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IDENTIFICATION AND ANALYSIS OF SOUTH AFRICAN MANAGERS' LATENT BEHAVIORAL DRIVERS TOWARDS PROACTIVE HEALTH CARE

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ABSTRACT

This article identifies and analyses behavioral drivers of South African managers' behaviour to proactive health care. More specifically, the results enlighten patients' attitude-driven behaviour aiming at how to avoid buying the unsought medical products and service. A convenience snowball sample of approximately 300 managers in Gauteng and North-West Provinces in South Africa were drawn, and a total of 180 complete questionnaires were received back. The validated questionnaire by Fullerton and McCullough (2014) were used to collect the data on a six-point Likert scale. Exploratory factor analysis identified seven factors, namely: *Health is my own responsibility (16.9%), Preventative health (10.2%), Information on illnesses (8.0%), Really ill before visiting doctor (7.7%), Follow medical advice (6.5%), Health plan (5.8%), Corrective health actions (5.2%)* and *State Health plan (4.4%)*. The factors explain a cumulative variance of 64.9%%. The first five factors are reliability since their Cronbach Alpha coefficients exceed 0.60. The last two factors, *Health plan* and *Corrective health actions* are not regarded as reliable factors because their alpha coefficients are below 0.30. The predictive abilities of the demographic variables towards the identified factors of proactive health behaviour were determined using multiple regression as statistical tool. The demographic variable *Racial group* turned out to be a significant ($p<0.05$) predictive variable for the factor *Health plan* (B= -0.398; R^2 = 0.340). Regarding inter-correlations between the factors, a number of the factors show significant correlations ($p<0.05$; $p<0.010$) between one another, however these correlations are low (<0.30). This indicates that the factors are individualistic in nature and that they require focussed individual managerial attention. The results are of value to management of health plans, health care facilities and also to customers aiming not to become patients. In addition, limited research in South Africa has been done on proactive buying behaviour, and this should also be of value to other researchers and academia.

Key words: Proactive health, latent variables, factor, managers, preventative health, healthy lifestyle.

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INTRODUCTION

The Consumer Health Coalition (2016) states that "…*It is in your best interest to be as proactive a patient as possible!*" Additionally Rankin (2015) points out that the patient plays an important part in his or her proactive health and is also the first line of defence against health issues because "*You know yourself and your needs better than anyone else*"; hence the patient should be first to become aware of any health changes. However, although the patient may be the first to realise health changes, not all of them act upon these health signals timeously. Rankin (2015) further points out that many of the patients acting upon health issues simply hand the power of their health over to physicians who they believe will heal them. They do not actively participate in getting better or to proactively manage their health.

Being unwell is by definition a negative state of affairs. By large measuring customer service in hospitals and post-medical procedures (which in essence are negative experiences rather to be avoided) seem to be mustard after the meal. Preventing hospitalisation and medical procedures from happening in the first place, is a more positive approach to personal health management.

Research by Cloete and Bisschoff (2015:59), in this regard, indicated that modern patients are taking more responsibility for their own health. Frequent exercise, being thoughtful about nutrition and diet have filtered through into the market place where healthy foods and specialised health supplements are now a common grocery item in the shopping trolley. People are living a better lifestyle than before whilst they have also became more proactive and started to take charge of their personal health issues.

This is also true in South Africa where the strong drive towards patient proactiveness originated in the largest medical insurance company Discover Health (2016). The specialised proactive health programme named *Vitality*, launched by Discovery Health, rewards proactive patient behaviour by issuing credits on a dynamic points system that can be redeemed in a wide array of business activities such as cheaper airline tickets, discounts at designated stores or heavily discounted membership at fitness centres. Vitality members get points for regular exercising, participation in organised sport events and also when they perform early detection of preventative health medical

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procedures like mammograms, visiting gynaecologists and annual check-ups of the prostate gland, cardiograms and colonoscopies, for example (Discovery Health, 2016). Other medical insurance companies followed suit with similar products to encourage personal proactive health management.

