors; ChurchAtt, Regular Smoking; New healthconditions; Current position; Smoking; New Life satisfaction; Overtime; HrsOvertime; Take Alco; OfteXercise; Relation; Years of service; Affectors; Exercise; Age group; Impact of life events; Qualification; Religious person; Religiosity.

Table 5.22: Regression Coefficients of Regression of Stress Vulnerability on Independent Variables

Model 1	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
	(Constant)	97.267	32.027				3.037
Age Group	-2.432	3.189	-.121	-.763	0.450	-8.872	4.007
Qualification	1.928	2.788	.117	.692	.493	-3.703	7.560
Current Position	-9.440	6.549	-.199	-1.441	.157	-22.666	3.786
Years of Service	1.891	3.440	.086	.550	.586	-5.057	8.838
Smoking	7.161	7.161	.114	.924	.361	-8.491	22.814
Regsmoke	-2.339	-2.339	-.150	-1.118	.270	-6.563	1.885
TakeAlco	-6.265	-6.265	-.143	-1.026	.311	-18.594	6.064
ChurchAtt	4.043	4.043	.112	.692	.493	-7.749	15.836
Religiousperson	-4.195	-4.195	-.125	-.634	.530	-17.561	9.171
Religiosity	-4.883	-4.883	-.258	-1.255	.217	-12.744	2.977
OfteXercise	.717	.717	.025	.170	.866	-7.806	9.240
Relation	10.276	-10.276	-.485	-3.408	.001	-16.367	-4.186
Overtime	-6.146	-6.146	-.098	-.732	.468	-23.093	10.802
HrsOvertime	1.088	1.088	.083	.565	.575	-2.799	4.975
Affetors	.329	.329	.195	1.491	.144	-.117	.775
Newhealthcond	-.089	-.089	-.100	-.638	.527	-3.369	.192
Impactlifeevents	-.161	-.161	-.208	-1.347	.185	-4.404	.81
Newlifesatisfaction	.222	.222	.064	.554	.582	-5.86	1.030
Workconditions	.004	.004	.000	.002	.998	-3.353	3.360

5.12 Analysis of Variance

Several tests using ANOVA were conducted with a specific intention of examining whether there are any differences between and among groups in respect of their vulnerability to stress. The groups are Race groups, Age groups, Education/Qualification groups and Gender groups. The general postulate here is that there are differences between and among these groups regarding their vulnerability to stress.

5.12.1 Age and Vulnerability to Stress

Here the postulate is that Age differences would have a bearing on one's vulnerability to stress. Put differently, it is maintained that susceptibility to stress differs among individuals in different age groups. When this postulate is expressed in a null hypothesis and alternate hypothesis form one would state that:

$$H_0 : \mu_{Age:1-8yrs} = \mu_{Age:9-16yrs} = \mu_{Age:17-34yrs} = \mu_{Age:34+yrs}$$

(H_0 : There is no difference between age groups with respect to their susceptibility to stress.)

$$H_1 : \mu_{Age:1-8yrs} \neq \mu_{Age:9-16yrs} \neq \mu_{Age:17-34yrs} \neq \mu_{Age:34+yrs}$$

(H_1 : There are differences between age groups with respect to their susceptibility to stress)

The null hypothesis states that there are no differences with respect to people in different ages in their susceptibility or vulnerability to stress, while the alternative suggests that there are differences. This hypothesis was tested and the results are reported in **Table 5.23**. The F statistic obtained as reflected in this table is equal to 1.264. If we assume $\alpha = .05$ as the criterion or level of significance against which we determine significance in group differences, then the significance which is equal to .286 and is greater than the .05 level of significance, we, then, accept or fail to reject the null hypothesis (H_0). In other words, we have a non significant differences among the age groups. We, therefore, conclude that in terms of their susceptibility to stress, the different age groups do not differ significantly. In other words, the fact that one is of a particular age, does not necessarily render one more vulnerable to stress as against employees of other age groups

TABLE 5.23: ANOVA: Age and Vulnerability to Stress

	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	664.677	3	221.559	1.264	.286
Within Groups	76258.257	435	175.306		
Total	76922.934	438			

5.13.2 Educational Qualifications and Vulnerability to Stress

Educational differences were also postulated as having a bearing on one's vulnerability to stress. What this entails is that differences in one's educational level would render individual employees of different educational levels more vulnerable or susceptibility to stress by virtue of their education. When this postulate is expressed in a null hypothesis and alternate hypothesis form one would state that:

$$H_0 : \mu_{ECP-B} = \mu_{ECP-I} = \mu_{ECT} = \mu_{ECP-A}$$

(H_0 : There is no difference between educational qualification groups with respect to their susceptibility to stress.)

$$H_1 : \mu_{ECP-B} \neq \mu_{ECP-I} \neq \mu_{ECT} \neq \mu_{ECP-A}$$

(H_1 : There are differences between educational qualification groups with respect to their susceptibility to stress)

Where ECP-B = Emergency Care Practitioners - Basic; ECP-I =Emergency Care Practitioners - Intermediate ;ECT = Emergency Care Technician; and ECP-A = Emergency Care Practitioners- Advanced.

The null hypothesis above states that there are no differences with respect to individuals' educational qualifications with respect to their susceptibility or vulnerability to stress, while the alternate suggests that there are differences. This hypothesis was tested and the results are reported in **Table 5.24**.

TABLE 5.24: ANOVA: Educational Qualifications and Vulnerability to Stress

	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	789.577	3	263.192	1.505	.212
Within Groups	85339.600	488	174.876		
Total	86129.177	491			

The F statistic obtained as reflected in table 4.8 is equal to 1.505 and the Sig. is equal to .212. If we assume $\alpha = .05$ as the criterion or level of significance against which we determine significance in group differences, this significance (.212) is greater than the .05 level of significance. We, therefore, accept or fail to reject the null hypothesis (H_0). That is, we have a non significant difference among the educational qualification groups. We, therefore, conclude that in terms of their susceptibility to stress, the different educational qualification groups show no significant differences. In other words, the fact that one has a lower or higher qualification does not necessarily render one more vulnerable to stress as against employees of other qualification groups.

5.12.3 Race and Vulnerability to Stress

It was also postulated that belonging to a particular racial group would render one more susceptible to stress as opposed to employees of other racial groups. What this suggests is that differences in racial affiliation would render individual employees of different racial groups more vulnerable or susceptible to stress by virtue of their racial group. When this postulate is expressed in a null hypothesis and alternate hypothesis form one would state that:

$$H_0 : \mu_{African} = \mu_{Coloured} = \mu_{White} = \mu_{Indian}$$

(H_0 : There is no difference between racial groups with respect to their susceptibility to stress.)

$$H_1 : \mu_{African} \neq \mu_{Coloured} \neq \mu_{White} \neq \mu_{Indian}$$

(H_1 : There are differences between racial groups with respect to their susceptibility to stress)

The null hypothesis above states that there are no differences with respect to individuals' racial affiliation with respect to their susceptibility or vulnerability to stress, while the alternate suggests that there are differences. This hypothesis was tested and the results are reported in **Table 5.25**.

TABLE 5.25: ANOVA: Race and Vulnerability to Stress

	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	299.005	3	99.668	.567	.637
Within Groups	85830.172	488	175.882		
Total	86129.177	491			

The F statistic obtained as reflected in table 4.9 is equal to .567 and the Sig. is equal to .637. If we assume $\alpha = .05$ as the criterion or level of significance against which we determine significance in group differences, this significance (.637) is greater than the .05 level of significance. We, therefore, accept or fail to reject the null hypothesis (H_0). That is, we have a non-significant difference among the racial groups. We, therefore, conclude that in terms of their susceptibility to stress, the different racial groups show no significant differences. In other words, the fact that one

is of a certain race group does not necessarily render one more vulnerable to stress as against employees of other racial groups.

5.12.4 Gender and Vulnerability to Stress

Gender differences were also postulated as having a bearing on one’s vulnerability to stress. What this entails is that differences in one’s sex or gender would render individual employees of different gender group more vulnerable or susceptibility to stress by virtue of their gender. When this postulate is expressed in a null hypothesis and alternate hypothesis form one would state that:

$$H_0 : \mu_{male} = \mu_{female}$$

(H_0 : There is no difference between gender groups with respect to their susceptibility to stress.)

$$H_1 : \mu_{male} \neq \mu_{female}$$

(H_1 : There are differences between gender groups with respect to their susceptibility to stress)

The null hypothesis above states that there are no differences with respect to one’s gender with respect to their susceptibility or vulnerability to stress, while the alternate suggests that there are differences. This hypothesis was tested and the results are reported in **Table 5.26**

TABLE 5.26: ANOVA: Gender and Vulnerability to Stress

	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	476.289	3	238.145	1.360	.258
Within Groups	85652.888	489	175.159		
Total	86129.177	491			

The F statistic obtained as reflected in table 4.10 is equal to 1.360 and the Sig. is equal to .258. If we assume $\alpha = .05$ as the criterion or level of significance against which we determine significance in group differences, this significance (.258) is greater than the .05 level of significance. We, therefore, accept or fail to reject the null hypothesis (H_0). That is, we have a non-significant difference among gender groups.

5.14 Conclusions and Summary

We, therefore, conclude that in terms of their susceptibility to stress, gender groups are not significantly different. In other words, the fact that one is male or female does not necessarily render one more vulnerable to stress as against employees of the other group. This is attributed to the fact that both genders are exposed to the same affectors as both male and female does the same job, and work the same shifts and hours. There is no gender that gets preferential treatment over the other meaning that they are similarly affected as both sexes are equally exposed to external stressors in the EMS environment. It is evident from the analysis above that relativity to any group be it racial group, age group, educational qualification group, or gender groups does not render anybody vulnerable to stress by virtue of belonging to that group. So the work environment in whatever category of work, does not affect workers differently.

CHAPTER 6

FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter consists of the following; findings, discussion, conclusion and implications sections. The summary of findings aims at giving a summation of the findings as per the results after the data analysis followed by the discussion of results that explains the findings and determining their bearing on the lifestyles of EMS employees. The conclusion section looks at the conclusion based on the evaluation of the results and the last part looks at the implications and recommendations of the study pertaining to stress vulnerability among EMS employees.

6.2 Summary of Findings

It is very clear from the results that have been provided that disparities exist in EMS in terms of ethnicity, age, gender and qualifications. The results also show the relationship between the dependent and independent variables and how the independent variables influence the dependent variables. The level of satisfaction with life has a significant impact on one's vulnerability to stress as indicated in the analysis of the results. One of the models shows that variables have significant contribution to stress vulnerability. What was further noted is that gender, race, education level and position in EMS does not have any significant bearing on the development of stress vulnerability but this is dependent on how much an individual is exposed to stressors in EMS. No one group surpasses the other with regards to exposure but it is dependent on how often one is exposed to affectors. Based on the results we can conclude that the work environment of EMS employees has affectors that contribute significantly to development of stress vulnerability.

A brief description of the findings in this study was the center of discussion. A descriptive analysis approach was taken to look at the socio-demographic and Employment status profiles and characteristics of EMS employees in the study. A comparison of EMS employees per area of

operation was made. Gauteng yielded 66.5% and North West 33.5%. This is owed to the fact that Gauteng has more employees than North West province. Further to this, a comparison in terms of distribution of gender was made. The implication of this is that there is a need for more employees within the North West Province but this is limited by size of the population they service and the demographics of the province. For the purpose of this study, this does not have much negative bearing on the outcomes of the study as this is only to have a demographical picture of the provinces.

Further to this the ratios with regard to gender were looked at. This was necessitated by the fact that EMS is believed to be predominantly male orientated and this hypotheses needed to be tested. The test results came out positive and confirmed what the hypothesis has already alluded to. In this study, the percentage of males is 65.7% while 34.3% are females. This also confirms that the service was historically white male dominated due to the fact that this kind of job was seen to be more suitable for them. With the abolition of apartheid in 1994, this has seen the African males entering the job market. The other reason for the service to be male dominated, is the attachment to the fire service. For one to be in the fire services it requires strength and muscle in order to operate the high pressure water hoses during callout to extinguish fires. Females were seen not to fit into such environments due to their femininity. Females have recently started entering the EMS job market but the numbers are still low as some fear intimidation from their male counterparts and others feel that this is a male environment hence they do not show much interest in entering this job market. The situation has not changed much as females are still in lower numbers as already witnessed in the results already mentioned in the text. However, based on the results already mentioned we cannot conclude that females are lower in number and this warrant future studies with regards to the employment of female emergency care practitioners. This is also confirmed by Franks, Kocher and Chapman (2003:3) in a study they conducted on EMS in California. Their study confirmed that 69% of the population of the study was males as compared to 31% of females in the same service. In terms of gender equity in South Africa, there is very little movement in the EMS environment as women are not found in top management positions.

