Behavioural determinants of hand hygiene of nurses in a private healthcare institution: A qualitative exploration

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DECLARATION

I, Sonelle Coetzer, ID 6712110009085, student number: 13099698 hereby declare that I have read the North West University's "Policy on Plagiarism and other forms of Academic Dishonesty and Misconduct" (NWU 2011).

I did my best to acknowledge all the authors that I have cited in this dissertation and tried to paraphrase their words to the best of my ability while still trying to portray the correct meaning of the words. I also declare that this dissertation in its entirety is my own work.

Ms S Coetzer

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ABSTRACT

Patient safety is one of the most important focus points of global healthcare. According to the World Health Organization (2017:1) patient safety is the prevention of errors and adverse effects on patients while receiving medical care. Hand hygiene is classified as one of the initiatives to ensure safe efficient clinical care to people in need of healthcare. Poor hand hygiene compliance, and emerging multidrug resistant organisms, not only pose a threat to the health of the community but could become the central point of failure of the entire global currently known healthcare system.

Despite available knowledge and the implementation of hand hygiene educational programmes, hand hygiene compliance levels remain low in a private hospital in the Mpumalanga Province of South Africa. Organisational leaders identified behavioural anomalies as a possible reason for poor compliance yet the behavioural determinants of nurses' hand hygiene compliance have not been investigated.

A literature review, regarding national and international trends and guidelines concerning hand hygiene, was conducted. This review identified behavioural determinants of hand hygiene as a gap in efforts to improve hand hygiene compliance. The aim of this study was to identify the behavioural determinants of hand hygiene of nurses working in a private hospital. The objectives of the study were to explore and describe hand hygiene practices of nurses, working in a private hospital, from a qualitative perspective and to formulate recommendations based on the study's findings.

The study followed a qualitative, interpretive and descriptive design. An all-inclusive purposive sample was selected of registered and enrolled nurses (N=143). Participants were recruited by an independent mediator who explained ethical aspects, including informed consent. Data were collected by trained facilitators by means of two World Café data collection sessions. Data saturation occurred with 22 participants. Data were transcribed by the researcher. Five themes with 9 descriptive categories and 13 subcategories emerged. The realities of different knowledge bases, whether embedded or acquired, influenced established hand hygiene patterns. Although established hand hygiene patterns might be dysfunctional and unscientific, they could become the truth within a practise gap and therefore become reality for the persons concerned. Hand hygiene compliance might be disrupted due to the misalignment of organisational processes causing inner conflicts for nurses. Although nurses strive for operational efficiency, inner conflicts between the organisational culture, nurse's personal value system and the hospital's hand hygiene culture, operational efficiency might become impossible, leaving nurses disengaged

from the workplace and the patient. A direct consequence of disengagement is non-patient centred nursing care with negative impacts on patients' safety. Recommendations are formulated to address deviations in practice e.g. to advocate a task group within the hospital assigned to improve hand hygiene as well as recommendations for future research and policy.

Key words: Hand hygiene, behavioural determinants, nurses, private healthcare, World Café data collection procedure

(Abstract word count: 462)

OPSOMMING

Pasiënte se veiligheid is een van die belangrikste aspekte betreffende globale gesondheidsorg. Volgens die Wêreld Gesondheidsorganisasie (2017:1) behels pasiëntveiligheid die voorkoming van foute en nadelige gevolge vir pasiënte terwyl hulle mediese sorg ontvang. Hand higiëne is geklassifiseer as een van die inisiatiewe om veilige doeltreffende kliniese sorg te voorsien aan persone wat gesondheidsorg benodig. Swak voldoening aan hand higiëne, en die verskyning van multi-middel weerstandbiedende organismes, bedreig nie net die gesondheid van die gemeenskap nie, maar kan die sentrale punt word van die ineenstorting van die totale globale tans bekende gesondheidsorg stelsel.

Ten spyte van beskikbare kennis en die implementering van hand higiëne opvoedkundige programme, bly voldoeningsvlakke van hand higiëne laag in ‘n privaat hospitaal in die Mpumalanga Provinsie van Suid-Afrika. Organisasie leiers het gedragsteenstrydighede geïdentifiseer as die rede vir swak voldoening, maar die gedragsbepalers van verpleegkundiges se hand higiëne voldoening is tot hede nog nie ondersoek nie.

‘n Literatuuroorsig, betreffende nasionale en internasionale tendense en riglyne wat verband hou met hand higiëne, is gedoen. Hierdie oorsig het gedragsbepalers van hand higiëne uitgewys as ‘n gaping in die pogings om voldoening aan hand higiëne te bevorder. Die doel van die studie was om die gedragsbepalers te identifiseer van hand higiëne van verleegkundiges wat in ‘n privaat hospitaal werk. Die doelwitte van die studie was om hand higiëne praktyke van verpleegkundiges, wat in privaat hospitaal werksaam was, te ondersoek en te beskryf vanuit ‘n kwalitatiewe perspektief en aanbevelings te formuleer gebasseer op die studie se bevindings.