In addition many private and public companies are setting up in-house wellness centres to assist employees in proactive health activities. Typically these wellness programmes assist in inoculations, stress management programmes, hypertension detection, fitness programmes and also psychological services for their employees (NWU, 2016). Some companies even set up in-house fitness centres and communal training programmes before, after and even during working hours to improve the health of their employees (Escom, 2016; Standard Bank of South Africa, 2016). More nutritional lunches are also served at employee canteens for lunch, all to improve health and prevent typical illnesses associated with obesity like type II diabetes, insulin resistance, hypertension or metabolic syndrome X (McArdle, et al. 2013:791).

PROBLEM STATEMENT

Patients can benefit from being proactive into living healthier for longer and maintain a better quality of life. Several of the illnesses that patients experience can be prevented if they focus on the cause and take action before it manifest in their bodies. Currently South Africa is the most overweight country in Sub-Saharan Africa with at least 33% of the population being overweight (Africa Check, 2015). In addition, Cloete and Bisschoff (2015:60) points out that 66% of adults South Africans are overweight or obese. They are on average 11 kilograms heavier than what their 1960 counterparts (Cook, 2014). However, another study by Lancet indicates that not 66%, but that 55% of South Africa's adults were overweight or obese. Gender distribution analysis indicated that women are three times more obese than men, indicating that 42% of women and 13% of men in this study were overweight or obese. It is noteworthy that although obesity is a serious health risk, it is not the only aspect of health risk that should be considered in a proactive health management plan (Health24, 2014).

A paradigm shift of patients is essential to mend their health by taking actions to promote and achieve improved health. Cloete (2014) points out that self-education

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regarding health risk factors, the family history, a healthy lifestyle and diet are also part of wide range aspects that forms part of the proactive health measures to prevent diseases in lives of people. Research by Fullerton and McCullough (2014) in the United States of America and Cloete and Bisschoff (2015) in South Africa analysed the patient proactive behaviours and attitudes as drivers of proactive health. However, these studies did not attempted to identify latent variables as drivers of proactive health behaviour. This study aims to explore the latent variables as drivers of proactive behaviour to enable patients and industry to better understand patient behaviour and assist in the paradigm shift on proactive health.

RESEARCH OBJECTIVES

Objectives

The primary objective is to identify latent drivers of proactive health behaviour and attitudes pertaining to South African managers.

The secondary objectives are to:

1. Investigate the current health system in South Africa;
2. Compile a demographic profile of the respondents;
3. Test the reliability of the data;
4. Identify latent drivers of proactive health behaviour; and to
5. Identify significant relationships between the demographic variables and the latent drivers of proactive health.

THE SOUTH AFRICAN MEDICAL ENVIRONMENT

The South African Health budget is 9.9% (2014), 8.93% (2015) and 8.7% (2016) of the Gross Domestic Product (GDP), amounting to ZAR168.4 billion awarded to health (Worldbank, 2015; Businesstec, 2016; SA, 2016). Noteworthy is the proactive health allocation of ZAR740 million for the treatment of tuberculosis, including enhanced

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screening and earlier detection and diagnosis (SA, 2016). The aim of public health is not only to improve longevity, but also to increase quality of life for all South Africans. In addition, the South African Treasury announced that sugar in fizzy drinks will be taxed from 2017 as sugar is regarded to be unhealthy. However, the South African statistics of infant mortality has decreased it remains high according to international standards with 40.19 deaths per 1000 births (South Africa Info, 2016). Life expectancy in South Africa for males is 57.7 years and for females it is 63 years (Health24, 2015).

Medical insurance companies in South Africa

The South African population, according to the 2012 census, were an estimated 52 million people. However, when concerning proactive health issues, this figure is skewed because the population composition differs vastly in their access to medical and health services. In reality, South Africa is both a first and third world country simultaneously. The first world component consists of a high income earning section of the population with upper middle to high living standards who have access to excellent medical health services in private hospitals and private physicians or specialists by means of good medical insurance plans afforded by them. These physicians are well experienced and trained, and on par with the world's best doctors. This group is fairly representative of the country demographics and the common denominators in this market is education, good employment and relative high income levels.