The next to be looked at is the distribution of EMS employees by gender, race and years of service. What this variable evaluated are the EMS employees according to percentages among race and

their years of experience in the service, as well as gender representivity among the workforce. From the results obtained it is evident that Africans in all categories constituting years of service are in the majority. Furthermore important to note that males constitute a higher percentage than females as already mentioned in the text above. This is historical based on the fact that the service has always been male dominated and will still be for a number of years to come. This confirms the statement already made earlier that males are in the majority as compared to females. Does this suggest that females do not stay longer in the service due to various reasons, or would the cause still be attributed to the fact that historically EMS was and still is a male dominated service. Is this a cause for concern or rather a call for future studies to be conducted in order to make conclusive pronouncements why females are lesser in number within the EMS workforce? The other races are also represented in the study but they are low in numbers and they include the Indians and Coloureds. According to the Census of South Africa (2011: 17) which was done states that blacks are 79.6%, Coloured 9.0%, Whites 8.9% and Asian 2.5%. This might also be attributing to the fact that Coloureds and Indians are so low in numbers within the Gauteng and North West Provinces. Census further indicate that Gauteng has 77.4% Blacks, 3.5% Coloureds, 2.9% Indians and 15.6 % Whites and North West has 91.2% Blacks, 2.0% Coloureds, 0.6% Asian and Whites 7.3%, with the results portrayed, it is a confirmation of the suspicion why the Coloureds and Indians are in smaller numbers within Gauteng and North West Provinces.

The other reason for the low representation of these races is because of the fact that most whites remained within the Fire service when the ambulance service and fire services were split and thus Whites would be found in lower numbers within the EMS workforce. An assumption is that they are in large numbers within those provinces due to the fact that their population bases are in those two provinces. Census South Africa (2011: 17) confirms that in the Kwa-Zulu Natal province Coloureds are 1.4% and Indians are 7.4% and in the Western Cape Province Coloureds are 48.8% and Indians are 1.0%. This confirms the statement made earlier that Indians and Coloureds are mostly found in the two provinces. And the inverse is true regarding Africans that are relatively represented in the two provinces as compared to Gauteng and North West as already indicated in the study results.

What the study also looked at is the satisfaction of EMS employees with their work. There is reason to believe that Job Satisfaction has an impact on stress vulnerability. The study seeks to confirm whether this assumption is true or not and what this means for EMS employees and the service. There has been various definitions of Job Satisfaction which were used by different authors. What we need to unearth from this study is that, does job satisfaction have any impact on stress vulnerability among EMS employees? Bradley, Petrescu and Simmons (2004: 5) conducted a study on job satisfaction and they assigned various degrees of importance to sources of satisfaction, which can be classified as intrinsic (depends on the individuals characteristics such as attitude) and extrinsic (sources that are situational and dependent on the environment such as the workplace climate). Intrinsic factors can still be controlled by the individual and extrinsic cannot be controlled. This is a confirmation that the work environment might have an impact on the individual. Whereas Bowron and Todd (1999) argue that job satisfaction and job performance are positively correlated. They further went on to state that it is important that EMS managers predict and identify the predictors of job satisfaction in order to maximize job performance among EMS employees. The results of the study conducted by Bowron and Todd (1999) showed that about 15% of a population of ninety paramedics was not satisfied with their work. This can also be confirmed by the results in the study conducted by (the researcher at Masters level) Sibanda (2007: 24) which shows that 14% had low life satisfaction and about 40% had moderate life satisfaction. This in itself shows that there is some form of dissatisfaction with life at work by EMS employees.

This present study seeks to determine whether any correlation between life satisfaction and stress vulnerability exists. With the results that are in table 5.13 we can conclude that there is a form of a relationship between stress vulnerability and life satisfaction. Table 5.14 and table 5.15 shows the results of the correlation between dependent and independent variables. We can therefore conclude that even though the correlation is not as high as expected, however the results are statistically significant in that they represent what the study wanted to determine. It is concluded on the basis of these results that there is significant relationship between stress vulnerability and life satisfaction. The Emergency Medical Services in the country and not limited to Gauteng and North West Provinces has seen a migration of scarce skills to other countries that offer better perks. Paramedics leave the country in droves hence depleting skills in the country and consequently the level of patient care dropped. In Gauteng EMS for the past few months there has been close to ten

paramedics that left the country to and work in Ethiopia, Somalia, and parts of Africa and in the oil rigs and mines Gauteng EMS Persal (2013). Other paramedics that remained in the country went into businesses that are related to EMS, either being the supply of medical equipment, conversion of vehicles into Emergency vehicles or private ambulance services. There has been a gradual decline in the quality of service due to staff turnover from unhappiness within the services. During exit interviews, most paramedics cited low salaries and the working conditions and shortage of equipment as major reasons why they are leaving the service and the red tapes in the government has created the gap and delays in improvements to the EMS environment.

Thus the implications of EMS employees not being satisfied with their job would mean that they would not be in their right mind set to take life-threatening decisions that would have an impact on the patient's life. Lack of passion for the job and not being satisfied with ones work can be detrimental for decision making in terms of what treatment needs to be given to the patient and thus failure to take such decisions timeously might lead to the demise of the patient and even death at times. The other implication is the staff turnover that results in scarce skills and higher qualified practitioners leaving the service. This leaves a gap in the clinicial field and thus decreasing the level of patient care. The implications of higher qualified practitioners leaving the service result in lower qualified staff not getting medical back up they need and thus the services are then outsources to private ambulance services. The outsourcing of calls to private ambulance service comes at a cost for the department. This also creates uncertainty among staff employed by the province as they fear that they are at risk of losing their jobs. All these have a snowball effect with one ultimate outcome – service collapse.

What the study further wanted to determine is whether age has a significant bearing on the development of stress vulnerability among EMS employees. There is reason to believe that there is correlation between the age and the stress vulnerability. This assumption is based on the researcher's personal experience and thus needed to be tested. The researcher has reason to believe that the longer one is in the service and the older one gets while in the service, the more is one exposed to the development of vulnerability to stress and that the symptoms become greater with increasing age. Clarke (1995: 285) conducted a study on vulnerability to stress and age on 283 University students. His study revealed that only age and hardiness contributed significantly and

minimally to variance in vulnerability. Young and hardy students had better health habits than old or less hardy ones. Researchers like Rudolf and Hammen (2003: 660) also conducted a study on age and gender as determinants of stress exposure. Their study revealed that consistent with predictions, age and gender-related patterns of life stress varied across the type and contexts of stressors. Most, notably adolescent girls experienced the highest level of interpersonal stress, especially stress and conflict that they associate with self-generated events. Robert, et al (1987: 1057) conducted a study on 159 children who were exposed to a sniper attack at their elementary playground. Systematic self-reports of posttraumatic stress disorder symptoms were obtained by use of a child PTSD Reaction Index (PRI). ANOVA revealed significant differences by exposure but not by sex, ethnicity or age. The results provide strong evidence that acute PTSD occur in school-age children with a notable correlation between proximity to the violence and type and number of PTSD symptoms. Studies conducted by Clarke (1995) and Rudolf and Hammen (2003) reveal that as one grows older and become more cognisant to stress, significant symptoms are seen because one has developed an understanding of the condition. Whereas Robert, et al (1987) conducted a study on elementary children which revealed that stress is not related to age because their cognisance to life and stressors has not fully developed yet.

However, Robert, *et al*(1987:12) confirms what the results from the analysis of data conclude that there is no difference with regards to age groups being susceptible to stress. In other words, the fact that one is of a particular age does not necessarily mean that one gets exposed differently to affecters. It does not mean the one age group is affected differently to the other age groups. We therefore conclude based on the results that age has no bearing on susceptibility to stress and, thus, this does not have any major implication to the service. However, what needs to be noted is that any one age category must be dealt with when doing psychological interventions within EMS and no group is to be left out as they get affected all the same because they are exposed to the same affecters. Further research needs to be conducted in EMS according to different age categories and the study must be ongoing to try and determine whether different age groups are affected differently to stressors or not.

The study further looked at whether the level of education has any impact on stress vulnerability among EMS employees. Very little or no literature has been found that explain the phenomenon

involving education as a precursor to stress vulnerability. One has to depend on the results at hand to come up with a conclusion as to whether education does impact on stress vulnerability or not. The result in this study indicate that there is no significant difference among the educational qualification groups and therefore we conclude that in terms of their susceptibility to stress, the different educational qualification level groups show no significant differences. In other words, the fact that one has a lower or higher qualification does not mean that one is exposed to stress vulnerability differently to the other employees of a different qualification groups. Therefore, there are no major implications to consider when dealing with different levels of qualifications as they are exposed to the same stressors equally and are affected the same. This must be borne in mind when dealing with employees of different qualification levels and none must be discriminated against or advantaged above the others because of their qualification levels. In EMS just like in the defense force, qualifications and rank gives the higher qualified the upper hand hence they might receive preferential treatment above the lower qualified. This should not be case when it comes to managing stress vulnerability within the EMS environment as emotional scars do not discriminate nor select according to qualification levels.

We hypothesized that employees in EMS are exposed to stress vulnerability according to their ethnic/racial denomination and gender. What this means is that employees of different races and gender groups would be exposed differently to stress. It is assumed that the one race group is exposed to stress vulnerability differently to the other and the same assumption is applied to gender within EMS. George and Lynch (2003: 44) examined race differences in depressive symptoms. Their hypotheses were that growth in exposure to loss-related events will predict growth in depressive symptoms and that African Americans will experience greater stress growth. Their study revealed that African-American experience greater stress growth than whites. Neff (1985: 481) conducted a study to look at the possibility of race differences in vulnerability to stress. Life-change-distress paths were slightly larger among blacks than among whites. This confirms the suspicion by the researcher that different race groups are affected differently by the vulnerability to stress. This stems from the fact that some racial groups do not report or want to consult fearing that they will be regarded as the weaker ones among their peers. However, based on the results of this study we therefore accept or fail to reject the null hypothesis. This therefore means that racials groups show no significant deifferences in relation to susceptibility to stress. In

other words, the fact that one belong to a different race group does not mean that one is exposed to stress vulnerability as compared to the other racial group. This therefore conclude that EMS employees are exposed to stress vulnerability regardless of their race group. This stems from the fact that they are exposed to the same stressors regardless of their racial grouping.

In a study conducted by Auerbach, *et al* (2012:61) the results indicated that in girls, low perceived control contributed to a greater occurrence of dependent interpersonal but not non-interpersonal stressors, which then triggered higher levels of both social anxiety as well as total anxious symptoms. In contrast, for boys, the stress generation pattern only emerged when examining physical anxious symptoms. The same applies with relation to gender, and mostly the male group would not want to expose themselves as a weaker link and for fear of stigmatization. There is also a misconception where psychological illness is confused with psychiatric illness, hence most fear being labeled as “crazy” among peers. There is very little or no research conducted on this variable. Therefore, the results that were yielded when data analysis was done indicate that there is no significant differences among races in relation to the development of stress vulnerability. This in itself then means that no racial or gender group should receive preferential treatment above the other as all are exposed to the same stressors equally and, therefore, would suffer from stress vulnerability symptoms. It therefore means that each employee would receive intervention according to the severity of the signs and symptoms and not because they belong to one or the other group. Therefore, literature regarding gender and stress vulnerability fails to articulate whether each group is affected differently to stress vulnerability. Pugliesi (1999: 97) conducted a study on gender and work stress and states that most studies of work stress involve samples of male workers. The hypothesis of differential vulnerability contends that women would be more responsive than men to work stressors. The differential exposure hypothesis proposes that there is no gender difference in the effects of work stressors, but patterns of occupational segregation increase women’s exposure to detrimental job conditions. Her study explored gender differences in the effect of work conditions on psychological distress and self-medication. However, the results of her study do not support the hypothesis of general differential vulnerability. The only difference observed indicates that women are less responsive than men to job demands. The study therefore concurs with the results of this study wherein sex or gender is found not to be a determinant in exposure to stress vulnerability.

The next set of results looked at employees with respect to their qualifications, years of service and current position. It is evident from the results that most of the employees who are the operational workforce fall within the ECP-B category and they constitute 53.3% of the work force. Most of the ECP-B practitioners either do not have an interest in furthering their studies or they never get opportunities to go and study hence the figure is so high. They are followed by ECP-I with a 25.96% representation. The majority of these employees are the ones that have been working within the organisation who started out as ECP-B and through the years managed to obtain an ECP-I qualification from within the department and the training is provided for by colleges within the respective provinces of operation. They are followed by the ECT who constitute 09.34%, and the reason why they are of such an amount is because the ECT course is fairly new with its launch in 2007 by the Deputy Minister of Health, by the late Dr Sefularo in the North West province. There are only two courses scheduled per year and they are allowed to take only 24 learners per course. This has seen the first group graduating in April 2009 hence the number is still low. The next category is the ECP-A which represents 01.59% of staff. The reason why they are such a minority is attributed to the fact that they are a scarce skills category of employee as not everyone manages to attain this qualification category due to its difficulty and toughness. Most of the others that managed to obtain the qualification no longer work for the service but have found work on the international platform and some have ventured into EMS related businesses. Others that remain either occupy management positions and the remainder thereof constitutes the 01.59% already projected in the results section. Some of the ECP-A leave the service due to the low salaries they are paid and hence look for greener pastures with the Private Ambulance Service providers who pay better. They thus prefer to join the private sector, rather than stay within the public sector because it does not pay much and the work environment is not as conducive for them. Researchers like Singh, Reddy & Prakash (2012) conducted a study that looked at stress vulnerability among professional students from different areas (Medical Students, Engineering Students and Physical Education Students). The study further wanted to compare stress vulnerability among professional students from different areas. The results of the study confirmed that there is significant difference among Medical Students, Engineering Students and Physical Education Students in relation to Stress Vulnerability. Physical Education Students possessed a greater/higher Stress Vulnerability in comparison to Medical and Engineering Students. However, their study did not address the

differences between the level of education but rather the different streams of education. It is clear from their study that individuals in different streams of education are affected differently by stress vulnerability. The current study wanted to look at whether there are differences in exposure to stress vulnerability according to the different levels of qualifications being Basic Life Support (BLS), Intermediate Life Support (ILS), Emergency Care Technician (ECT), and Advanced Life Support (ALS). In the literature review chapter 3, it was indicated that employees who possess a lower qualification would be exposed differently to stress vulnerability as compared to those that possess higher qualification.. However, looking at the results from the collected data, it is clear that differences do not exist. We, therefore, conclude that in terms of their susceptibility to stress, the different educational qualification groups show no significant differences. In other word, the fact that one has a lower qualification to the other does not mean one will be exposed differently to stress vulnerability.