Die studie het ‘n kwalitatiewe, verklarende en beskrywende ontwerp gevolg. ‘n Alles-insluitende doelgerigte steekproef is gekies van geregistreerde en ingeskrewe verpleegkundiges (N=143). Deelnemers was gewerf deur ‘n mediator wat die etiese aspekte, insluitende ingeligte toestemming, verduidelik het. Data is ingesamel deur opgeleide fasiliteerders deur middel van twee World Café data insamelingsessies. Data saturasie is bereik met 22 deelnemers. Data is deur die navorser getranskribeer. Vyf temas met 13 sub-kategorieë en nege beskrywende kategorieë het te voorskyn gekom. Die realiteite van verskillende kennisbasisse, synde vasgelê of aangeleer, het die vasgestelde hand higiëne patrone beïnvloed. Alhoewel vasgestelde hand higiëne patrone disfunksioneel en onwetenskaplik kan wees, kan hulle die waarheid word binne ‘n praktykgaping en dus die werklikheid word vir die betrokke persone. Voldoening aan hand higiëne mag onderbreek word deur die ontsporing van organisatoriese prosesse wat innerlike konflik vir verpleegkundiges veroorsaak. Alhoewel verpleegkundiges na operasionele doel-

treffendheid streef, kan innerlik konflik tussen die organisatoriese kultuur en die verpleegkundige se persoonlike waardestelsel en die hospitaal se hand higiëne kultuur, operasionele doeltreffendheid onmoontlik maak, wat veroorsaak dat die verpleegkundige onbetrokke raak by die werkplek en by die pasiënt. ‘n Direkte gevolg van onbetrokkenheid is nie-pasiënt-gesentreerde verpleegsorg, met ‘n negatiewe impak op pasiënte se veiligheid. Aanbevelings is geformuleer om afwykings in die praktyk aan te spreek om verpleegkundiges te help om die pasiënt-veiligheidsgaping te oorbrug met behulp van die organisasie deur aan hand higiëne praktyke te voldoen.

Sleutelterme: Hand higiëne, gedragsbepalers, verpleegkundiges, privaat gesondheidsorg, World Café data insamelingsprosedure.

LIST OF ABBREVIATIONS

AMA	American Medical Association
APA	American Psychological Association
APIC	Association for Professionals in Infection Control
ANC	Antenatal care
AUTHeR	Africa Unit for Transdisciplinary Health Care
BU	Boston University
CDC	Centers for Disease Control and Prevention
CPD	Continuing professional development
CRE	Carbapenem Resistant Enterobacteriaceae
DoH	Department of Health
HAI	Healthcare associated infections
HBM	Health Belief Model
HCW	Healthcare worker
HREC	Health Research Ethics Committee
ICMJE	International Council of Medical Journal Editors
ICN	International Council of Nurses
IHI	Institute of Healthcare Improvement
IMB	Informational-Motivational-Behavioural Skills Model
ISM	Integrated Staffing Model
LMICs	Low and middle income countries
MDRO	Multidrug resistant organism

NEI	Nursing Education Institution
NWU	North-West University
PPE	Personal protective equipment
SA	South Africa
SANC	South African Nursing Council
SCT	Social Cognitive Theory
SSI	Surgical site infection
TIE	Time, inconvenience and expense
TPB	Theory of Planned Behaviour
WHO	World Health Organization

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CHAPTER 1
OVERVIEW OF THE RESEARCH

1.1 Introduction

Hand hygiene is the cornerstone strategy for preventing healthcare–associated infections (HAIs) and to enhance safe patient care (Allegranzi *et al*., 2010:133). The current focus of many healthcare institutions is safe patient care. During the Quality Improvement Summit held in South Africa, October 2014, numerous quality improvement advisors expressed their concerns regarding poor hand hygiene within the public as well as private healthcare sectors. Quantitative international studies conducted in various countries, including Switzerland (Pittet & Boyce, 2001:9), Canada (Mertz *et al.,* 2011:695) and the United States of America (Palmore & Henderson, 2013:1593) concluded that poor hand hygiene compliance is an international dilemma. Most of these studies adopted quantitative methodologies, possibly neglecting the qualitative aspect of hand hygiene. In addition, limited evidence is available of qualitative studies regarding hand hygiene conducted in both private and public health sectors. However, the literature presented in this chapter argues that hand hygiene compliance is closely linked to behaviour and the theories of behaviour. This illuminates the need to explore hand hygiene from a qualitative perspective, which occurred within the private hospital setting in the current study. The participating private hospital's setting served as the initial catalyst in the researcher's interest in hand hygiene and nurses' behavioural determinants thereof.

Chapter 1 presents background information about hand hygiene and behavioural determinants underlying the problem statement. The most appropriate methodology, selected to reach the study's objectives, will be discussed. Strategies to enhance trustworthiness as well as relevant ethical considerations will also be addressed.

1.2 Background

Hand hygiene was complied with in only 40% of observations done by Erasmus *et al.* (2010:285). Yet hand hygiene, being any action where hands are cleaned using medicated soap or alcohol (Erasmus *et al.,* 2010:285), is the ultimate method for containing the spread of organisms. In order for organisms to spread, the following five sequential steps occur: organisms being present after being shed onto fomites; caregivers' hands are contaminated after contact with a patient's skin or surrounding environment; organisms survive on the hands for a couple of minutes; healthcare workers' (HCWs) inadequate hand hygiene practices can transfer such organisms directly from person to person or onto shared medical devices (Pittet *et al.,* 2006:641). Viruses specifically, are adept to transfer (and survive) from hands, food, water and

environmental surfaces (Kotwal & Cannon, 2014:41). Thus the rationale underlying hand hygiene is to prevent the movement of organisms from the hands of a healthcare worker to a patient.