In support of this market, medical insurance companies act more informatively to encourage their members to actively partake and manage their health proactively. These companies strive to be more efficient as well as financially viable whilst some are even listed on the Johannesburg Stock Exchange. They form partnerships developed in areas such as healthy living promoters at fitness centres (for example Discovery Vitality with Virgin Active and Planet Fitness centres), Insurance Institutions (for example Old Mutual) whereby members can apply for a credit card or loyalty points scheme participation, or even cheaper airline tickets and hotel accommodation as rewards for engaging in proactive health activities (Discovery Health, 2016). This mutually beneficial business strategy improves not only quality of life for the members, but also

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render better profits for the medical insurance companies because they save on illness costs which are now proactively averted.

Additionally, medical insurance also service their members needs successfully by professionally segmenting and targeting their members to market specific health packages to them that fits in well with their lifestyle and stage in the family life-cycle. These medical insurance packages range from the more affordable and cheaper packages with the uttermost basic cover, up to a package for members who have the means to afford more medical and dental procedures, attempting to satisfy all their members' needs (Bankmed, 2016; Discovery Health, 2016). Medical insurance companies also inform and members of the recommended price of procedures (as defined by the Department of Health), and pre-approved medical procedures.

Medical insurance companies have, as strategic cost management thrust, identified preventative health as vehicle to better profit margins. Resultantly they have created a partnership network and member product offerings to encourage members to, for example, exercise more for their own good health, lose weight, be more active, stop smoking and live a more healthy life, adding financial benefits to members such as cheaper premiums or earning reward points that can be redeemed on a wide array of options. In addition, strict control measures are in place to make sure that members, who commit themselves to exercising at partner gyms, stick to their new lifestyles. Employers are also drawn into the partnership circle to ensure healthier lifestyles of their employees. Employers have the benefit of healthier employees and hopefully less absenteeism, whereas medical insurance companies gain in the long run because healthier members have minimum doctor's visits and generally results in a saving on medical expenses insured by the company (CDC, 2013 cited by Discovery Health, 2016).

On the other hand, the majority of the population are third world citizens who are relying on the public health system for medical care. This care are delivered via the state hospitals and rural clinics throughout the country.

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State Hospitals and Community Clinics

The third world component consists of the poor population segment who makes use of state medical services, poorly managed public hospitals and remotely distributed clinics where understaffing and high patient doctor ratios are in the order of the day. Additionally patients are screened by a qualified nurse and overworked general practitioners only consult seriously ill patients. Patients not screened to see the physician are treated by the nursing staff. Most of these doctors are freshly graduated and busy doing their compulsory practical service year as interns at a government health institution. Their aim is to be admitted as general practitioners after completion of their government service year and to move on into private practice. Few doctors stay in state employ after their compulsory service year, hence limited medical memory is retained by state hospitals and clinics. The state also makes use of Nigerians, Cubans and other nationality doctors to fill the shortage gap. However, language frequently presents communication problems between the patients and these foreign doctors, leading to perceptions of inferior training or treatment by these foreign medical staff.

In the state hospitals a first come first serve system prevails. First patients have to sit in line for a file to be opened, be screened by the nurse, and then wait in line again to see the doctor. Should further examination be required (such as X-rays) patients need to join that que where after falling in at the back of the que at the doctor. This is immensely frustrating and time consuming for ill patients. The same rules apply when collecting medicines if prescribed to a patient. A visit by a severely ill person can take a whole day before being admitted (Moeti, 2012) and patients mostly complain about the long waiting times and inadequate supplies available in state institutions, resulting in low services satisfaction levels (Makgai, 2012). In this regard Mapumulo's (2014) indicated that of the 394 state hospitals that was audited by the Department of Health for the service delivery aspects of cleanliness, infection rates, drug stocks, staff attitude, patient safety and waiting times, only one hospital met the accepted standards set by the department.

The state medical services are free of charge and medication is distributed free of charge to patients diagnosed with illness of chronic conditions such as hypertension, for

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example. Hospitalisation is also free of charge, however long waiting lists are the order of the day when an operation is needed.

Future changes in medicare

The Department of Health is well aware that the current system of health services is severely under pressure, inadequate and that quality health service is not provided to the majority of South Africans. As a result the concept of a National Health Insurance (NHI) is investigated whereby better health services could be rendered to all South Africans. The aim is to bring equal medical services to everyone, regardless if they have a private medical insurance plan or not. This insurance plan is state driven and resembles the National Health Care (NHC) plan that is in existence in the United States of America. At present this health concept is in its planning stage and no law regarding this new proposed medical structure was passed as yet in South Africa to implement the system (Department of Health in SA, 2012).