Further analysis indicates that staff employees in EMS, who hold current position as managers, are a total of 35 which is 07.97% of the whole workforce. For instance, 10 (2.28%) have an ECP-1 qualification, and 13 (2.96%) have an ECT qualification, while 12 (2.73%) have acquired an ECP-A qualification. It is, however, interesting to find that 17 (3.87%) out of a total number of 35 (07.97%) managers have only 1 to 8 years of experience as opposed to 18 workers whose years of service are between 9 and 35+ years. From this table, it is evident that many of those with relatively less years of service are in managerial positions. This might mean that employees in managerial positions are generally recruited from outside the service as opposed to being promoted from within the ranks. This is true for EMS in both Gauteng and North West as most employees either do not meet the criteria as per the requirements for the position or some do not show interest based on personal reasons. What further contributes to this is the fact some are not sufficiently qualified to occupy such position or do not have the required years of experience as per the Occupation Specific Dispensation (OSD, Res 3 of 2009), which stipulates the years of experience in a specific qualification category before occupying the next higher position. This puts a limitation and strain on EMS as some employees are very good at holding such positions but are never afforded the opportunity based on the OSD stipulations. There is reason to believe that the position that one holds would have different outcomes when it comes to stress vulnerability. This is based on the fact that managers get out operations and focus on administration and by virtue of

that, they are less prone to stress vulnerability. Management in EMS are a fraction as compared to the workforce on the ground. This would then yield results that are somehow biased towards the workforce than managers. The aim of this results was to highlight the percentage of managers within the service as compared to the workforce on the ground.

The last focus of interest is on the distribution of staff with regard to their current positions, gender and years of service. The variable of interest is gender where we want to establish as to whether there are any differentials between the two gender groups with respect to years of service as they relate to current position in the service. The total number of males in the operational sphere is 258, i.e. 58.77%, while 25, i.e. 5.69% are in management. On the other hand females in the operational category are 137, i.e. 31.21%, while those in management are 10, i.e. 2.28%. It is evident from this table that those with 1 to 8 years of service constitute the majority in the management category. Males again predominate in this category. In any EMS service in the world, this is true as mostly males were historically in the service from the period when the services were combined with the Fire services. Most if not all held dual qualifications in the Fire and medical services. With the splitting of the services, this has seen some go to the ambulance services and females were barred from entering into the job market because of the inherent physical strength requirement. In recent years, especial the period post the splitting of the services, this has seen the criteria for women to enter the emergency services been relaxed especially on the ambulance side as this needed more mental fitness than physical fitness. In recent years, due to occupational hazards experienced in the past, EMS was forced to move from the stretchers that are lifted by two to four persons when loading and off-loading from an ambulance, to the self-loading type stretchers which are in most cases single-person operated. This does not need physical strength but rather the mental capacity to operate it. This has allowed females to enter into the market and thus most can comfortably operate the self-loading stretchers. This has opened the opportunity for females who are passionate about saving lives to enter the EMS job market.

What was looked at next was the dependent variable as it was impacted upon by the independent variables. More powerful statistics were used to analyze the data and the regression analysis and analysis of variance were used to get to the conclusion. What the study sought to achieve is the determination of to what extent EMS employees are affected by stress vulnerability in Gauteng

and North West Province. This will give us an understanding of EMS employees's emotional wellbeing.

In chapter 5 a complete correlation matrix was represented in which variables in the study were correlated in order to establish whether there might be possible relations between them or among them. A preliminary analysis of the variables assisted in choosing the variables that were included in the regression models and they will be included in the models if their correlation is sufficiently high. From the examination it is evident that the correlation between variables: New Health Condition and Impact of Life Events yielded a correlation status of .60 whereas the rest yielded a correlation range of .023 to -.298 which are relatively low but does not necessarily mean they will be excluded as they have statistical significance in the study. This in itself means that every variable that is mentioned in the study cannot be excluded as they have a part to play in the study even though the significance is very low.

Several models were tested to determine the extent to which variance in the dependent variable is explained by the independent variables in the study. Both simple and multiple regression models were postulated to determine this fact. The first model that was postulated was that Life Satisfaction among workers would have an impact on Stress Vulnerability. What was further hypothesized was that the difference in vulnerability to stress is a function of the extent of satisfaction one has in life. The correlation coefficient equal to .243 and an R^2 of .059. What is important to note is that the variables used in this study are trying to determine how these positively or negatively impact on the development of stress vulnerability.

In chapter 5 the results of a model are presented. This model yields the best fit with a multiple R equal to .748, while the coefficient of determination is $R^2 = .559$, i.e. 56%. All the variables in the model in combination account for 56% of the variance in Stress Vulnerability. It should be noted that the level of significance against which we test the significance is ≤ 0.05 . A close examination of the model as reported in table indicates that the sum of squares due to regression, viz. 8280.571 is greater than the sum of square due to residuals, i.e. 6529.659. That is the variance accounted for by variables in the model is greater than variance accounted for by variables not in the model. Since we assume $\alpha = 0.05$ as the criterion or level of significance against which we

determine significant contribution to the variance in the dependent variable, our obtained F of 2.737, with a significance level of .003 is \leq than the 0.05 level of significance, we therefore conclude that the contribution by the variables in the model, in combination is significant in accounting for variance in Stress Vulnerability. Comparatively, this is the best fitting model that explains how the independent variables influence the dependent variables.

The main interest was to determine whether there is any statistical significant (non-zero) linear relation between the dependent variable (Stress Vulnerability) and the fifteen independent variables. We have observed that the sum of squares due to regression in all the thirteen models, are less than the sum of squares due to residuals. This then suggests that the explained variance in the dependent variable is accounted for more by variables that were not included in the model. This means that there are other variables that were not included in the model that would have a much impact on stress vulnerability as compared to the variables that were tested using Model 1 in the study. This then simply means that there is a need to conduct another research to look at other variables that may have an impact on stress vulnerability and its significance. However, the variables as tested in the model are not out rightly dismissed because even though they do not fit the data, they are statistically significant in relation to stress vulnerability.

Another model presented in table 5.18 yields the best fit with a multiple R equal to .748, while the coefficient of determination is 56% meaning that all the variables in the model in combination account for 56% of the variance in Stress Vulnerability. It is important for better understanding to revisit the variables that are referred to in this model and they are: *Age group, Qualification, Current Position, Years of Service, Smoking, Regularity of Smoking, Take Alcohol, Exercise, Relation, Overtime, Hours of Overtime, Affecters, New Health Condition, Impact of Life Events, New Life Satisfaction and Work Conditions*. However, what needs to be noted is that some of the variables mentioned in this model, on their own have an impact on Stress Vulnerability and they are **age** and **qualifications** which will be discussed in much detail in the preceding discussions. What further need to be kept in mind is that the variables as a combination have significance in the study. What could not be thoroughly determined was up to what extent each one has a contribution to stress vulnerability. This model however yields the best fit with a coefficient of determination of 56% meaning that all the variables in the model when combined yield 56%. What would be

interesting to find out is what each variable yield alone so that we can see how much influence each has on the dependent variable. The implication of the combination of variables for EMS employees then means that they are affected by a number of variables into the development of stress vulnerability. This then confirms the suspicion of the researcher as there are several variables found in EMS that have a negative impact in the emotional wellbeing of EMS employees. In this study the variance yielded may seem rather low but researchers like Pfeffer (1982) in Finchman (1999:4) states that the aim of variance theories is to develop a theoretical structure that is consistent with data while being parsimonious, interesting and conceptually sound. King (1990) in Finchman (1999: 7) states that there is a logical fallacy in that one cannot logically determine which model is true given the data. King further states that the best that one can do is to determine which model is most likely to generate the data. Scholars like Lieberman (1985: 104) in Finchman (1999: 7) suggests that any judgement by the about the explanatory power of a theory will be affected by the nature of the data set. There are two equally valid and at least partially separate questions involved here. The first refers to whether a theory is correct and the second refers to whether it helps us understand a given phenomenon. In this study perse the theories utilized helps understand the stress vulnerability phenomenon and how this impact on the lives of EMS employees in Gauteng and North West provinces. While other researchers believe that the value depends on the study itself. People like Duke in his study looked at the value of the R squared and states this depends on how you measure it. If you measure it as a percentage of the variance of the original series, then a simple time series model may achieve an R-squared above 90%. On the other hand if you measure R-squared as a percentage of a properly stationarized series, then an R-squared of 25% may be quiet respectable (in fact, an R-squared of 10% or even 5% may be statistically significant in some application, such as predicting stock returns). So to support the statement, it depends on the study itself as most of the variables have a significant role to play in contributing to the outcome of the study. In this study, most of the variables have a significant stastical role they play hence they cannot be dismissed based on the outcomes of the variance. What needs to be looked at is what statistical significance do they have to the study. Whether great or small a role, these contribute in highlighting that a problem does exists and each variable has a role to play no matter how small. This raises curiosity as to what role they have to play when are associated with dependent variables on their own instead of as a group of variables.

Each of these variables were looked at in the literature review chapter and hence their contribution to stress vulnerability can be looked at to ascertain what impact they have on the EMS employees.

Current position for EMS employees simply refers to where one is in the hierarchy in EMS. Those that are on the ground level are believed to be of lower qualifications and earning a low salary because promotions in EMS are based on the qualification you hold in the service. EMS promotions are determined by the OSD manual as prescribed by the Department of Public Service. This bars anyone from being promoted without meeting the qualification requirements and the years of service in the same qualification. This in itself means that no one person in EMS can be promoted because they know someone as this is applied very strict. The lower one is in the hierarchy, the less salary you get and this is a frustration to many as they earn a salary sufficient enough to take them through life. Years of service can be coupled with current position as it also contributes to the promotion criteria that is used according to the OSD manual. One has to be more than 10 years in the same position and qualification level to be promoted to another level or grade. This is a long period which means that most will be frustrated as they can only be promoted and earn a higher salary once they meet this criterion. This added with other stressors and conditions at work exacerbates the development of stress vulnerability in the EMS environment.

There is reason to believe that over time smoking does lead to stress vulnerability. Will, Sandy and Yaeger (2002: 122) conducted a study on 1,364 adolescents. Their study was a comparative test of hypotheses that stress is an etiological factor for smoking and cigarette smoking causes increases in stress. This study was conducted at 3 yearly intervals. Measures of negative affect, negative life events and cigarette smoking were obtained. The latent growth modeling showed negative affect was related to increase in smoking over a period of time. Latent growth modeling showed negative affect was related to increase in smoking over time and there was no path from initial smoking to change in negative affect. This confirms that smoking has an effect on stress vulnerability and thus EMS employees were found to be smokers. On the inverse Ansell et al (2012: 200) examined the effects of cumulative stress and impulsivity on smoking status. Their study was conducted on 291

men and women from a community sample to assess cumulative stress, self-reported impulsivity and smoking history. Data were analyzed using the bootstrapping techniques to estimate indirect effects of stress on smoking via impulsivity. Cumulative stress is associated with increased risk of smoking via increased impulsivity and via pathways independent of impulsivity. This study confirms that people smoke because of stress and some develop stress due to smoking. EMS employees are not unique to this as they too either smoke because they are stressed by the working environment and external stressors or they develop stress due smoking too much. The implication thereof means that they now get exposed to other lung related infections like pneumonia and emphysema due to smoking habits and frequency and most of them end developing into chain smokers.

Stress and alcohol has been seen to go together. What needs to be determined is whether people drink because they are stressed or they are stressed because they drink. In a study conducted by National Institute for Alcohol Abuse and Alcoholism (2013), want to determine whether stress influences drinking. The study revealed that whether an individual will drink as a means of coping with economic stress, job stress, and marital problems, often in the absence of social support and that the more severe and chronic the stressor the greater the alcohol consumption. Some researchers have found that high levels of stress may influence drinking when alternative resources are lacking, when alcohol is accessible, and when individuals believes that alcohol will help to reduce stress. This is not unique to this study by NHIAA as this can be found among EMS employees. They consume alcohol because they believe that EAP is not available or rather ineffective hence they do not bother to consult and seek for help. They further believe that when they go and seek help at the EAP offices, they would be regarded as weaklings by their peers. Due to the lack of pastoral and psychological services unlike in the past 10 years, this has seen many EMS employees finding solace in alcohol. This creates a problem for EMS as a service as they start experiencing alcohol abuse and high absenteeism rates that result in most abusers taking unnecessary sick leave days. This further creates conflict between manager and employee as some come to work under the influence or they drink on the job especially when they are on night shift. This poses a danger to the patient, the partner in the emergency vehicles and the public road users as they would work under the influence and

because there are not managers at night, there is no proper control over such. When such employees are found to be under the influence, disciplinary procedures are instituted against them which further creates more stress for them due to the fact in most instances they are given unpaid leave for the day and warning letters gets issued. This in itself exacerbates the situation and they end up being worse off than they were before.