Hand hygiene is an evolving science. The first hand hygiene recommendations were published during the mid-1800's when Ignaz Semmelweis recognised that healthcare-associated infections were transmitted via the hands of healthcare workers. In a review article by Pittet and Boyce (2001:9) recognition was given to Ignaz Semmelweis who discovered the aetiology and prevention of puerperal fever. The main drive towards hand hygiene improvements started in the 1980s when the Center for Disease Control and Prevention (CDC) published their first guidelines for preventing and controlling healthcare-associated infections (CDC, 1985:1). The main recommendations were that hospitals should be allowed to choose their products for hand hygiene according to the intended use, the ideal time for hand hygiene is 10-15 seconds, soap bars are effective for removing transient organisms and antimicrobial soap should only be used in special circumstances (such as when touching a new born or high risk patient [CDC, 1985:1]). These guidelines were followed by the 1988 and 1995 hand washing and hand antisepsis guidelines by the Association for Professionals in Infection Control (APIC) which were similar to the previously discussed guideline except for the introduction of an alcohol-based hand rub (Larson, 1995:1). Hand hygiene research was started by Doctor Didier Pittet from 1994-1997 and from that research the Geneva Hand Hygiene Model was drafted (Pittet *et al.,* 2000:1307). During 2004 the World Health Organization (WHO) appointed Doctor Didier Pittet to assist with drafting hand hygiene guidelines. These guidelines (WHO, 2009:1) were launched during 2009 and describe hand hygiene as the primary measure necessary for reducing healthcare-associated infections (HAIs) and have since been accepted in 139 countries as being the most important guidelines for hand hygiene. The 2009 WHO guideline suggested the implementation of actions aimed at healthcare professionals on critical patient safety issues, including hand hygiene from a multimodal approach. Such a multimodal approach entails access to water, towels and soap, the availability of alcohol rub at the point of care, training and education of healthcare workers, monitoring of hand hygiene practices and performance feedback (WHO, 2009:99). These guidelines list the five moments for hand hygiene as: before touching a patient; before performing clean/aseptic procedures; after body fluid exposure risk; after touching a patient; and after touching a patient's surroundings.

A survey, including seven hospitals in Geneva (1994-1997), investigated whether improved hand hygiene compliance occurred if the patient's bedside had all the elements of the multimodal approach (Pittet *et al*., 2000:1307). Yet, Mazi *et al.* (2013:15) argued that sustainability after the implementation of the multimodal approach was difficult because hand hygiene com-

pliance remained between 60% and 70% despite the full implementation of the multimodal approach.

Irrespective of a multimodal approach, hands play a central role (Palmore & Henderson, 2013:1595) in the movement of organisms and in containing the transmission of multidrug resistant organisms (MDROs). Alp and Damani (2015:1040-1045) identified MDROs in low to middle income countries (LMICs) as being one of the most difficult entities to treat due to extreme resistance, the inability of infection control teams to prevent cross contamination and poor antimicrobial stewardship programmes with no new medicines to treat gram positive organisms since the 1980s. An increase in *Carbapenem Resistant Enterobacteriaceae* (CRE), a group of drug resistant gram-negative bacteria are associated with high mortality as well as increased healthcare costs (Mendelsohn *et al.,* 2012:608). Progressive extensive drug resistance (Brink *et al.,* 2008:586) and the deaths attributed to MDROs vary between 26% and 44% (Falagas *et al.,* 2014:1173).

Yet, hand hygiene remains a complex challenge, integrated into human behaviour and exceeding organisational procedures. Research should be aimed at exploring the behavioural determinants of healthcare workers within varying ethnic and professional groups in order to understand hand hygiene practices (Whitby *et al.,* 2007:6). This is confirmed in that behavioural determinants that guide everyday practice were identified as one possible reason for poor hand hygiene compliance which might warrant further investigations (WHO, 2009:146-150).

Behavioural determinants can be defined as any factor which strongly influences and impacts behaviour (Nuggent, 2015(a):1). Recent developments in social and neuro sciences suggest that behaviour can be assigned to three interacting causes. Cognitive control produces planned behaviour, a reward system will produce motivated behaviour and automatic controls are responsible for habitual behaviour (Aunger & Curtis, 2008:337). Hand hygiene, as behaviour, can be planned, motivated or habitual. Behavioural determinants and social cognition play an integrated role in hand hygiene compliance (Glanz & Bishop, 2010:402). As determinants are dynamic, the focus is directed to behavioural models and theories. The Health Belief Model (HBM) and Social Cognitive Theory (SCT) have been applied to hand hygiene behaviour in order to design interventions based on behaviour modelling, observational learning and reinforcement (Curry & Cole, 2001:15-16). Although the HBM has been applied in many studies in European countries the researcher was unable to find evidence that it has been used in Equatorial Africa or Southern Africa. For the purpose of the current study, both the HBM and the SCT were adopted to formulate questions and direct the research. By applying behavioural models, Erasmus *et al.* (2009:417) concluded that poor hand hygiene is due to diminished social control in a healthcare setting, poor role models and the norms and culture within the setting. Hand hygiene

behaviour seems to be motivated by self-protection and cleaning oneself after performing a dirty task. Erasmus et al. (2009:417) recommends further behavioural research in order to develop multifaceted interventions, as is in line with the WHO suggestions of conducting further studies into the behavioural determinants of hand hygiene practices (WHO, 2009a:146).

The risk of HAIs in developing countries is 20 times higher than in developed countries according to the WHOs Manual on Patient Safety Assessment (2013:7). However, the challenges to practise optimal hand hygiene is a reality in developing countries (WHO, 2009:133) with infrastructure and hand hygiene product supplies being problematic. Although hand hygiene is not a new concept, the WHO (2009:6) stated that many global facilities have not started addressing the issue and are unable to show sustainable improvements. Most studies did not focus exclusively on nurses but included allied health professionals and doctors. No qualitative study was found regarding the phenomenon of hand hygiene as experienced by nurses in South Africa.