PROACTIVE HEALTH MANAGEMENT

Everyone is responsible for his or her own health. This means that people should be proactive in attitude and behaviour to reap the benefits of avoiding or supressing illnesses or diseases. In addition early detection by proactive behaviour also improves the prognoses of illnesses. Early detection of serious illnesses such as cancer or tuberculosis dramatically increase the probability of successful treatment and even cure. In this regard it is important to note that the patients must act proactively and not extend action due to insecurity, fear of diagnoses or a feeling of wait and see if symptoms are a false alarm. In proactive health management, time is of the essence and delayed actions could be detrimental to a person's health and longevity.

"You cannot escape the responsibility of tomorrow by evading it today.

Abraham Lincoln

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Proactivity also includes less serious actions such as making sure that a balanced diet provides all the required vitamins and minerals. Patients with vitamin deficiency can, for example, sense symptoms such as weakness, tiredness, light-headedness, rapid heartbeat and breathing to name but a few (Last, 2013). Although there is controversy about nutrition, it is widely accepted that healthy nutrition is displayed in the Mediterranean diet with fish, shellfish, whole grains, fruit, vegetables, nuts, healthy fats like olive oil, and very little red meat. Moderate daily intake of all the mentioned food categories ensures natural health. This is also a relatively cheap diet for patients to follow (Mayo Clinic, 2013). Vegetarians replace the protein or amino acids that meat and fish provide to the body with nuts, dairy, eggs, hummus, hempseed, and buckwheat products (English, 2014).

Taking care of the physique when younger can help a person to live healthier for longer. Overexposure to the sun when young could lead to skin problems later in life, and even skin cancer in severe cases. Diseases like Alzheimer's (Dementia) or Parkinson's disease can in some cases be postponed if managed properly and if care is taken accordingly. The brain can be protected with some of the same strategies used to protect a heart, namely not to smoke; to control blood pressure, cholesterol and blood sugar levels and maintain a healthy weight (Alzheimer's Association, 2014).

Medical doctors confirm that being proactive in the consultation room has less medical complications and adverse events than when being reactive (except it is more time consuming). Discussing the different options with patients, guiding them, but then leaving the decision for them to decide what option suits them better. Patients are all very unique, taking time and effort to explain preventative evidence-based medicine is the focus. The best results and satisfaction concerning their treatment is the ultimate aim (Young, 2011).

Various vaccines are available for various serious illnesses to improve patients' immunity towards a particular disease. A vaccine normally contains an inactivated or weakened disease-causing microorganism that is introduced to a body to prevent disease to manifest and cause illness. After vaccination a microorganism is recognised by the anti-bodies and the body uses its own immune system to combat and protect the body from that disease (Harvard Health Publications, 2000-2014). The Centre for Disease

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Control and Prevention (CDC) also recommend taking the influenza vaccine every year to protect patients from infection. In the United States of America the estimates of flu-associated deaths, range from a low of about 3,000 in 1997 to a high of approximately 49,000 people in 2007. Nearly 90 percent of deaths occur in people 65 years and older. The seasonal flu vaccine protects against the influenza viruses that research indicates will be most common during the upcoming season (World Health Organisation, 2014). However, it is noteworthy that the body's immune response from vaccination declines over time, so an annual vaccine is needed for optimal protection. Flu viruses are constantly changing; the formulation of the flu vaccine is reviewed each year and sometimes updated to keep up with changing flu viruses (Centre for Disease Control, 2014).

D'Adamo (2014) emphasizes the importance of blood type, and categorise the best nutriment to consume for better body function of each of the blood types. According to him our blood type is the roadmap to our inner chemistry. Each blood type process food, handles stress and fight disease differently. Patients need to consume enough of all the food groups daily, water, vegetables, fruit and a protein source such as dairy, meat, fish or beans, to stay healthy. Proactive health actions, according to D'Adamo, should therefore also consider foods that best fit the individual's blood type.

Considering the patient's family history, and proactive actions to help prevent early occurrence and controlling of these known diseases, nutrition play a vital role in lifestyle habits (Young, 2011). This global take-control-of-my-health attitude and that of regular wellness and medical action is thus a topic with many different facets and worthy of scientific investigation in South African environment.