Exercise or the lack thereof can contribute to the development of stress in EMS employees. For most men, exercise was some form of relief for them after traumatic incidents. In most bases in Gauteng and North West, there is no gym equipment for EMS employees to exercise. This means that they lead an unhealthy life because even their eating habits are not healthy. Exercise is believed to relieve stress in one way or the other as exercise stimulates the release of hormones into the system that strengthens the heart and lung muscles thereby prolonging life. However EMS employees has irregular eating times and eating habits as they do not have a fixed lunch hour and eat whenever they get a gap and in most instances they are able to buy junk food which adds up to the unhealthy life they are living.

Overtime has always been considered a source of extra income by EMS employees. Overtime and overtime hours are the two variables that have an influence on stress vulnerability together with the other mentioned variables. Most employees work overtime to ensure that they get extra income. This they do mostly when they are on their four-days-rest-period. This further means that they do not get enough rest as some would work three days during their rest period thus giving them only one day rest and they would go back to work exhausted. With the public service and all the red tapes that exist, payment of the worked overtime is never paid on time. This creates stress for some of the employees as some of them tell their partners they are working overtime and if the money is not paid, their partners accuse them of lying. Lu, *et al* (2005: 9) confirms the statement that working overtime and shift work are related to development of work-family-conflict. He says that one of the major causes of work or family stressors has to do with not having sufficient time to dedicate to both equally. This is true with EMS employees as most commit to

dedicate enough time to work because the more hours you put in the more money you get paid out. Studnek & Fernandez (2008) conducted a study on overtime work in EMS in the USA. The study revealed that 70% of EMTs worked some sort of overtime. This confirms the fact that overtime work is not unique to South Africa as this is practice in most countries in the world and other sectors of government.

Affectors as well as work conditions in EMS have an impact on the wellbeing of employees. There are several affectors and from the researchers personal experience they are not limited to the following:

Stress due to being threatened by bystanders at the scene of the accident thereby putting the life of the emergency medical employees at risk. Most of the time this occurs when the bystanders are the ones that has either assaulted the injured person that needs attention and they want to prevent him/her from receiving medical treatment. Some of the EMS employees are assaulted by either family or people on the streets when the ambulance arrives late due to the non-availability of sufficient resources that result in the ambulance response.

There were incident reported of employees being robbed, mugged and their valuables taken. Some of them stabbed and be shot at by these very robbers. The kind of conditions that EMS employees find patients in at times is more than what the human eye can comprehend. Most see decapitated bodies, avulsed and torn off body parts due to accidents, bodies that are burned beyond recognition, being run over by trains and busses, etc. All these can have a greater negative impact on EMS employees and their emotional wellbeing. This in itself renders most of them unsound to treat patients hence they need to be exposed to psychological interventions or the EAP to start with.

Other medical staff are harsh on them when they take patients to medical institution which builds up the anger in them and they sometimes take it out on their peers or partners and some chose to stay away from work hence the high number of sick leave that most take just to be off from work over and above their four days off.

Work conditions in EMS were found to be the major contributor to the development of stress vulnerability. There are various factors that can lead to EMS employees being stressed. The work environment, management style, conditions of the working areas, the kind of work EMS employees perform, the condition of the equipment and vehicles they use, the management style and approach. All these contribute to employees being very aggressive and show symptoms of stress in the long run. The managers also contribute to the negative working conditions that the employees find themselves in and it is frustrating for them to work in such environment. They also face the harsh realities of weather as they mostly work outside on the streets through rainy, cold and extremely hot weather conditions. This becomes frustrating as their counterparts in the medical field like doctors and nurses work in controlled environments. Little or no research has been conducted into how work conditions in EMS affect the development of stress vulnerability. There is a need to conduct further studies that will look at the work conditions individually and their impact on stress vulnerability. This would assist in unearthing what the specific work conditions that impact negatively on the emotional wellbeing of EMS employees.

With all of the above variables and the extent to which they impact on EMS employees, it is very clear that one can develop stress vulnerability especially in the environment within which they function and the conditions they work under., it creates an environment where EMS employees are exposed to the development of stress vulnerability. This in itself requires further research to be conducted on each variable to determine to what extent each has an impact on stress vulnerability especially in the EMS environment. Further research will unearth the conditions and circumstances that lead to the development of stress vulnerability as well assist the department in realizing the extent of the condition and its impact on the service as whole. This will further assist the department to strengthen existing strategies and come up with new ones to ensure that stress vulnerability is controlled to render EMS employees efficient in service delivery

6.3 Implications of the study

The outcomes of this study suggest a number of factors, namely that:

Stress vulnerability is not influenced and related in any way to the age, gender and racial orientation of EMS employees. It further means that all individuals will suffer from stress vulnerability based on the level of exposure to affectors.

Different employees are affected differently by effectors that lead to the development of stress vulnerability hence each case must be handled on its own merit.

Africans are in the majority in the service as witnessed in the analysis of the study results and this being the result of employment equity and staff turnover of the majority of white employees. There is no racial representivity in the service given the result already discussed in chapter 6. This further suggests that the department of health must look into the recruitment, selection and retainment strategy in order to keep such employees as they have the experience and expertise needed in the service.

What the study further unearthed is that there is high staff turn-over of skilled staff due the implementation of the OSD which limits department to exercise to option of offering scarce skills EMS employees, better salaries and as a result, they go job hunting in the private sector or internationally.

Gender equity is a problem in EMS as women are found in lesser numbers 34.3% as compared to males at 65.7% and thus confirms that the service is historically male dominated and thus entry for women into the services has been barred by the physical orientation of the job and the historical employment criteria to employ males only as their job depended on the physical strength. Females are found in lesser number even in management positions based on historical employment criteria and the nature of the job.

Further implications of the finding suggest that there is need for further evaluation and assessment of the service to determine the concrete cause of stress vulnerability development among EMS employees.

This further suggest that the Department of Health not only limited to Gauteng and North West provinces, needs to invest money into looking after the wellbeing of EMS employees as emotional wellbeing is unheard of in the EMS environment.

These results suggests that there is an absence or insufficiency of EAP services in the service and this needs to be looked into to beef up such services in order to have.

There is greater need to establish debriefing committees led by professionals in order to debrief employees upon their return from multi-casualty or traumatic incidents.

6.4 Contributions of the study

Following the implications of the study, the contributions of the study will be helpful in ensuring that the department of health learns from what other areas has done with the emergence of such a condition. This study seeks to understand the “work conditions and experiences of Emergency Medical Services Personnel in the Department of Health in Gauteng and North West Provinces. The researcher has reason to believe that very little research, if any, was done to understand this phenomenon and the conditions under which EMS employees operate. In chapter 1 of this study it is stated that they work under harsh conditions, under duress and even with limited resources. One can only imagine the frustration that these employees experience in their everyday life at work when they are charges with the responsibility of saving lives at the cold face of emergencies. The researcher can confidently state that a study of this nature was never conducted in the South African context that looks at the conditions and experiences of EMS workers. Studies already conducted in EMS in South Africa focus on the development of post traumatic stress disorder, the shift system and the migration of Emergency Care Officers out of the service, but none has focused on what this study aimed at achieving which is trying to understand the work experiences and conditions of EMS personnel in South Africa even though the focus was on two provinces.

The reason for conducting this study is motivated by personal experience which showed the deteriorating conditions of EMS employees due to lack of support services aimed at helping employees cope with their job. Different studies has been conducted outside of the borders of South Africa that focused individually on the each aspect of this study and not jointly as this study has. There are several studies that focused on work conditions of health care workers in general and not specifically focusing on EMS employees. Authors like Pomaki, Maest and Ter Doest (2004) conducted a study among health care employees. They wanted to discover if the employee

wellbeing is predicted by work conditions. In their study the authors considered correlates of employee psychosocial distress and well-being using a goal-focused approach grounded in Ford's motivational systems theory. They focused on work conditions and midlevel worker goal processes (WGP) using a questionnaire. Of importance however is that WGP is explained in the variance in job satisfaction, burnout, depression and somatic complaints. This means that investigation of WGP can enhance the understanding of employee psychosocial distress and well-being. It is clear from the study conducted by the authors that work conditions have a significant impact on employee wellbeing and this needs to be investigated thoroughly to unearth whether this has any bearing or not. This is an indication that work conditions of EMS employees might have an impact on their wellbeing and this need to be investigated further to look at the extent to which work conditions affects employees. Further and broader studies needs to be conducted to look at this impact in depth. This will give an indication as to what approach needs to be undertaken by the employer to ensure that the work conditions of EMS employees are conducive for them to operate in.

The study conducted by authors indicated earlier is confirmed by researchers such as Tkach and Rumpf (1995) who conducted a study on EMS employees. Their study revealed that when EMS employees leave their training they are armed with newfound knowledge but usually lack the appropriate life skills to excel and survive on the streets. As the new providers enter the real world of EMS, they face challenges of making life-and-death decisions in uncontrolled environments. This includes making appropriate decisions while functioning effectively even in potentially dangerous settings. The high job stress this creates often leads to burn out and high turn-over rates. This is the situation with EMS in South Africa. Some employees are thrown in the deep end where they do not even have the support system to induct them soon after training. Bakker, *et al* (2003: 17) also conducted a study among employees working in different home care organizations. The central assumption in their study is that burn out develops when certain job demands are high and when job resources are limited because such negative working conditions lead to energy depletion and undermine worker motivation and learning opportunities. The results in their study showed that job demands are primarily and positively related to the exhaustion component of burnout, whereas job resources are primarily related to cynicism (negatively) and professional efficacy. In EMS just like any other working environment, you need to have the minimum equipment that is needed to perform your duties and without them, not much can be done. EMS being a pre-hospital

emergency service requires these equipments in order to save lives. Without these, it would mean that some patient will lose their lives as basic resources like Oxygen would not be available to treat life threatening life conditions such as a heart attack which requires one to have a high oxygen concentration in the body in order to properly perfuse the heart muscle to prevent them from dying off and later create further heart conditions. This resource is regarded as a schedule one medication as is readily available and does not need to be purchased through the pharmacy. Without these basic resources EMS employees become very frustrated and thus most feel inadequate to perform their function and thus regard the work conditions as not conducive for their operations. This contributes to staff turnover especially skilled staff as they get better remuneration within the private sector environment and outside countries that tap into the skills in South Africa to better their own EMS systems.

In chapter 5 of this study it is clear that work conditions were measured as part of the correlation co-efficient to determine whether this has any contribution or has an impact on the wellbeing of EMS employees. It is rather difficult to ascertain as to what extent EMS work conditions impacts on the wellbeing of EMS employees as this variable was looked at in conjunction with other variable and collectively yielded results that showed some impact to EMS employee wellbeing. What would be interesting is to see what future studies reveal when work conditions is looked at in its entirety to determine how much impact this has on employee wellbeing.

As already stated by different researchers as indicated in the literature review chapter of this study, it is believed that for an individual to be satisfied at work, they need to function in an environment that is conducive for them. This would have a positive impact on the wellbeing of such employees as they would enjoy working under such conditions and would further overlook some of the minor hindrances or rather conditions that makes the working conditions not conducive for EMS employees. Inadequate salaries, staff shortages and inadequate resources further impact on the job satisfaction for EMS employees in South Africa as a whole and not only limited to Gauteng and North West provinces as selected provinces for the study. This in itself means that there is a greater need to evaluate all provinces to assess as to whether provinces are adequately resourced and the equipment are in good order. Locke (1976) in Gazioglu and Tansel (2002: 3) defines job

satisfaction as the individual's subjective valuation of different aspects of their job. The Wikipedia Free Encyclopedia (2009) describes job satisfaction as a pleasurable emotional state resulting from the appraisal of one's job, an affective reaction to one's job; and an attitude towards one's job. The Free Management Library (2008) defines job satisfaction in regard to one's feelings or state-of-mind regarding the nature of their work. Job satisfaction can be influenced by a variety of factors, e.g. the quality of one's relationship with their supervisor, the quality of the physical environment in which they work, degree of fulfillment in their work. Bradley, Petrescu and Simmons (2004:5) did a study on job satisfaction and they have assigned various degrees of importance to sources of satisfaction, which can be classified as intrinsic and extrinsic. Intrinsic sources depend on the individual characteristics of an individual such as attitudes. Extrinsic sources are situational, and dependent on the environment such as workplace climate. The intrinsic factors can still be controlled by the individual whereas the extrinsic factors cannot be controlled. The external factors are determined by the environment and yet they have an effect on the individual performance. It is thus imperative that EMS employees should be satisfied at work to ensure that they execute the duties optimally without putting the lives of patients at risk

As indicated in the study, there were several implications that the study has identified. These implications if not addressed would have a negative impact on the operationalisation of the service. The study revealed that stress vulnerability is not influenced and related in any way to the age, gender and racial orientation of EMS employees. It further means that all individuals will suffer from stress vulnerability based on the level of exposure to affectors. The hypothesis was that stress vulnerability is linked to age, gender and race and that individuals in these categories would be affected differently. As this might be true for other employment categories, this is not the fact with EMS employees as they are exposed to the same stressors as they work under the same working conditions and environment. This in itself requires further investigation with control measure to determine if the condition changes once interventions are put in place. What the study further noted was that employees are affected different by effectors that lead to the development of stress vulnerability hence each case must be handled on its own merit.