1.3 Problem statement

Specialised healthcare (especially private healthcare) is expensive and prolonged hospitalisations, attributable to HAIs and MDROs, cause escalations of healthcare costs. All hospitals should aim to deliver safe patient care to enhance positive patient and organisational health outcomes. Hand hygiene is seen as a dominant patient safety strategy and the WHO (2009:1) has drafted evidence-based guidelines to structure hand hygiene practices. A review of the literature revealed that SCT underpins possible behavioural determinants of hand hygiene. The behavioural determinants of nurses' hand hygiene practices in private hospitals cannot be overlooked as a disease control objective (Rowe *et al*., 2005:1030) and warrants investigations. Whitby *et al.* (2007:6) suggest that it is important to explore the determinants of hand hygiene amongst different categories of HCWs. In order to design cost-effective motivational programmes addressing behavioural factors influencing hand hygiene practices, these aspects should be explored (WHO, 2009:88). No empirical data could be traced about hand hygiene research regarding the behavioural determinants of hand hygiene in South Africa or about hand hygiene practices within the private hospital sector in this country. The identified research gap indicates that insufficient qualitative research regarding hand hygiene has been conducted but can provide an in-depth understanding of behavioural determinants of hand hygiene practices to fortify quantitative research results. Considering the diversity of the South African population and the different categories of nurses, studies conducted in Europe and/or America might not be applicable to South Africa. This is also applicable to a typical private hospital in Mpumalanga, one of the nine South African provinces, where the researcher identified low adherence to hand hygiene practices amongst various disciplines of nurses despite continuous training granted to all health personnel. Policy makers within the specific hospital group verbalised that

the lack of compliance is due to behaviour yet, the drivers of behaviour has never been investigated.

1.4 Research question

From the background and problem statement, the following research question was stipulated: *What are the behavioural determinants of hand hygiene practices of registered and enrolled nurses currently employed at a private hospital in the Mpumalanga Province of South Africa?*

1.5 Research aim and objectives

The aim of this research was to identify the behavioural determinants of nurses regarding hand hygiene practices within one private hospital. The following objectives were set:

- To explore and describe nurses' hand hygiene practices within one private hospital with the focus on behavioural determinants adopting a qualitative approach.
- To formulate recommendations for the participating private hospital based on the findings of the current study.

1.6 Researcher's assumptions

The researcher's assumptions comprise meta-theoretical, theoretical and methodological assumptions representing the researcher's views about life and how it influences research (Botma *et al.,* 2010:186).

1.6.1 Meta-theoretical assumptions

Assumptions made in research, also known as the paradigmatic perspective of the researcher refer to a set of values and concepts that comprise the researcher's views of reality (Botma *et al.,* 2010:49). In the following section the researcher will declare her world view on man as a human being, nursing, health and the environment. These assumptions are followed by the researcher's views of theoretical and methodological assumptions.

The world view of the researcher is both humanistic in nature as she believes that there is good in human behaviour but founded within the principles of Christian theology. Mutual trust and respect, as well as compassion in the relationships within the healthcare team and with patients, form the basis of her nursing practice. The researcher always aims to act with sensitivity towards the values and norms as well as the cultural and religious backgrounds of other persons.

1.6.1.1 Man as a human being

Man was created in the image of God according to Genesis 1:26 (Holy Bible, 1983) with both a physical and a spiritual dimension. Every human being is unique and has values and norms that form part of his/her beliefs and structures the way in which he/she acts and reacts in real life situations. In this study registered and enrolled nurses are seen as human beings influenced by their values and norms but caring for other human beings with their own sets of values, norms, cultural and religious backgrounds.

1.6.1.2 Health

Health is not only the absence of disease but rather a state of complete physical, mental and social wellbeing (WHO, 2017:1). Health and illness are the two opposite ends to a continuum and people move on this continuum from either having optimal health to being ill. In this study hand hygiene plays a vital role in ensuring that a nurse does not affect the health of a patient, regarded as being a vulnerable person, negatively. Good hand hygiene practices facilitate health while poor hand hygiene compliance promotes the transfer of disease-causing micro-organisms.

1.6.1.3 Nursing

According to the American Nurses Association (ANA, 2017:1), nursing is the act of protecting, promoting and optimising the health of individuals, families, communities and populations as well as preventing illness, alleviating suffering, and advocacy. Within the humanistic paradigm the researcher sees nursing as caring for a vulnerable, ill person's physical, psychological and spiritual wellbeing regardless of that person's values, norms, religion or cultural background. The researcher acknowledges cultural diversity and strives to acquire improved understanding of such diversity. For the purpose of the current study, hand hygiene is seen as a nursing intervention which will protect the vulnerable ill person without influencing personal values, norms, religion and culture but carried out by a person with a different set of values, norms and religion which might influence the caring aspect of nursing.

1.6.1.4 Environment

The environment of a patient is both internal and external and has a direct impact on the physical, psychological and social wellbeing of the person. The external environment encompasses all the conditions in which a patient lives and includes physical and social elements that interact with the patient. The internal environment comprises elements influencing a patient from within, including physiological, psychological, sociocultural and spiritual factors. The internal and external environment of a person is inseparable and determines the state of health of a person. For

the purpose of this study the external environment can be described as the private hospital setting. The internal environment of a patient is the internal profile of a person with his/her own disease, micro-organism profile as well as sociocultural values and behaviours. From the humanistic point of view the researcher acknowledges that every person has his/her own internal and external environment influencing how he will react in certain situations.