In summary, key proactive health focusses on (Ranklin, 2013):

- Maintain a healthy physical fitness to increase blood flow and oxygen to the brain, heart as well as other parts of the body;
- Preventative medicine for high cholesterol, high blood sugar or hypertension;
- Getting a flu injection to prevent severe flu in the winter;
- To be informed about a sickness or disease through research before going to the doctor;

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- Refrain from excessive dieting and taking dietary tablets;
- Gather information and be educated about illnesses and preventative actions;
- Perform early warning medical tests such as annual prostate examinations, pap smears or mammograms; and
- Intake of enough vitamins and minerals that the body require to function if nutrition is not adequate.

RESEARCH METHODOLOGY

The questionnaire

Fullerton and Davidson (1991) designed an eight item questionnaire to assessed patient proactivity. The questionnaire was expanded to include additional preventive health care and preventative health behaviors (Cangelosi, Ranelli & Markham, 2009; Fullerton and McCullough, 2013) This final questionnaire were validated by a group of non-physician practitioners who work in the health care field. Based on their feedback, a final questionnaire was drafted and presented to a general practitioner (MD) for critical review. Several items were slightly modified and three items were added. The questionnaire employs a six-point Likert scale ranging from *strongly agree* to *strongly disagree*, regarding their proactive health behaviour and include questions to compile a demographic profile.

For South African use the questionnaire was marginally adapted to fit country specific influences. The content validity of the questionnaire was confirmed by subjecting it to a quantitative research panel consisting of South African business management academia. The panel's comments were presented and discussed with Fullerton as the key author of the original questionnaire for comments (Cloete, 2014). In addition the questionnaire was tested in a pilot study by Cloete and Bisschoff (2015) to ensure that the questionnaire performs well in the South African managerial environment. This questionnaire was used to collect the data from the South African respondents (Cloete & Bisschoff, 2015).

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Data collection

A convenience snowball sample, estimated to be 300 managers in Gauteng and North-West Provinces, were target using the social media platform Facebook. The questionnaire was shared to them (as Facebook friends) with a request to complete the questionnaire and then to re-share the questionnaire together with the request to their Facebook friend fitting the managerial profile. One reminder message was sent to increase the response rate. A total of 180 complete questionnaires were received (indicating an estimated response rate of 60%). Since no accurate response rate can be calculated, the adequacy of the number of respondents was determined by the Kaiser, Meyer and Olkin measure of sample adequacy (Steyn, 2016). Respondents emailed their completed questionnaires to the North-West University's Statistical Consultation Services (Potchefstroom campus) where the data were professionally captured and analysed.

Data analysis

The statistical analysis used in this paper, the interpretation and the decision-making criteria thereof are listed in Table 1 below.

Table 1: Statistical techniques and interpretation

Technique	Interpretation	Source
Kaiser, Meyer and Olkin measure of sample adequacy (KMO)		
• Acceptable (Lower limit)	≥0.50	Field (2009:671)
• Satisfactory	≥0.70	Field (2009:672)
Bartlett's test of Sphericity	p≤0.01	Field (2009:671)
Cronbach Alpha		
• Satisfactory reliability	α≥0.70	SPSS (2016); Field (2009:674); Cronbach (1951:322); Cortina (1993:103)
• Acceptable lower limit of reliability	α≥0.57	
• Minimum reliability	α≥0.30	

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Table 1: Continued…

Technique	Interpretation	Source
Pearson correlation coefficient		
• Medium correlation	≥0.30	Nagelkerke (1991:691);
• Strong correlation	≥0.50	SPSS (2016)
Exploratory Factor Analysis		
• Factor loadings	≥0.40	Field (2009:644)
• Cumulative variance explained	0.60	Field (2009:645)
• Eigenvalues	≥1	Kaizer (1960:145)
• Eigenvalue (Lower limit)	0.70	Jolliffe (2002); Cangelosi & Gorieli (2007:5)
Multiple regression		
• Significance	$p \leq 0.05$; $p \leq 0.10$	Field (2009); SPSS (2016);
• Variance ($R^{2)}$	$R^2 \geq 0.50$	Nagelkerke (1991:691)

RESULTS

Demographic profile

The demographic profile of the respondents appear in Table 2 (figures rounded to nearest decimal).