In terms of the Employment Equity Act, the government of the day aimed at addressing the skills shortages and addressing the gap that existed across the different ethnic group. What I do not

reemployee the EEA stating is that one ethnic group should be in the majority above others. But given different factors that impact on these outcomes, it has seen Africans being the majority in the service as projected in the analysis of the study results and this being the result of staff turnover of the majority of white employees and the incorrect implementation of the EEA. There is no racial representivity in the service given the result already discussed in chapter 6. This further suggests that the department of health must look into the recruitment, selection and retainment strategy in order to keep such employees as they have the experience and expertise needed in the service. Coupled to Employment Equity is gender equity within the work environment. Gender equity is a problem in EMS as women are found in lesser numbers 34.3% as compared to males at 65.7% and thus confirms that the service is historically male dominated and thus entry for women into the services has been barred by the physical orientation of the job and the historical employment criteria to employ males only as their job depended on the physical strength. Females are found in lesser number even in management positions based on historical employment criteria and the nature of the job. With the change in the dynamic of the work environment, employment in EMS no longer require one to be physically strong as the lifting of heavy stretchers and going up the stairs has been replaced with by self-loading stretchers which is a one person operation stretcher and lifts and elevators in high rise building. Further to this, stair stretchers have been introduced to make it easy for employees to carry patients down to ambulances in building with two or more floor levels. The training, recruitment and employment of females in EMS need to be looked at to ensure that there is gender representation with the workforce.

What the study further unearthed is that there is high staff turn-over of skilled staff due the implementation of the OSD which limits department to exercise to option of offering scarce skills EMS employees, better salaries and as a result, they go job hunting in the private sector or internationally. This is depleting scarce skills within the public sector and result in the public sector EMS relying on Private Ambulance Services for Advanced Life Support interventions. This is a critical area that needs to be looked at as it impacts on the level of patient care and thus drains the department as private ambulance services are paid to render these services. The Gauteng Department of Health paid PAS over R100 million for services rendered in 2013 and this money could have been used to purchase extra resources and employed more people to address the

shortage. It could have also been used to create an incentive for the scarce skilled Emergency Care Officers in order to retain them within the public sector EMS.

Employee wellness is key in any work environment. EMS especially is not to be excluded from the equation as their work environment and conditions are such that, they require debriefing on a regular basis. This further suggest that the Department of Health not only limited to Gauteng and North West provinces, needs to invest money into establishing a platform to look into the wellbeing of EMS employees as emotional wellbeing is unheard of in the public sector EMS environment. In some Metros and Municipalities not forgetting the private sector EMS, such services does exist and public sector EMS can learn from this. What was further discovered is that EAP within the two provinces is not well developed as there are no EMS specific practitioners appointed to deal with the number of EMS employees exposed to stressors. The suggestion from the study is to have debriefing committees that will work hand-in-hand with the social workers and psychologists to assist in the debriefing of EMS employees. This will assist the departments to identify and assess employees who are vulnerable to stress and interventions be done at an early stage of the condition. It will further assist department to draw up debriefing strategies to ensure that there are regular debriefing sessions held with the employees especially but not limited to post-response to mass casualty incident management.

The researcher intends to utilize the outcome of the research to advice the National Department of Health (NDOH) on how best to go about managing the increase of vulnerability to stress among EMS employees within the service in South Africa. The study will assist policy makers to understand the need and urgency of coming up with programs that will help employees cope with the stress work demands. The belief is that with proper and up to date treatment, stress vulnerability can be alleviated. The study will further benefit the employee as it will create a sense of awareness about their working conditions and need for psychological interventions. The researcher also hopes to find the link between stress vulnerability and work conditions and how the two influence each other. There should be a relation between the two that highlights the effect that one has on the other and how best this can be addressed to alleviate the end result of the other. Research findings may also serve as points of further enquiry regarding specific issues relating to stress vulnerability in Emergency Services.

6.5 Conclusion

Based on the preceding discussion of the results it is concluded that the models postulated adequately represent the actual inter-relations among factors explaining the development of stress vulnerability. In other words they are good theoretical conceptualization of the development of stress vulnerability among EMS employees. Sets of composite variables were found to be comparatively more potent or powerful in explaining the development of stress vulnerability than the individually selected variables. The relationship between hypothesized explanatory variables and stress vulnerability development are not importantly mediated by intervening factors. It has been demonstrated that the comprehensive approach to the explanation of the development of stress vulnerability holds more promise in explaining the development and it is evident from the low explained variance in the development of stress vulnerability that the theoretical models need further revision and refinement in order to explain more variance. To achieve this, several remedies could be resorted to. These include the refinement of the conceptualization of the hypothesized variables constituting the models and the refinement of the measurement or operationalization of these variables. This entails procedures that would address questions of validity and reliability of measurement instruments, especially content and construct validity.

With regards to the results of the study, further research needs to be conducted to come up with conclusive evidence that work environment has a significant contribution to the development of stress in the work environment of EMS workers. It must be noted that this kind of study has never been conducted especially within the EMS environment and thus further research would be required to go deeper into the causative factors that leads to stress vulnerability and how this impacts on the employees and services rendered to the patients. It is also a fact that EMS employees are exposed to affectors that leads to them being more vulnerable to stress. It is of utmost importance to note that even after intervention and treatment, some employees would still relapse as they are continually exposed to affectors and thus the importance of continuous intervention will be very vital during their period of employment in the service. Further to this there is a need to have services that would look after the wellbeing of EMS employees. Services such as Psychological services as well as Pastoral services have played a key role in the past. These services can be revisited as they have proven to be effective in the past even though no

scientific information exist to support this statement, however, with the intervention of the Pastor after the incident made the burden lesser for the EMS employees. Perhaps, as departments we need to evaluate the services that existed in the past and learn from what was done in order to assist EMS employees. These are the lessons that can assist in ensuring that we do not rehash the wheel but rather learn from the approach of the past and work towards coming up with better systems that will best assist employees within the EMS environment. The EAP service needs to be strengthened as it is part of the bigger department and thus would be there to monitor the employees on a daily basis and provide advice and support to the employees. The EAP services is the first line of contact for the employees and thereafter they would be referred for psychological intervention and further management.

6.6 Recommendations

From the above aim, objectives, discussions and summary of results, it is very clear what the study aims to achieve. It is clear that stress vulnerability does not discriminate against age groups, qualification categories, ethnicity and gender. It is further clear that EMS employees become susceptible to stress vulnerability due to their work conditions simply because of what they are exposed to daily at work. The work experience also influence vulnerability to stress on the basis that the longer they are in employ the more they get exposed to stressors and without the necessary interventions, they are bound to suffer from stress related ailment. With all that being said, the following are recommended:

6.6.1 Recommendation 1 – Further Research

It is clear that some of the research objectives could not be conclusively determined hence the importance of conducting further research to ensure that the objectives are expanded upon in detail. The first aspect that would need in depth research is the job resources or the lack thereof and the impact it has on employee wellbeing. Further to this what also needs to be looked at is the impact that the work environment has on employee wellbeing. This will assist in determining if the work environment of EMS employees has any impact on their wellbeing and what intervention

strategies needs to be employed to ensure that this is dealt with to decrease the impact this might have.

There is great need to investigate how job satisfaction impact on the wellbeing of EMS employees. In a study conducted by D'Addio, AC. *et al* (2003: 2), the researchers explain that work psychologist have for a long time been arguing that for most people jobs cannot only be characterized by the pay and hours of work associated with them, as standard economic analysis does, but also by job and workplace features like promotion and other career prospects, job security, job content and interpersonal relationship. This is a clear indication that job satisfaction is very important in any workplace. EMS is no exception to this as the environment that employees work under is both volatile and not competing with the private ambulance sector in terms of salaries. The OSD has tried to address the salary issues but this has not come up with positive results as there is still a huge salary disparity amongst the two sectors. What makes it worse is that scarce skills individuals leave the industry and the country in search for better jobs with better perks. This confirms the need to conduct further in-depth research regarding the satisfaction of EMS employees with their jobs. This would shed light into why EMS employees are not satisfied with their jobs and why they leave the service especially the more experienced and higher qualified officers.

6.6.2 Recommendation 2 – Appointment of Psychologists

A further recommendation to the Department of Health, is to have a team of psychologists and social workers that will work hand-in-hand to evaluate each of the employees in the Emergency Medical Services in order to check if any of the mentioned stressors has an impact on the employee wellbeing, based on the results at hand. This is a short-term plan and the long term plan is to have permanent and hands-on psychologist who will be there for the employees when they are needed. Theresa Geldenhuys in the Fire Africa Publication (2012: 46) states that “If an EMS staff employee experience trauma after dealing with a suicide or attempted suicide, there are trauma counselors available at the scene and at the office. They can also use trauma lines at a later stage”. This is true for some EMS services based in the local authorities but not necessarily for those services in the provincial sector. This is a clear indication that the service are indeed needed in the

public sector environment as the provincial department is the biggest employer of emergency care officers as compared to the local authorities. The team will also be responsible for the debriefing sessions immediately after the incident happen thereby exposing employees to intervention to reduce the impact of the exposure to stressors on them. This will be the first line intervention which can then be followed by contact session and treatment intervention where necessary.

6.6.3 Recommendation 3 – Employment Pre-screening

Employment pre-screening is a norm in any department and forms part of the the Human resources recruitment process. however, with a service like EMS, a unique pre-screening process is needed over and above what already exist. The screening of applicants who wants to enter the EMS employment must be rigorous as most people are not cut out to work in such environments. CPNI (2011:3) defines pre-screening as a process that seeks to verify the credentials of the job applicant to check that the applicants meet preconditions of employment (e.g. that the individual is legally permitted to take up an offer or employment). are used by employers to help assess a candidate's suitability for a particular job and usually of an ability/aptitude test and a personality questionnaire. Organisations like technology companies, financial institutions, management consultancies, the public services, police forces, fire services and armed forces are using such services to screen candidates. The South African National Defence Force (SANDF) also uses a pre-employment screening strategy which selects employees that will be suitable for employment within that environment. South African Military Health Services (SAMHS) which is the medical corps of the SANDF also uses the same criteria as they too have the emergency services wing. The Department of Health can learn from such experiences and implement this to ensure that the correct type of employees are selected for employment within the EMS environment.

It is rather imperative to have pre-screening in EMS as this will eliminate candidates that are not cut out for the job. This will eliminate those that apply for the job for the sake of earning a salary and not because they love the job. Experience has taught us that employees who enter into the EMS market because of the love of the profession tend to have more resilience and last longer in the service amidst the challenges. This is true as they find a way of better dealing with the

condition and are also mentally prepared to undertake such a job and not only doing it to earn a salary.

6.6.4 Recommendation 4 – Chaplaincy Services

The other recommendation is to have a Chaplaincy service in the Emergency Medical Services. These services were available within the service but this slowly vanished with the passing of time. The role of the Chaplain was to give counseling and debriefing to EMS employees after a major incident or an incident that the human brain cannot handle and this assisted as employees could better deal with causes that lead to the development of stress vulnerability. The Chaplains were also there to give employees spiritual guidance and upliftment which is something that does not happen anymore as the appointment of Chaplains stopped when the services migrated to the provincial services and no longer resided within the municipalities. They were also required to assist families of the employees as this proved rather difficult for EMS employees to deal with to avoid the spilling over of stress into the family of EMS employees. This alleviated the responsibility of having to convey news about a death to the family by the paramedic. The Chaplain played a major role regarding the emotional wellbeing of EMS employees. Ever since this service ceased to exist, this has seen more and more employees requesting for the services restored thus the recommendation and this should be looked into on a serious note. The Chaplains will be the first line of contact with the EMS employees after they has been to a traumatic incident. The Chaplains will then counsel the employees and then recommend referral to psychologists should there be a need for such.

6.6.5 Recommendation 5 – Establishment of Trauma lines for EMS

The fifth recommendation is to trauma lines made available for employees and this must be known to them through regular workshops and publications directed at them. The advantage of trauma lines is that the employees do not have to come into contact with the counselor but would rather speak telephonically and it creates an environment where employees can speak freely without being under duress. This will be very helpful to those who are afraid to pour out their emotions face-to-face with a counselor and it makes it easy as first contact before face-to-face contact can be

made. This creates a platform where those specific employees can be summarily be evaluated and then recommendations can be made for the employee to consult a psychologist for further management. Scotland has a trauma counseling line that offers confidential telephone counseling to any adult who experienced abuse as a child. This includes sexual, emotional, physical, psychological, spiritual abuse or neglect. Through this support survivors are able to address the issues that have affected them and understand how it has prevented them from living the life they want to lead. Through building their confidence they can take greater control of their lives (Health in Mind, Scotland).

6.6.6 Recommendation 6 – Establish assessment and intervention teams

It is vital that strategies are employed to always measure the coping level and the level of stress among EMS employees. This would assist the departments to identify those employees that are relapsing and those who are not responding very well to treatment and intervention measures. The assessment and intervention teams will be based in the institutions and the employees who need their assistance will then be referred to them for consultation. With such interventions, employees who need further psychological intervention will be identified and referred for further management. The interventions will also assist to identify the conditions before the situation is adverse and it would require long admission for treatment purposes. This will shorten the admission period and thus make employees available for operations within a short space of time. This teams will be the first line of contact in the referral pathway of the affected employees.