1.6.2 Theoretical assumptions

Human nature is complex and comprises interpersonal and intrapersonal intelligence that control behaviour (Derksen *et al.,* 2002:38). Intrapersonal factors are characteristics of individuals for example attitudes, beliefs, knowledge and certain personality traits (Whitby *et al.,* 2007:3) while interpersonal factors include internal processes and primary groups to which an individual belongs such as family and friends that provide the individual with social identity, support and role definition (WHO, 2009:85). Human health-related behaviour, of which hand hygiene is one aspect, is influenced by biology, the environment, education, and culture (WHO, 2009:86). To describe healthcare workers' cognitive determinants of hand hygiene practices, social cognitive models could be applied (WHO, 2009:86). Two of these models were applied in this study, namely the Health Belief Model (HBM) and Social Cognitive Theory (SCT). Synopses of the two models are presented in figure 1.1 and HBM and SCT provided the structure for data collection.

1.6.2.1 Health Belief Model as theoretical framework

The HBM addresses intrapersonal components of hand hygiene behaviour. The HBM is applied to study all different types of health behaviour by attempting to predict behaviour according to certain belief patterns (Rosenstock *et al*., 1988:175). This model attempts to predict certain health behaviours on the basis of five elements namely i) perceived susceptibility, ii) perceived barriers, iii) perceived threat, iv) perceived self-efficacy and v) perceived benefits. For the purpose of this study the HBM suggests that if a nurse believes that he/she has the possibility of contracting a disease, or that there is a possibility that his/her own health might be threatened, then good hand hygiene will be practised regardless of the barriers experienced. The model also suggests that nurses believe they have self-efficacy and could make sound decisions regarding health behaviour practices. Certain intrapersonal components, such as age, knowledge, gender, personality and socio economic status, could also impact on health behaviour. (Please refer to figure 1.1 and 2.4; table 1.4 and 2.1 as well as section 2.3.1.4 of this study).

1.6.2.2 Social Cognitive Theory as a theoretical framework

Social Cognitive Theory (SCT) addresses interpersonal components of hand hygiene behaviour (Whitby *et al*., 2007:3). SCT describes behaviour by predicting the origin of different behaviours

and the interaction between personal factors, behavioural factors and the environment (Glanz & Bishop, 2010:399). Hand hygiene practices are believed to have a deeply rooted origin linking personal, behavioural and environmental factors. Knowledge, expectations and attitudes are interlinked with skills, practices and self-efficacy. The environment in which the nurse grows up, and where he/she is taught basic concepts, presumably impact on his/her current behaviour. Therefore it is warranted to investigate whether or not this assumption is true. (Please refer to figure 1.1 and 2.5; table 1.4 and 2.1 as well as section 2.3.1.4 of this study).

1.6.3 Methodological assumptions

According to Botes (1992:36), the essence of nursing research is to improve nursing practice. The model for qualitative research in nursing describes three orders of nursing activities, namely the empirical world of nursing practice, theoretical and methodological assumptions of nursing practice and the paradigmatic perspective describing the philosophy of nursing. These three orders were discussed as applied to the current research:

1.6.3.1 Order 1: The empirical world of nursing practice

The act of nursing practice takes place within the empirical world and the nurse acts with knowledge as well as pre-scientific knowledge of nursing (Botes, 1992:39). The researcher is in a dialectic interaction with nursing practice and has to explore and analyse every action in order to understand nursing practice within the empirical world.

Nursing practice, in the case of the current study, takes place within a hospital in the Mpumalanga Province of South Africa. Hand hygiene is practised both with knowledge and pre-scientific knowledge. Poor hand hygiene compliance was identified by nurse managers as being a key concern with minimal improvement over time. The reasons for such perceived poor compliance have never been investigated at the hospital where the current study was conducted.

1.6.3.2 Order 2: Theory and methodological assumptions of nursing.

In this study, nursing research and theory development take place and are regarded as being meta-practical activities. The researcher will recognise a problem, explore the problem and propose answers to the problem. This order deals with research decisions from conceptualisation, formulating the research problem, as well as aims and objectives, selecting the research design, as well as implementing the research activities (Botes, 1992:40).

The researcher functions within the level where research is planned and she interacts with the first order where nursing practice takes place. For the purpose of this study the concepts of

hand hygiene, nurse, behavioural determinants and private healthcare were identified, investigated and described before recommendations were made.

1.6.3.3 Order 3: Paradigmatic assumptions

The third order is a meta-theoretical activity where concepts are studied and the researcher internalises assumptions and methods of the first and second order (Botes, 1992:40). The philosophy of nursing is described. The components of a paradigm are meta-theoretical, theoretical and methodological in nature. For the purpose of this research the researcher declares her world view as being humanistic and defines a human, nursing, health and the environment from within her view, as discussed in section 1.6.1 of this study.

1.7 Definitions

The central concepts, as applied in the current study, are described to enhance comprehension between the researcher and the readers of this research report:

- **Hand hygiene:** A general term that applies to hand washing, antiseptic hand washing, antiseptic hand rubbing or performing surgical hand antisepsis (Boyce & Pittet, 2002:3). Hand hygiene is the central concept of the current study.

- **Behavioural determinant:** refers to any factor which strongly influences and affects behaviour. Whatever this factor might be, it produces a behavioural effect which might be desirable or undesirable (Nuggent, 2015(a):1).

- **Professional nurse:** The Nursing Act (33 of 2005) describes a registered nurse as any person who is registered with the South African Nursing Council (SANC) and is qualified and competent to independently practise comprehensive nursing in a specific manner and at a certain level and taking responsibility and accountability for such practice. Professional nurses are also referred to as registered nurses.