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Table 2: Demographic profile

Demographic variable	Percentage
Respondents' health	
Good health	89%
Minor health problems	10%
Major health conditions	1%
Medical insurance	
Member	93%
No medical insurance	5%
Government health programs	2%
Racial orientation	
Whites	71 %
Blacks	23%
Coloureds	4%
Indians	2%
Full-time employed	91%
Relationships	
Married and living with their spouse	67%
Single	24%
Widowed, divorced or unmarried but living with their partners	9%
Households structures	
Only one person the household,	11%
Consisted of 2 to 5 persons	86%
More than 5 people in household	3%
Sexual preferences	
Heterosexual	82%
Prefer not to answer the question	12%
Did not answer the question at all	4%
Homosexual or bisexual	2%

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From the table it is clear that the majority of managers are in good health, are able to afford private medical insurance (with or without their employ's fringe medical benefits), are white and consists of 2 to 5 people per household. The majority are married; hence the supportive heterosexual preference. Noteworthy is the fact that this population is not reflective of the demographics of the country. It would, therefore, seem that more white respondents opted to take part in the survey as the initial population targeted were equally dispersed between black and white managers.

Sample adequacy and data suitability

The adequacy of the population were statistically calculated by the KMO statistic. In addition, the analysis of inter-correlations between variables are also important since it reports on the advisability to use the data in multivariate statistical analysis. The results appear in Table 3.

Table 3: Sample adequacy and sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.621**
Bartlett's Test of Sphericity	Approx. Chi-Square	711.541
	df	253
	Sig.	**.000**

The KMO value is not satisfactory (see Table 1) but acceptable as it exceeds the lower margin of 0.60. The population is thus usable in analysis. Further, the result of the Bartlett's test (χ^2 (253) = 711.541; $p \leq 0.01$)) reveals that the data is suitable for use in exploratory factor analysis.

Factor identification

The results from the factor analysis in Table 4 show that eight latent variables (called factors) could be identified from the data. Only factors with eigenvalues of one and higher, according to the Kaizer criterion, were extracted (Kaizer, 1960:145).

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Table 4: Variance and cumulative variance explained by factors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	3.893	16.926	16.926	3.893	**16.926**	16.926
2	2.353	10.229	27.155	2.353	**10.229**	27.155
3	1.846	8.028	35.183	1.846	**8.028**	35.183
4	1.770	7.697	42.879	1.770	**7.697**	42.879
5	1.488	6.470	49.350	1.488	**6.470**	49.350
6	1.342	5.836	55.185	1.342	**5.836**	55.185
7	1.211	5.266	60.452	1.211	**5.266**	60.452
8	1.021	4.439	64.891	1.021	**4.439**	**64.891**

Extraction Method: Principal Component Analysis.

The cumulative variance explained exceeds 60% indicating a good fit to the data. In addition, the most variance (16.9%) is explained by the first factor, indicating that this factors is the most important latent variable. The component matrix was rotated using a varimax rotation because this rotation maximises the variance explained; this suitable for exploratory research (Field, 2009:639). The rotated matrix appears in Table 5 (note that the criteria numbers correspond with their descriptions as per Appendix A).

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Table 5: Rotated Component Matrix[a]

	Component							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
6	.850							
7	.750							
5	.612							
8	.546							
4	.407							
13		.785						
11		.678						
12		.663						
9		.637						
15			.830					
21			.725					
14			.672					
3				.896				
22				.891				
20					.829			
1						.781		
16						.481		
17						.406		
19							.733	
18							.648	
23								.883

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Two criteria did not achieve the minimum factor loading of 0.40 set for this study. Questions 2 and 10 dealt with *the respondent's present health* and *making a list of questions to ask the doctor when visiting him/her*, respectively. Noteworthy is that 89% of the respondents indicated that they are in good health when they completed the questionnaire (Criterion 2). The non-importance of Criterion 10 to South African

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patients is no surprise because subjecting a doctor with a written list of questions is, in addition to be culturally impolite to the doctor, also not the standard practice in the country. As a result of their low factor loadings, these two criteria were discarded form the analysis.