APPENDICES

Annexure 1

Figure 5.1: A Plot of expected Cum Prob against Observed Cum Prob testing for Linearity

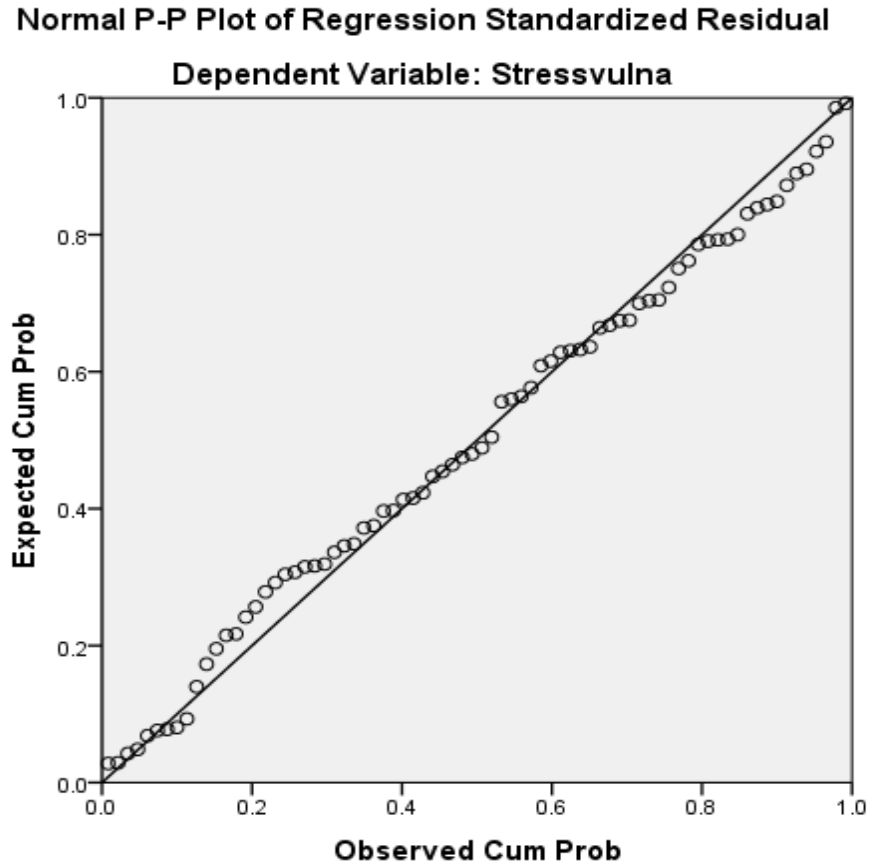


Figure 5.2 A Histogram of Regression Standard Residuals with the Normal Curve Superimposed on it

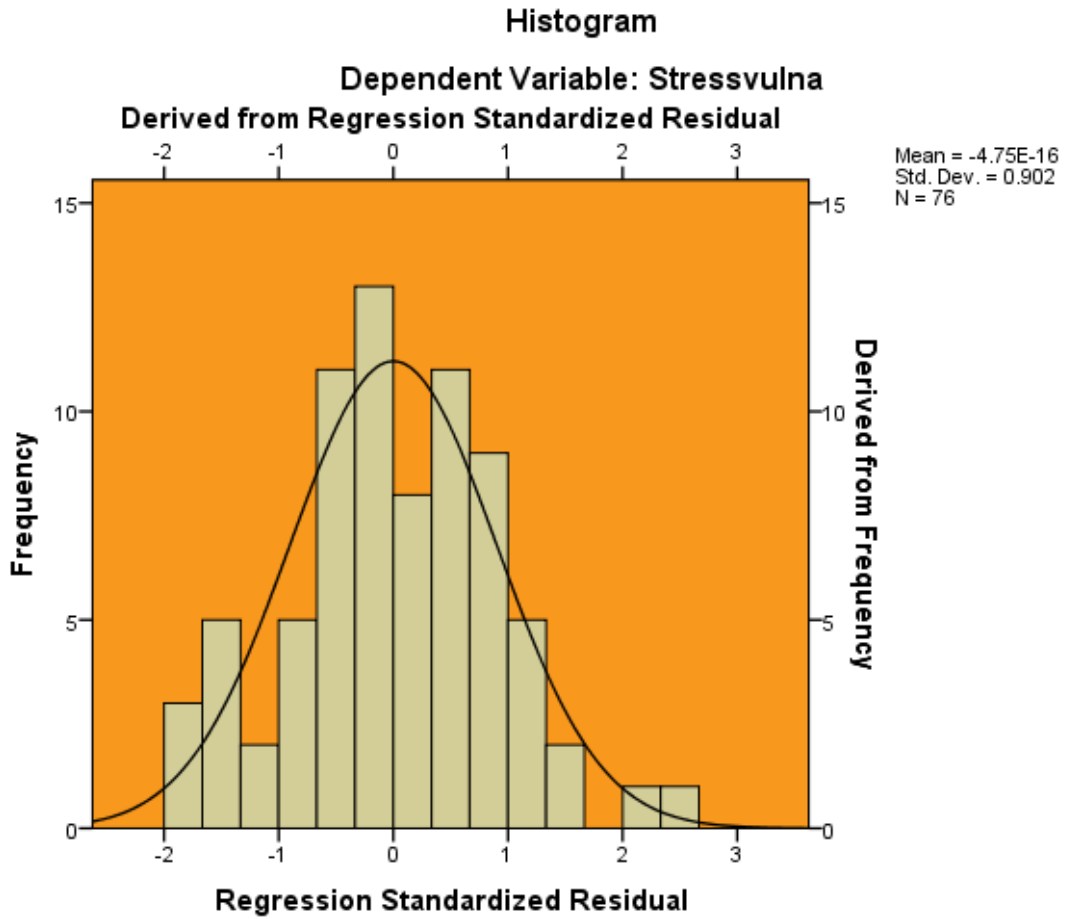
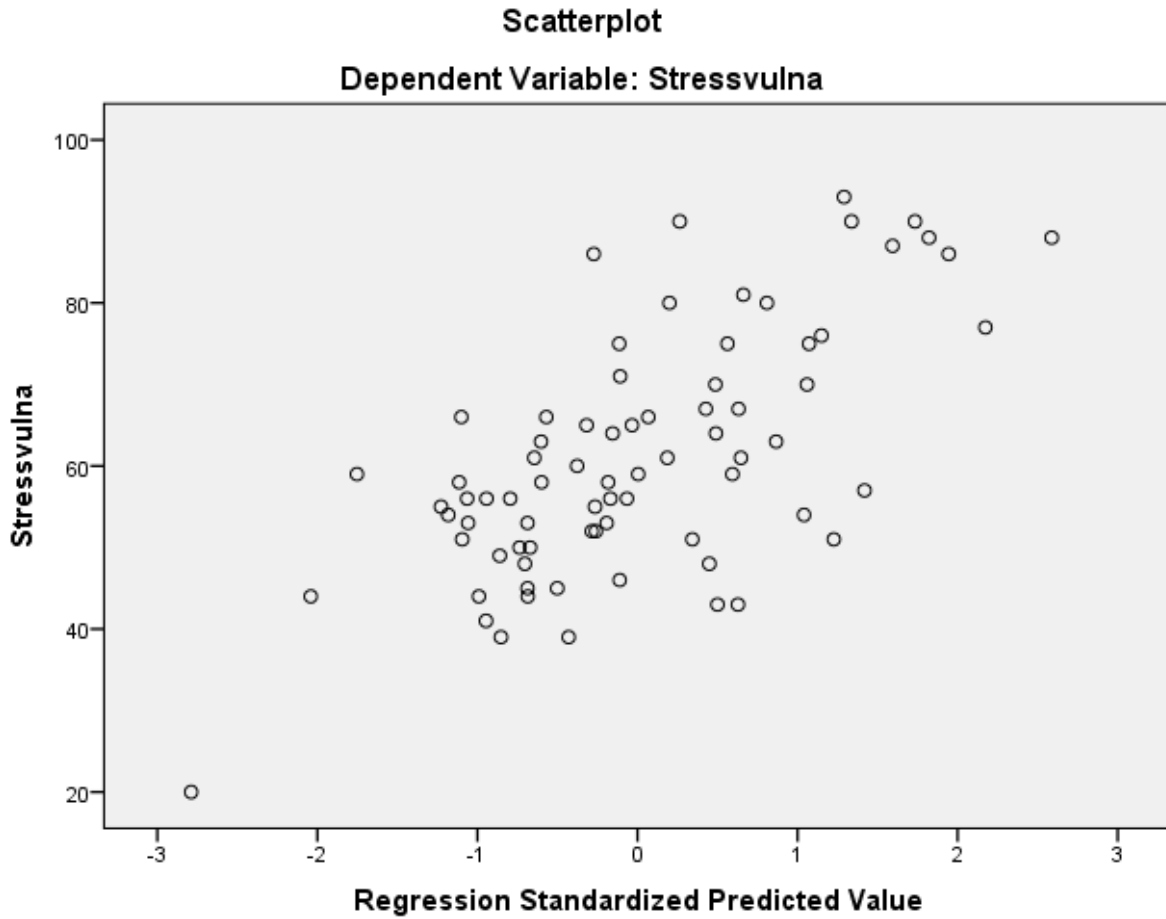


Figure 5.3 A Scatterplot of Stress vulnerability against Regression Standardized Predicted Values



Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	96.205	25.208		3.817	0.000	45.708	146.702
Age group	-2.093	2.726	-0.107	0.768	0.446	-7.554	3.367
Qualification	3.184	2.019	0.208	1.577	0.120	-0.860	7.228
Current Position	-7.925	5.705	-0.161	1.389	0.170	-19.354	3.505
Years of Service	0.641	2.867	0.031	0.223	0.824	-5.103	6.384
Smoking	8.159	6.946	0.125	1.175	0.245	-5.755	22.074
Regsmoke	-2.046	1.698	-0.136	1.205	0.233	-5.447	1.356
TakeAlco	-9.998	4.575	-0.250	2.185	0.033	-19.163	-0.834
Exercise	-3.723	4.574	-0.090	0.814	0.419	-12.887	5.440
Relation	-6.372	2.404	-0.321	2.650	0.010	-11.188	-1.555
Overtime	-6.168	7.714	-0.095	0.800	0.427	-21.620	9.284
Affectors	0.363	0.192	0.210	1.892	0.064	-0.021	0.747
Newhealthcond	-0.197	0.120	-0.233	1.644	0.106	-0.438	0.043
Impactlifeevents	-0.106	0.110	-0.138	0.959	0.342	-0.326	0.115
Newlifesatis	0.265	0.367	0.079	0.722	0.473	-0.470	1.000
Workconditons	-0.795	1.393	-0.072	0.571	0.570	-3.585	1.994

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
	(Constant)	95.621	25.849				3.699
Age group	-2.061	2.726	-0.105	0.746	0.459	-7.596	3.473
Qualification	3.301	2.237	0.216	1.476	0.146	-1.182	7.784
Current Position	-8.023	5.809	-0.163	1.381	0.173	-19.663	3.618
Years of Service	0.562	2.959	0.027	0.190	0.850	-5.367	6.492
Smoking	8.003	7.116	0.123	1.125	0.266	-6.258	22.264
Regsmoke	-2.020	1.725	-0.135	1.171	0.247	-5.478	1.438
TakeAlco	-9.979	4.618	-0.249	2.161	0.035	-19.234	-0.724
Exercise	-3.793	4.648	-0.091	0.816	0.418	-13.107	5.521
Relation	-6.367	2.426	-0.320	2.624	0.011	-11.229	-1.505
Overtime	-6.168	7.728	-0.095	0.793	0.431	-21.764	9.429
HrsOvertime	0.189	1.499	0.015	0.126	0.900	-2.816	3.194
Affectors	0.363	0.193	0.210	1.874	0.066	-0.028	0.750
Newhealthcond	-0.195	0.123	-0.229	1.581	0.120	-0.441	0.052
Impactlifeevents	-106.000	0.111	-0.139	0.956	0.343	-0.329	0.117
Newlifesatis	0.266	0.370	0.080	0.718	0.476	-0.476	1.008
Workconditons	-0.777	1.413	-0.070	0.550	0.585	-3.608	2.054

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	97.201	24.603		3.951	0.000	47.935	146.468
Age group	-1.798	2.364	-0.092	0.761	0.450	-6.532	2.936
Qualification	3.276	1.960	0.214	1.671	0.100	-0.649	7.201
Current Position	-7.909	5.657	-0.161	1.398	0.168	-19.237	3.420
Smoking	8.327	6.848	0.128	1.216	0.229	-5.386	22.039
Regsmoke	-1.970	1.650	-0.131	1.194	0.237	-5.273	1.334
TakeAlco	-10.130	4.499	-0.253	2.252	0.028	-19.138	-1.122
Exercise	-3.810	4.520	-0.092	0.843	0.403	-12.860	5.241
Relation	-6.289	2.356	-0.316	2.669	0.010	-11.007	-1.571
Overtime	-6.712	7.259	-0.103	0.925	0.359	-21.247	7.824
Affectors	0.358	0.189	0.207	1.895	0.063	-0.020	0.736
Newhealthcond	-0.199	0.119	-0.235	1.674	0.100	-0.437	0.039
Impactlifeevents	-0.105	0.109	-0.138	0.963	0.340	-0.324	0.113
Newlifesatis	0.284	0.354	0.085	0.804	0.425	-0.424	0.992
Workconditons	-0.845	1.364	-0.076	0.620	0.538	-3.575	1.886