- **Enrolled nurse:** According to the Nursing Act (33 of 2005) an enrolled nurse is a person educated to practise basic nursing in the manner and to the level prescribed.

- **Private healthcare:** Private healthcare in South Africa is healthcare paid for by either medical aid schemes or from patients' private bank accounts (Söderlund *et al.*, 1998:3). A private healthcare context, private hospital and private healthcare institution share similar meanings in the study.

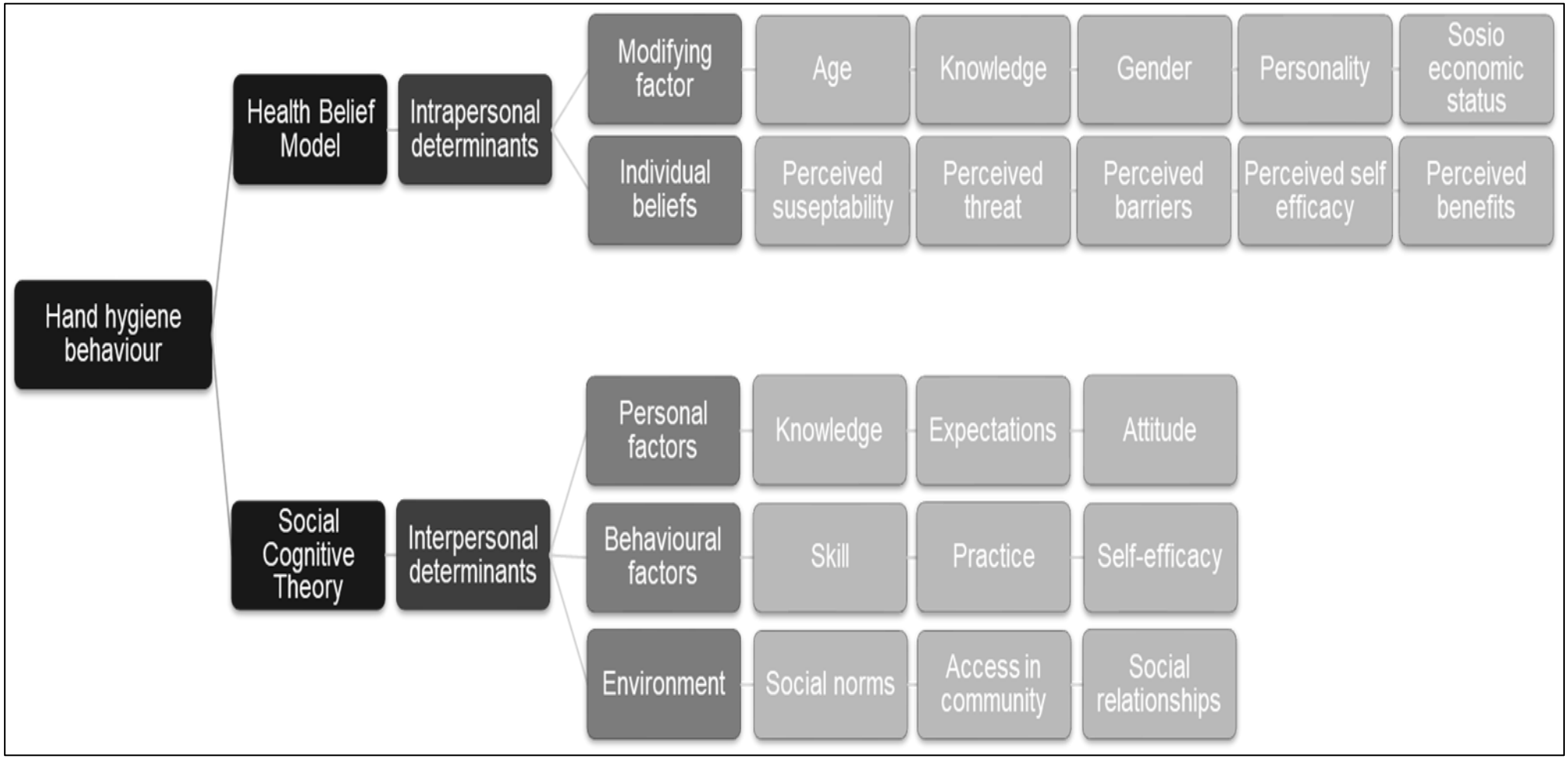

Figure 1.1: Conceptual framework of the Health Belief Model and Social Cognitive Theory applied to hand hygiene

1.8 Central theoretical statement

The researcher gained insight into and an improved understanding of nurses' behavioural determinants of hand hygiene practices where external environmental awareness is dominant and where poor hand hygiene could impact negatively on patient outcomes, by means of a qualitative exploration. Based on the current study's findings, recommendations were proposed to enhance hand hygiene practices of nurses in the participating private hospital and possibly also in other private hospitals. The use of the HBM and the SCT enabled the researcher to construct a theoretical framework that provides an intra- and interpersonal perspective of behavioural determinants affecting nurses' hand hygiene practices.

1.9 Research methodology

Research methodology, comprising the design and method(s), is seen as a blueprint for the research and guides the researcher in planning and implementing the study (Grove *et al.,* 2013:195).