The results identified a total of seven factors. The factors are: *Health is my own responsibility (16.9%), Preventative health (10.2%), Information on illnesses (8.0%), Really ill before visiting doctor (7.7%), Follow medical advice (6.5%), Health plan (5.8%), Corrective health actions (5.2%)* and *State Health plan (4.4%)*. The factors explain a cumulative variance of 64.9%%. Furthermore the results showed that the first five factors could be regarded as reliable because their alpha coefficients exceed the required 0.60 Cronbach Alpha coefficient with ease. The last two factors, *State health plan* and *Corrective health actions* are not regarded as reliable because their alpha coefficients are below 0.30

Reliability of the data

The reliability of the factors were measured my calculating the Cronbach Alpha coefficient. The reliability results appears in Table 6.

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Table 6: Reliability of the factors

Factor	Cronbach's Alpha	No. of Items
Factor 1: Health is own responsibility	.627	5
Factor 2: Preventative health	.654	4
Factor 3: Information on illness	.688	3
Factor 4: Really ill before visiting doctor	.847	2
Factor 5: Follow medical advice	***	1
Factor 6: Health plan	.370	3
Factor 7: Corrective health actions	.366	2
Factor 8: State health plan	***	1
Total data set	**.739**	**23**

*** *undetermined due to limited criteria*

From Table 6 it is clear that Factors 1 to 4 is reliable factors (exceeding the lower limit of 0.57 with ease), while factors 6 and 7 are not. This means that the first four factors are more likely to be population related factors which should represent themselves in future similar studies, while the other four factors are more related to this specific study. The total data set displays a satisfactory reliability coefficient above 0.70 indicating that the data were suitable for analysis.

The eight factors have also been tested against the demographic variables to identify possible relationships by means of Pearson correlations ($p \leq 0.05$; $p \leq 0.10$). Significant correlations higher than 0.30 are deemed mentionable (see Table 7 for the correlation matrix).

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Table 7: Pearson Correlation matrix

FACTORS		Marital status	Racial orientation	Sexual orientation	Employ-ment	Age	Study further
Health is own responsibility	Correlation	.014	-.025	-.063	**-.195****	-.025	.021
	Sig. (2-tailed)	.853	.739	.411	.010	.739	.785
	N	179	179	173	175	180	170
Preventative health	Correlation	**.148***	**-.158***	**-.185***	-.077	-.183*	**-.282****
	Sig. (2-tailed)	.047	.035	.015	.312	.014	.000
	N	179	179	173	175	180	170
Really ill before visiting the doctor	Correlation	.003	**-.154***	.139	-.117	-.068	-.003
	Sig. (2-tailed)	.971	.040	.067	.124	.362	.964
	N	179	179	173	175	180	170
Follow medical advice	Correlation	-.068	-.042	-.063	-.084	**-.157***	-.086
	Sig. (2-tailed)	.366	.576	.409	.268	.035	.267
	N	179	179	173	175	180	170
Health plan	Correlation	.059	**-.227****	.039	.047	-.069	-.065
	Sig. (2-tailed)	.431	.002	.608	.541	.358	.401
	N	179	179	173	175	180	170
Corrective health actions	Correlation	-.055	-.106	.064	**-.162***	-.095	.086
	Sig. (2-tailed)	.467	.157	.405	.032	.204	.268
	N	179	179	173	175	180	170

$*p \leq 0.05$; $**p \leq 0.10$

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Although a number of significant correlations surfaced, none of them exceeded 0.30, hence not worth mentioning. In subjecting the demographic variables to a multiple regression model, however, revealed that four demographic variables (as independent variables) do have predictive some predictive abilities on the some of the factors (as dependent variables) concerning health attitudes and preventative health behaviors. The results appear in Table 8.