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	89.210	20.840		4.281	0.000	47.494	130.925
Age group	-1.690	2.345	-0.086	0.721	0.474	-6.384	3.004
Qualification	2.910	1.859	0.190	1.565	0.123	-0.811	6.630
Current Position	-7.827	5.626	-0.159	1.391	0.169	-19.087	3.434
Smoking	8.344	6.811	0.128	1.225	0.226	-5.291	21.978
Regsmoke	-1.941	1.640	-0.129	1.184	0.241	-5.225	1.342
TakeAlco	-10.492	4.437	-0.262	2.365	0.021	-19.373	-1.610
Exercise	-3.227	2.289	-0.078	0.734	0.466	-12.029	5.575
Relation	-5.976	2.289	-0.301	2.611	0.011	-10.557	-1.394
Overtime	-7.728	7.034	-0.119	1.099	0.276	-21.807	6.352
Affectors	0.348	0.187	0.202	1.860	0.068	-0.027	0.723
Newhealthcond	-0.200	0.118	-0.236	1.693	0.096	-0.437	0.037
Impactlifeevents	-0.940	0.107	-0.123	0.879	0.383	-0.308	0.120
Newlifesatis	0.263	0.079	0.079	0.753	0.455	-0.437	0.964

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	89.674	20.745		4.323	0.000	48.164	131.185
Qualification	2.613	1.805	0.171	1.447	0.153	-0.999	6.225
Current Position	-8.657	5.484	-0.176	1.579	0.120	-19.630	2.317
Smoking	8.417	6.783	0.129	1.241	0.220	-5.155	21.989
Regsmoke	-2.203	1.593	-0.147	1.383	0.172	-5.391	0.984
TakeAlco	-10.747	4.405	-0.268	2.440	0.018	-19.561	-1.933
Exercise	-4.125	4.200	-0.099	0.982	0.330	-12.529	4.279
Relation	-5.939	2.279	-0.299	2.606	0.012	-10.499	-1.379
Overtime	-8.864	6.827	-0.136	1.298	0.199	-22.524	4.796
Affectors	0.347	0.186	0.201	1.861	0.068	-26.000	0.720
Newhealthcond	-0.179	0.114	-0.211	1.571	0.122	-0.408	0.049
Impactlifeevents	-0.098	0.107	-0.128	0.915	0.364	-0.311	0.116
Newlifesatis	0.234	0.346	0.070	0.675	0.502	-0.459	0.927

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
	(Constant)	95.090	19.046				4.993
Qualification	2.700	1.792	0.176	1.506	0.137	-0.886	6.285
Current Position	-8.680	5.459	-0.177	1.590	0.117	-19.600	2.239
Smoking	8.062	6.734	0.124	1.198	0.236	-5.403	21.527
Regsmoke	-2.156	1.584	-0.144	0.361	0.179	-5.325	1.012
TakeAlco	-10.950	4.374	-0.273	2.503	0.015	-19.700	-2.200
Exercise	-4.346	4.168	-0.105	1.043	0.301	-12.684	3.991
Relation	-6.093	2.257	-0.307	2.700	0.009	-10.608	-1.579
Overtime	-9.112	6.786	-0.140	1.343	0.184	-22.686	4.461
Affectors	0.372	0.182	0.216	2.049	0.045	0.009	0.736
Newhealthcond	-0.182	0.114	-0.215	1.606	0.114	-0.409	0.045
Impactlifeevents	-0.111	0.104	-0.145	1.067	0.290	-0.319	0.097

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
	(Constant)	89.639	18.328				4.891
Qualification	2.573	1.790	0.168	1.438	0.156	-1.005	6.152
Current Position	-7.892	5.410	-0.161	1.459	0.150	-18.711	2.926
Smoking	8.678	6.710	0.133	1.293	0.201	-4.740	22.096
Regsmoke	-2.070	1.583	-0.138	1.308	0.196	-5.235	1.096
TakeAlco	-11.753	4.309	-0.293	2.728	0.008	20.370	-3.137
Relation	-6.381	2.242	-0.321	2.846	0.006	-10.864	-1.898
Overtime	-8.083	6.718	-0.124	1.203	0.234	-21.512	5.351
Affectors	0.371	0.182	0.215	2.041	0.046	0.008	0.735
Newhealthcond	-0.197	0.113	-0.232	1.744	0.086	-0.422	0.029
Impactlifeevents	-0.108	0.104	-0.141	1.034	0.305	-0.316	0.101

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
	(Constant)	88.383	18.297				4.830
Qualification	2.570	1.791	0.168	1.435	0.156	-1.010	6.149
Current Position	-7.530	5.402	-0.153	1.394	0.168	-18.328	3.268
Smoking	9.588	6.656	0.147	1.440	0.155	-3.718	22.893
Regsmoke	-2.269	1.572	-0.151	1.443	0.154	-5.411	0.874
TakeAlco	-11.267	4.280	-0.281	2.629	0.011	-19.834	-2.700
Relation	-6.559	2.236	-0.330	2.933	0.005	-11.030	-2.089
Overtime	-7.686	6.711	-0.118	1.145	0.256	-21.102	5.729
Affectors	0.331	0.178	0.192	1.862	0.067	-0.024	0.686
Newhealthcond	-0.269	0.088	-0.318	3.056	0.003	-0.446	-0.093

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	82.449	17.592		4.687	0.000	47.294	117.604
Qualification	2.131	1.753	0.139	1.215	0.229	-1.373	5.635
Current Position	-6.659	5.361	-0.136	1.242	0.219	-17.372	4.055
Smoking	8.584	6.614	0.132	1.298	0.199	-4.634	21.802
Regsmoke	-2.312	1.576	-0.154	1.468	0.147	-5.461	0.836
TakeAlco	-12.166	4.224	-0.304	2.881	0.005	-20.606	-3.726
Relation	-6.948	2.216	-0.349	3.135	0.003	-11.376	-2.519
Affectors	0.334	0.178	0.194	1.874	0.066	-0.022	0.690
Newhealthcond	-0.262	0.088	-0.308	2.968	0.004	-0.438	-0.085

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	78.886	17.410		4.531	0.000	44.105	113.667
Current Position	-3.687	4.789	-0.075	0.770	0.444	-13.253	5.880
Smoking	10.107	6.519	0.155	1.550	0.126	-2.916	23.130
Regsmoke	-1.625	1.476	-0.108	1.101	0.275	-4.574	1.324
TakeAlco	-11.293	4.177	-0.282	2.703	0.009	-19.639	-2.948
Relation	-6.912	2.224	-0.348	3.108	0.003	-11.355	-2.469
Affectors	0.328	0.179	0.190	1.837	0.071	-0.029	0.685
Newhealthcond	-0.259	0.088	-0.305	2.925	0.005	-0.435	-0.082

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	75.443	16.773		4.498	0.000	41.944	108.942
Smoking	10.404	6.487	0.160	1.604	0.114	-2.551	23.359
Regsmoke	-1.502	1.463	-0.100	1.027	0.308	-4.423	1.420
TakeAlco	-11.488	4.157	-0.287	2.764	0.007	-19.790	-3.187
Relation	-7.051	2.210	-0.355	3.191	0.002	-11.464	-2.638
Affectors	0.312	0.177	0.181	1.765	0.082	-0.041	0.666
Newhealthcond	-0.252	0.088	-0.297	2.875	0.005	-0.427	-0.077

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	69.311	15.680		4.498	0.000	38.004	100.618
Smoking	10.225	6.487	0.157	1.576	0.120	-2.727	23.177
TakeAlco	-10.907	4.120	-0.272	0.265	0.010	-19.132	-2.682
Relation	-6.673	2.180	-0.336	3.062	0.003	-11.025	-2.322
Affectors	0.342	0.175	0.198	1.950	0.055	-0.007	0.691
Newhealthcond	-0.260	0.087	-0.307	2.977	0.004	-0.435	-0.086

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower bound	Upper bound
(Constant)	80.771	14.046		5.750	0.000	52.734	108.807
TakeAlco	-9.771	4.101	-0.244	2.383	0.020	-17.956	-1.586
Relation	-7.033	2.192	-0.354	3.209	0.002	-11.407	-2.586
Affectors	0.335	0.177	0.194	1.898	0.062	-0.017	0.688
Newhealthcond	-0.277	0.088	-0.327	3.163	0.002	-0.452	-0.102

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<http://www.squidoo.com/job-satisfaction-questionnaire#module100400121> **Job Satisfaction Questionnaire: a guide through the design process, conduct and survey analysis**
[30 June 2012]

QUESTIONNAIRE

I am currently conducting a study on experiences in the workplace and feelings about life in general. There are six (6) sets of questions attached to this document. There are no right and wrong answers to these questions. The first feeling about your experience when reading the question is possibly the best answer. Please answer each and every question.

Your participation in this study is completely confidential thus no identifying information is required from you. It will take no longer than forty (40) minutes to answer all questions. Please take note that participation is totally on a voluntary basis and you are not forced to participate. I would however greatly appreciate your voluntary participation in order to make this study a success that will assist you and your colleagues in the future.

Indicate with a tick (x) whether you are participating voluntarily.

Yes

No

BIOGRAPHICAL QUESTIONNAIRE

Instructions

Underneath are questions that need to be completed. Please ensure that you answer each and every question and do not leave any question unanswered. Indicate your answer by putting an X in the correct box

Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female		
Ethnicity	<input type="checkbox"/> African	<input type="checkbox"/> Coloured	<input type="checkbox"/> White	<input type="checkbox"/> Indian
Age group	<input type="checkbox"/> 18-24	<input type="checkbox"/> 25-34	<input type="checkbox"/> 35-44	<input type="checkbox"/> 45-60
Qualification	<input type="checkbox"/> ECP-B	<input type="checkbox"/> ECP-I	<input type="checkbox"/> ECT	<input type="checkbox"/> ECP-A
Current position	<input type="checkbox"/> Operational	<input type="checkbox"/> Management		
Years of service	<input type="checkbox"/> 1-8yrs	<input type="checkbox"/> 9-16yrs	<input type="checkbox"/> 16-34yrs	<input type="checkbox"/> 34yrs and above
Do you smoke	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
How regular do you smoke	<input type="checkbox"/> 1-5 per day	<input type="checkbox"/> 6-10 per day	<input type="checkbox"/> 11-15 per day	<input type="checkbox"/> 16 and above
Do you take alcoholic beverages	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Do you attend church	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Do you consider yourself a religious person	<input type="checkbox"/> Yes	<input type="checkbox"/> No		

If "Yes" to above, how often to you take part in religious activities

Never	1-3 times a week	4-6 times a week	7 times a week
-------	------------------	------------------	----------------

Do you participate in exercise activities

Yes	No
-----	----

How often do you exercise

1-3 times a week	4-6 times a week	7 times & above
------------------	------------------	-----------------

I would describe my relationship with my wife/husband/partner/dependents as

Very relaxed	Casual	Stressful
--------------	--------	-----------

Do you work overtime at work

Yes	No
-----	----

Hours of overtime worked per month

10-20 hrs.	20-30hrs	30-40hrs	40 hrs. & above
------------	----------	----------	-----------------

Is this overtime voluntary or compulsory

Voluntary	Compulsory
-----------	------------

Do you use overtime money to supplement your salary

Yes	No
-----	----

Are you currently using medication as a result of your work circumstances

Yes	No
-----	----

Have you ever had to take alcohol on the job due to work related stress

Yes	No
-----	----

Taking all your bad experiences at work, would you rather talk to

Spouse/ Partner	Colleague	Pastor	Psychologist/ Social Worker
--------------------	-----------	--------	-----------------------------------

My satisfaction level at work

Not satisfied	Satisfied	Extremely satisfied
---------------	-----------	---------------------

I would change my job for another one

Yes	No
-----	----

LIFE SATISFACTION QUESTIONNAIRE

Instructions

Below are five statements with which you may agree or disagree. Using the 1 to 7 scale below, indicate your agreement with each item by crossing the appropriate number in line with that item. Please do not write comments on the documents, just place a cross in the appropriate block.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree						
	1	2	3	4	5	6	7						
1	In most ways my life is close to my ideal						1	2	3	4	5	6	7
2	The conditions of my life are excellent						1	2	3	4	5	6	7
3	I am satisfied with my life						1	2	3	4	5	6	7
4	So far I have forgotten the important things I want in life						1	2	3	4	5	6	7
5	If I could live my life over, I would change almost nothing						1	2	3	4	5	6	7

AFFECTOMETER

Instructions

This inventory consists of 20 sentence items. Please read each sentence and decide how often the feeling was present over the past few weeks, according to the following grade. Please make Mark with an **X** in the correct column

Not at all	Occasionally	Some of the time	Often	All the time
1	2	3	4	5

NB: You are to mark your answer next to each statement as it applies to you. Please answer every statement

1	Statement	1	2	3	4	5
1	My life is right on track	1	2	3	4	5
2	I wish I could change some part of my life	1	2	3	4	5
3	My future looks good	1	2	3	4	5
4	I feel as though the best years of my life are over	1	2	3	4	5
5	I like myself	1	2	3	4	5
6	I feel there must be something wrong with me	1	2	3	4	5
7	I can handle any problems that come up	1	2	3	4	5
8	I feel like a failure	1	2	3	4	5
9	I feel loved and trusted	1	2	3	4	5
10	I seem to be left alone when I don't want to be	1	2	3	4	5
11	I feel close to people around me	1	2	3	4	5
12	I have lost interest in other people and I don't care	1	2	3	4	5
13	I feel I can do whatever I want to	1	2	3	4	5
14	My life seems stuck in a rut	1	2	3	4	5
15	I have energy to spare	1	2	3	4	5
16	I can't be bothered doing anything	1	2	3	4	5
17	I smile and laugh a lot	1	2	3	4	5
18	Nothing seems very much fun anymore	1	2	3	4	5
19	I think clearly and creatively	1	2	3	4	5
20	My thoughts go round in useless thoughts	1	2	3	4	5

IMPACT OF EVENT SCALE

Instructions						
The following is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you during the past month with respect to a disaster you have seen/experienced. How much were you distressed or bothered by these difficulties?						
Not at all	Occasionally	Some of the time	Often	All the time		
1	2	3	4	5		
NB: You are to mark your answer next to each statement as it applies to you. Please answer every statement						
1	Any reminder brought back feelings about it	1	2	3	4	5
2	I had trouble staying asleep	1	2	3	4	5
3	Other things kept making me think about it	1	2	3	4	5
4	I felt irritable and angry	1	2	3	4	5
5	I avoided letting myself upset when I thought about it	1	2	3	4	5
6	I thought about it when I didn't mean to	1	2	3	4	5
7	I felt as if it hadn't happened or wasn't real	1	2	3	4	5
8	I stayed away from reminders about it	1	2	3	4	5
9	Pictures about it popped into my mind	1	2	3	4	5
10	I was jumpy and easily startled	1	2	3	4	5
11	I tried not to think about it	1	2	3	4	5
12	I was aware that I still had a lot of feelings about it, but I didn't deal with them	1	2	3	4	5
13	My feelings about it were kind of numb	1	2	3	4	5
14	I found myself acting or feeling like I was back at that time	1	2	3	4	5
15	I had trouble falling asleep	1	2	3	4	5
16	I had waves of strong feelings about it	1	2	3	4	5
17	I tried to remove it from my memory	1	2	3	4	5
18	I had trouble concentrating	1	2	3	4	5
19	Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart	1	2	3	4	5
20	I had dreams about it	1	2	3	4	5
21	I felt watchful and on guard	1	2	3	4	5
22	I tried not to talk about it	1	2	3	4	5

GENERAL HEALTH QUESTIONNAIRE (GHQ)

Instructions

We would like to know if you have had any medical complaints, and how your health has been in general over the past few weeks. Please answer ALL the questions simply by marking the answer which you think most nearly applies to you with a cross. Reemployee that we want to know about present and recent complaints and those that you had in the past. It is important that you try to answer ALL the questions. Thank you very much for your cooperation.