1.9.1 Design

The chosen design for this research was qualitative, interpretive, descriptive and contextual. Qualitative research is a systematic, interactive, subjective approach used to describe life events and give them meaning (Grove *et al.,* 2013:705). The current study was qualitative in nature as it explored behavioural determinants of hand hygiene practices as experienced by nurses within their working environment. An interpretative descriptive approach provides a logical structure and a philosophic rationale for some of the design decisions made during qualitative research (Thorne *et al.,* 2004:2). This approach is particularly suitable to smaller scale qualitative clinical nursing studies as it captures themes and patterns within subjective perceptions that could improve clinical understanding (Thorne *et al.*, 2004:2). The researcher had prior knowledge regarding hand hygiene practices and interpretive descriptions allowed the researcher to investigate and build on the substantial body of relevant knowledge (Thorne *et al.,* 1997:173). The current study is contextual as it relates only to registered and enrolled nurses at one participating private hospital in South Africa. This private hospital was selected as this hospital approached the researcher to conduct the research based on a clinical need.

1.9.2 Research method

In order to understand the proposed method it is important to discuss the context, population and sampling, data collection strategies, data analysis and coding and the research setting.

1.9.2.1 Context

There are three major private hospital groups in South Africa. The context of this study was within one of the four major private hospital groups. The selected hospital group has 53 hospitals across South Africa. The selected hospital is a 202 bed private hospital in the Mpumalanga Province of South Africa with ten functional wards. The management of this hospital requested an investigation to be conducted into current hand hygiene practices. The main services rendered are medical and surgical (general surgery, orthopaedic, urology, obstetrics and gynaecology) including adult, paediatric and neonatal patients. During June 2016 a total of 73 registered and 70 enrolled nurses were employed by this hospital, which is registered with the SANC as a Nursing Education Institution (NEI), implying that it is a training facility for nurses. Hand hygiene compliance is monitored quantitatively in the hospital on a monthly basis as this is a corporate requirement. Trained hand hygiene champions observe hand hygiene practices of different categories of staff utilising the hand hygiene tool of the Institute of Healthcare Improvement (IHI, 2011:31). The multimodal approach is implemented in the hospital with access to running water, soap, towels and alcohol spray at every point of care (please refer to sections 1.2 of this study). Posters were placed at every hand basin explaining the five moments of hand hygiene as well as pictures of hand hygiene practices. Corporate policy guides hand hygiene practices and these practices are taught during orientation of newly appointed staff members. As the clinical risk manager of this specific hospital, the researcher is responsible for monitoring hand hygiene in the hospital but has been unable to improve hand hygiene during the five years preceding the current study due to a lack of understanding of the behavioural determinants of nurses working the hospital.

Additional training regarding hand hygiene was done during the annual hand hygiene campaign as well as on-the spot-training during daily rounds by infection control practitioners of the hospital. Training included all categories of staff, permanent and agency, as well as contractors. Feedback regarding compliance was provided to the entire hospital as well as to each individual unit during monthly infection control meetings. In spite of all these measures, poor hand hygiene practices are still evident with compliance rarely exceeding 70% and the average compliance rate remained 70% during 2015. The readmission rate for 2016 to date at the hospital was 8.5% while the rate within the company for the same dates was 7.7%. There has been an increase of 12.5% in patients' hospitalisation duration in the participating hospital, compared to 10.4% within the entire group of hospitals. Surgical site infection (SSI) rates for the hospital increased by 7.7% to 3.2 per 1 000 cases. The SSI rate within the group was 2.8 per 1 000 cases (2016). Poor hand hygiene could pose a huge safety risk for patients. Therefore a renewed focus on hand hygiene was planned for 2016 and 2017. A literature review suggested the importance of

exploring behavioural determinants of hand hygiene in order to understand the current trends influencing adherence to hand hygiene within the specific hospital.

1.9.2.2 Population, sampling and sample size

An all-inclusive, purposive sampling procedure was adopted according to predetermined inclusion and exclusion criteria. This did not have an effect on the sample size as the sample size of a World Café session can range from 12-1200 (Schieffer *et al.,* 2004:6). The main goal of purposive sampling is to focus on particular characteristics of a population that are of interest, which will best answer the research questions (Grove *et al.,* 2013:365). In this study purposive sampling entailed the selection of both registered and enrolled nurses responsible for implementing and maintaining hand hygiene procedures in the hospital in order to increase the researcher's understanding of possible behavioural determinants. Purposive sampling requires a specific set of inclusion and exclusion criteria, which assisted the researcher to identify potential participants with similar hand hygiene experiences. Inclusion criteria are certain characteristics that a participant should have (Grove *et al.,* 2013:366) while exclusion criteria refer to characteristics that the participants should not have, to be included in the sample. The target population comprised registered and enrolled nurses working at the participating private hospital (N=143, n=22) according to personnel numbers during June 2016. The sample was homogeneous in the sense as they were nurses, either registered or enrolled with the SANC, but their training regarding hand hygiene was the same. The lists of registered and enrolled nurses were available to the mediator and everyone on the list was invited to participate in the current study. Several data collection sessions were organised to accommodate large numbers of nurses who wished to participate. The sessions were conducted during the nurses' off-duty times ensuring that patient care would not be compromised.

1.9.2.2.1 Inclusion criteria

Based on the research question the following inclusion criteria were applied, namely participants had to be:

- Registered and enrolled nurses working full time at the participating private hospital who had completed the hospital's orientation, including hand hygiene training. These categories of nurses were chosen because they are required to practice good hand hygiene and for ensuring that all categories of healthcare workers adhere to good hand hygiene;

- Found to be competent in performing basic hand hygiene procedures by completing the procedure prior to the study;

- Actively involved in bedside nursing and not in a managerial position. These individuals were identified by looking at work allocation books that indicated active involvement with nursing care;

- Willing to participate voluntarily in a World Café method of data collection where only partial confidentiality could be assured requiring participants to be actively involved in providing information about hand hygiene in unfamiliar data collection teams, and to sign informed consent forms;

- Able to express themselves in Afrikaans or English as these languages were the official languages of the selected hospital. Participants were expected to interpret questions and communicate with ease; and

- Willing to participate in the current study during their off-duty time without additional remuneration for participation.