Table 8: Influences of demographic variables on factors

Identified factors as <u>dependent</u> variable	**Unstandardized Coefficients**		**Standardized Coefficients**			**Demographic variables acting as <u>independent</u> variables (predictors)**
	B	**Std. Error**	**Beta**	**t**	**Sig.**	
Health is own responsibility	.233	.068	.245	3.404	.001	Racial category
Really ill before visiting doctor	1.048	.290	.944	35.733	.000	Racial category
Follow medical advice	.161	.041	.265	3.974	.000	Racial category
Health is own responsibility	.319	.058	.395	15.128	.000	Sexual orientation
Really ill before visiting doctor	1.764	.117	.159	3.241	.001	Sexual orientation
Illness information	.188	.058	-.084	-1.127	.001	Employment status
Corrective health	.227	.075	.144	3.020	.003	Employment status

$p \leq 0.05$

Racial category as independent variable has a significant influence on three factors, namely that *Health is own responsibility* ($p \leq 0.05$; $\beta = 0.233$), *Really ill before visiting*

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doctor (p≤0.05; β=.1.048), and *Follow medical advice* (p≤0.05; β=0.161). Likewise, the demographic variable *Sexual orientation* shows influences of the factors *Health is own responsibility* (p≤0.05; β=0.319) and *Really ill before visiting doctor* (p≤0.05; β=1.764). The factors *Illness information* (p≤0.05; β=0.188) and *Corrective health* (p≤0.05; β=0.227) are influenced by the demographic variable *Employment status.* In essence the regression analysis shows that three of the reliable factors and two of the non-reliable factors were influenced by demographic variables, signifying their relevance in proactive health attitudes and behaviours.

SUMMARY

The study aimed to identify latent variables that influence proactive health behaviour amongst managers in the Gauteng region of South Africa. The empirical research succeeded to do so and eight latent variables (factors) were identified. The factors and their variance explained are: *Health is my own responsibility (16.9%), Preventative health (10.2%), Information on illnesses (8.0%), Really ill before visiting doctor (7.7%), Follow medical advice (6.5%), Health plan (5.8%), Corrective health actions (5.2%)* and *State Health plan (4.4%).* It is also noteworthy that the first four factors are reliable according to the Cronbach alpha coefficient, while the other four factors are not regarded to be reliable.

The responding managers were also demographically profiled, and the demographic variables were analysed for positive influences towards the factors. Although a number of significant correlations were identified, they were below 0.30, signifying weak relationships between the demographic variables and the factors. However, the multiple regression analysis indicated that three dependent demographic variables are significant to the measuring criteria (see Appendix A). These variables are *Racial category*, *Sexual orientation* and *Employment status*. The dependent variable *Really ill before visiting the doctor* shows a strong beta value towards the independent variables *Racial category* (1.048) and *Sexual orientation* (1,764); this indicates predictive ability of the independent variable towards these two dependent variables. In practice this means that race and sexual orientation do play a role when a patient decides to visit the doctor.

The study is of value for researchers, academia and managers in the health industry.

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Care should, however, be taken before the results are operationalized because the sample is limited to a specific geographic area and specific manager profile. The results may therefore differ in other regions and with different managerial profiles. However, the study identified the latent variables successfully that can be employed in understanding and managing managers towards better proactive health habits, increased longevity and quality of life.

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Appendix A: Proactive health measuring criteria

1. Describes your current health care plan?
2. How would you describe your health over the past year or so?
3. I only see a doctor when I am really sick.
4. I believe that I am the person who is primarily responsible for my own health.
5. I often read articles from news resources and magazines which contain information on health – and how to maintain my health.
6. It is important to know how to prevent diseases and illnesses from occurring.
7. It is important to recognize the early symptoms and warning signs of disease.
8. It is important to have a family physician.
9. I have a physical exam on a relatively regular basis.
10. I like to ask my doctors questions; in fact I think it is smart to take a written list of questions when visiting a doctor.
11. I have a flu shot most years.
12. I take vitamins as a way of maintaining better health.
13. I use herbal supplements that are advertised as a way to improve my health.
14. I visit Internet sites such as WebMD to get information about illnesses and their cures.
15. I have visited Internet chat rooms (and blogs) where specific illnesses are discussed.
16. My current health insurance plan does a good job of meeting my needs.
17. An HMO or PPO is superior to traditional health care insurance.
18. When a doctor gives me a prescription, I generally have it filled and begin taking it right away.
19. When appropriate, I engage in self-examinations which will help me identify potential health problems.
20. When a doctor gives me a prescription, I take it as instructed until I run out – even if I feel better before I have taken all of the prescribed medicine.
21. I sometimes visit social media sites such as Facebook to get information about certain diseases and their treatments.
22. I only go to the doctor when I am really sick
23. In general, I am satisfied with the health care system in the United States.