HAVE YOU RECENTLY		1	2	3	4
A1	Been feeling perfectly well and in good health?	Better than usual	Same as usual	Worse than usual	Much worse than usual
A2	Been feeling in need of a good tonic?	Not at all	No more than usual	Rather more than usual	Much worse than usual
A3	Been feeling run down and out of sorts?	Not at all	No more than usual	Rather more than usual	Much worse than usual
A4	Felt that you are ill?	Not at all	No more than usual	Rather more than usual	Much worse than usual
A5	Been getting pains in your head?	Not at all	No more than usual	Rather more than usual	Much worse than usual
A6	Been getting a feeling of tightness or pressure in your head?	Not at all	No more than usual	Rather more than usual	Much worse than usual
A7	Been having hot or cold spells?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B1	Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B2	Had difficulty in staying asleep?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B3	Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B4	Been getting edgy and bad tempered?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B5	Been getting scared or panicky for no good reason?	Not at all	No more than usual	Rather more than usual	Much worse than usual
B6	Found everything getting on top of you?	Not at all	No more than usual	Rather more than usual	Much worse than usual

B7	Been feeling nervous and strung-up all the time	Not at all	No more than usual	Rather more than usual	Much worse than usual
C1	Been managing to keep yourself busy and occupied?	More so than usual	Same as usual	Rather less than usual	Much less than usual
C2	Been taking longer over the things you do?	Quicker than usual	Same as usual	Longer than usual	Much more than usual
C3	Felt on the whole you were doing things well	Better than usual	About the same	Less than usual	Much less than usual
C4	Been satisfied with the way you've carried out your task	More satisfied	About the same as usual	Less satisfied than usual	Much less satisfied
C5	Felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
C6	Felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
C7	Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
D1	Been thinking of yourself as worthless?	Not at all	No more than usual	Rather more than usual	Much more than usual
D2	Felt that life is entirely hopeless?	Not at all	No more than usual	Rather more than usual	Much more than usual
D3	Felt that life isn't worth living?	Not at all	No more than usual	Rather more than usual	Much more than usual
D4	Thought of the possibility that you might make away with yourself?	Definitely not	I don't think so	Has crossed my mind	Definitely has
D5	Found at times you couldn't do anything because your nerves were too bad?	Not at all	No more than usual	Rather more than usual	Much more than usual
D6	Found yourself wishing you were dead and away from it all?	Not at all	No more than usual	Rather more than usual	Much more than usual
D7	Found that the idea of taking your own life kept coming into your head?	Definitely not	I don't think so	Has crossed my mind	Definitely has

STRESS VULNERABILITY TEST

Instructions						
These sets of questions measures how vulnerable you are to stress. Please answer all questions a truthful, honestly and as it applies to you.						
1	I eat a least one hot, balanced meal a day	1	2	3	4	5
2	I get seven to eight hour of sleep at least four nights a week	1	2	3	4	5
3	I give and receive affection	1	2	3	4	5
4	I have at least one relative within 50 km, who I can rely on	1	2	3	4	5
5	I exercise to the point of sweating at least twice a week	1	2	3	4	5
6	I limit myself to less than half a pack of cigarettes a day	1	2	3	4	5
7	I take fewer than five alcohol drinks a week	1	2	3	4	5
8	I am the appropriate weight for my height	1	2	3	4	5
9	I have an income adequate to meet basic expenses	1	2	3	4	5
10	I get strength from my religious beliefs	1	2	3	4	5
11	I regularly attend clubs or social activities	1	2	3	4	5
12	I have a network of friends and acquaintances	1	2	3	4	5
13	I have one or more friends to confide in about personal matters	1	2	3	4	5
14	I am in good health (including eyesight, hearing, teeth)	1	2	3	4	5
15	I am able to speak openly about my feelings when angry or worried	1	2	3	4	5
16	I have regular conversations with people I live with about domestic problems (for example, chores or money)	1	2	3	4	5
17	I do something for fun at least once a week	1	2	3	4	5
18	I am able to organize my time effectively	1	2	3	4	5
19	I drink fewer than three cups of coffee or other caffeine drinks a day	1	2	3	4	5
20	I take some quiet time for myself during the day	1	2	3	4	5

Job Satisfaction Questionnaire

By complete a job satisfaction questionnaire, you'll be able to identify those aspects of your current job that are rewarding as well as those that contribute to dissatisfaction. The results will help you to clarify the aspects of a job that most directly contribute to your career satisfaction. You can also use this exercise to predict how you might respond to potential occupations and the degree of satisfaction that a potential job is likely to provide.

PART I

GENERAL INFORMATION

Occupation: _____

How long have you worked for this company? _____

What previous positions have you held with the company? _____

What is your job title? _____

How long have you held your current position? _____

Briefly describe your work responsibilities (as you would on a resume):

PART II

RATING YOUR JOB SATISFACTION

1	2	3	4	5
not satisfied at all		somewhat satisfied		extremely satisfied

Using the scale shown above, rate your level of satisfaction with the following aspects of your job.

GENERAL WORKING CONDITIONS

- _____ Hours worked each week
- _____ Flexibility in scheduling
- _____ Location of work
- _____ Amount of paid vacation time/sick leave offered

PAY AND PROMOTION POTENTIAL

- _____ Salary
- _____ Opportunities for Promotion
- _____ Benefits (Health insurance, life insurance, etc.)
- _____ Job Security
- _____ Recognition for work accomplished

WORK RELATIONSHIPS

- _____ Relationships with your co-workers
- _____ Relationship(s) with your supervisor(s)
- _____ Relationships with your subordinates (if applicable)

USE OF SKILLS AND ABILITIES

- _____ Opportunity to utilize your skills and talents
- _____ Opportunity to learn new skills
- _____ Support for additional training and education

WORK ACTIVITIES

- _____ Variety of job responsibilities
- _____ Degree of independence associated with your work roles
- _____ Adequate opportunity for periodic changes in duties

OTHER ASPECTS OF THE JOB RELATING TO YOUR LEVEL OF SATISFACTION

Review your ratings. List the items for which your level was a 4 or a 5:

These are the aspects of your current job with which you are generally satisfied. As you consider potential career changes in the future, make sure you take into account those things about your current job that are satisfying.

Now list the items below for which your satisfaction level was a 1 or a 2.

These are the characteristics associated with your current work situation that are dissatisfying. These aspects of your job are the types of things that you'll want to avoid in any future career or occupational choice. You can gain a better understanding of what to look for in a future career change by analyzing what it is that you dislike about your current job.

As you consider changing your career plans, whether now or at some point in the future, try to make the types of changes that'll lead to an increase in your overall job satisfaction.

Work-Environment Questionnaire

To complete the questionnaire, read and then rate each statement according to the following scale:

- 5 Strongly Agree
- 4 Agree
- 3 Neither Agree nor Disagree
- 2 Disagree
- 1 Strongly Disagree

*This survey will be kept entirely **confidential** and is designed to solicit honest and candid feedback that will be used as a baseline for further and on-going work that will be done to improve overall school/work climate.*

- _____ The culture and emotional climate of the work environment is generally positive and supportive.
- _____ I feel like I am a part of a team (shared mission, values, efforts and goals).
- _____ I feel challenged and am given assignments that inspire, test, and stretch my abilities.
- _____ My efforts are recognized and acknowledged in tangible ways.
- _____ I receive constructive feedback in a way that emphasizes positives, rather than negatives.
- _____ Innovation is expected of me, and I am encouraged to take the initiative.
- _____ I have clear-cut and non-contradictory policies and procedures in my work environment.
- _____ I am encouraged to solve as many of my own work-related problems as possible.
- _____ I believe in and take pride in my work and my workplace.
- _____ At work, I am accepted for the person I am.
- _____ I feel in control of my work and capable of competently carrying out my daily tasks.
- _____ I tend to see problems as challenges, rather than as obstacles.
- _____ The rewards for success are greater than the penalties for failure.
- _____ I am encouraged to give honest feedback to my supervisor.
- _____ I am able to keep encounters with other staff work-centered, rather than ego-centered.

- _____ I feel accepted and am treated with courtesy, listened to, and invited to express my thoughts and feelings by the subordinates.
- _____ I feel accepted and valued by my colleagues.
- _____ I feel accepted and am treated with courtesy, listened to, and invited to express my thoughts and feelings by my principal.
- _____ I feel accepted and am treated with courtesy, listened to, and invited to express my thoughts and feelings by the upper administration.
- _____ The administrative team provides an environment in which I feel safe and secure.
- _____ The administrative team provides an environment in which honesty and openness are valued.
- _____ It is safe to go to employees of the administrative team if I'm having difficulty with some aspect of my job (a particular student or class, an angry parent, improving learning in some particular area).
- _____ To the degree that it is possible, I believe that the administrative team considers my needs and preferences when making decisions that affect my work life.
- _____ My professional judgment is respected by my principal; I have adequate freedom to exercise my judgment and expertise.
- _____ I see my principal as a resource (rather than an obstacle).
- _____ I have a clear understanding of the expectations of my principal.
- _____ I trust my principal to be there for me and back me up.
- _____ I feel safe sharing my plans, programs and policies with my principal.
- _____ My principal is committed to finding win-win solutions to problems.

WORK ENVIRONMENT QUESTIONNAIRE

Customer – Employee Relations & Empowerment Strategies How Are You doing

Instructions: To protect your confidentiality, please do not sign this form

Check on of the boxes next to each statement that corresponds to the extent you agree or disagree

Work Environment Issues	Stron gly Disag ree 1	2	Neut ral 3	4	Stron gly Agre e 5
1. Leaders in my organization have clear expectations for how employees should treat each other and our customers/clients.					
2. My job description clearly spells out my responsibilities for how I should treat other employees and customers/clients.					
3. Leaders in my organization give employees the authority to make decisions and take actions to meet the needs and expectation of our customers/clients					
4. Employees in my organization, for the most part, accept responsibility to make decisions and take actions to meet the needs and expectations of our customers.					
5. Leaders in my organization are positive role models for how employees should treat each other and our customers/clients					
6. My superior encourages and allows me to work to the best of my abilities					
7. I routinely set goals for myself and give my best at work and in my personal life.					
8. My superior routinely gives me feedback on my performance, whether positive or negative.					
9. Employees in my organization will often go beyond their job responsibilities to help another employee of their team or organization.					
10. I believe that people in my organization, for most part, work well together.					
11. I know I will be supported by my superior if I go beyond my job description to help another employee in my organization.					
12. My organization welcomes and encourages employees to “think outside the box”					

13. I believe that most employees understand the mission of our organization and how their work helps to serve that mission.					
14. My superior asks me for feedback on his/her performance, whether positive or negative.					
15. I frequently take the initiative to test out new ideas that might improve my work or the organization.					
16. My organization involves employees in helping to set goals for the organization.					
17. For the most part, my organization hires people who have good relationship skills.					
18. Most employees in my organization enjoy their work.					



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ETHICS APPROVAL OF PROJECT

Ethics Committee
Tel +27 18 299 4850
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Email Ethics@nwu.ac.za

2010-01-21

This is to certify that the next project was approved by the NWU Ethics Committee:

Project title : Work Conditions and Experiences of Emergency Medical Services Personnel in the Department of Health in South Africa	
Student : W Sibanda	
Ethics number:	NWU-00042-09-A9
<small>S = Submission, R = Re-submission, P = Professional Authentication, A = Authentication</small>	
Expiry date: 8 December 2014	

The Ethics Committee would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the Ethics Committee for any further enquiries or requests for assistance. The formal ethics approval certificate will follow shortly.

Yours sincerely

Marietjie Halgryn
NWU Ethics Secretariate