1.9.2.2.2 Exclusion criteria

Based on the ethical principle of autonomy the following exclusion criterion was applied:

- Agency personnel who were not full time employees of the participating hospital.

1.9.2.2.3 Presentation of participant recruitment and research process

The process, commencing when the researcher being approached by the hospital's management and ending with data collection, is depicted stepwise in table 1.1; including the steps followed to initiate recruitment of participants and to conduct the research process.

Table 1.1: Process followed to initiate the research process

Step	Process of recruitment and research
1	• Researcher was approached by the hospital manager and nursing service manager (gatekeepers) requesting that research should be conducted with an understanding of goodwill. • The researcher was responsible to draft the proposal and obtain ethical permission from Human Research Ethics Committee (HREC) of the North-West University (NWU), Potchefstroom campus. • The hospital's general manager and nursing service manager selected a mediator that would assist the researcher. The mediator was an independent person not in full time employment of the specific hospital.
2	• The researcher was introduced to the mediator and the research process was discussed. • Specific areas for discussion included the research context, research process, recruitment and selection and informed consent with special attention to ethical considerations.

Step	Process of recruitment and research
3	• The mediator received a list of all registered and enrolled nurses and invited them during a meeting as well as individually (during night shifts) to participate in the current study. Research advertisements were placed in all relevant hospital units. • The mediator discussed the research, the informed consent process, and the demographic data, the procedure of the data collection day as well as the operation of the World Café method • Prospective participants were given 24-48 hours to consider whether or not they would participate.
4	• Participants were given informed consent forms but these were only signed on the day of data collection. • Prospective participants indicated their willingness to participate in the current study to the mediator.
5	• The mediator discussed the willingness of participants to participate with the researcher.
6	• The researcher contacted five facilitators who were experienced nurse educators and well known to the participants. • Facilitators received training regarding the research process, execution of the World Café data collection method, compiling field notes, managing audio recording devices and adhering to ethical principles.
7	• The mediator reminded all registered and enrolled nurses one week and again one day prior to data collection to attend the session. This was done by sending cellular phone messages specifying the logistics of the data collection process. • Informed consent was confirmed, signed and sealed by all the participants in the presence of the mediator and confidentiality agreements were signed by facilitators and the mediator before data collection commenced (please refer to addendum C of this study). • The mediator was present during data collection to assist the facilitators and to ensure the flow of the World Café process. • The researcher coordinated the data collection process by welcoming everyone involved but was not a facilitator.
8	• Data were collected by means of a World Café procedure according to the seven design principles specified by Brown and Isaacs (2005:40).

1.9.2.3 Data collection

The researcher used the World Café procedure as data collection method. The World Café procedure refers to a powerful social technology for engaging people in relevant constructive conversations (Brown & Isaacs, 2005:1). This method enabled participants to engage in informal conversations and unstructured interviews in a comfortable and conducive café-like setting. In order to create a learning community it is important to have some facilitation that will encourage, train and support groups throughout their dialogues and interactions (Wals & Schwarzin, 2012:16). The World Café approach could identify different nursing disciplines' considerations about hand hygiene as every discipline is involved in patient care and required to practice optimal hand hygiene. As the focus of this study was to explore learned behaviour that could influ-

ence training and support, a dialogue method was deemed suitable for exploring cognitive-related information. During a session participants were invited to gather around a table with a question on every table and they were given opportunities to answer, discuss, deliberate and introduce new thoughts and ideas. Voice recordings were made throughout all sessions. Critique of the World Café method is that only partial confidentiality could be ensured. The World Café entails seven design principles or steps (Brown & Isaacs, 2005:40) as described in table 1.2.

Table 1.2: Steps of the World Café Data Collection Procedure adapted for the current study (Brown & Isaacs, 2005:40)

Step	Actions
1. Setting the context.	• Making contact with the gatekeepers, assigned mediator and facilitators. • Ensuring that everyone involved is trained on the methodology. • Discussing logistical aspects such as the venue, times, duration and dates. • Adhering to ethical standards. • Preparing invitations.
2. Creating a hospitable space.	• Creating a hospitable space by preparing the venue the day preceding the data collection. • Setting tables in different colours and placing snacks on every table. • Ensuring that each table has one facilitator who would facilitate the discussions. • Inviting participants upon arrival to sit at any table. • Welcoming of all participants and facilitators by the researcher. • Discussing the process with the participants and providing opportunities to ask questions. • Re-emphasising voluntary participation.
3. Encouraging everyone's contribution.	• Discussing the value of individual contributions and collective perceptions with participants but also allowing participants (who only have limited participation) opportunities to listen.
4. Exploring questions that matter.	• Predetermining and discussing the selection of questions. • Ensuring that relevant questions are available at every table.
5. Connecting diverse perspectives.	• Facilitators should present questions at each table and facilitate discussions using effective communication skills. • Each table represents a new question and participants will rotate between the tables after discussions lasting 15-20 minutes. • Feedback should be interpreted and formulated on a poster at each table by the facilitator. • Facilitators make audio recordings.
6. Listening together.	• Facilitators individually identify patterns and insights gained in every group. • The facilitators should have an opportunity to clarify their thoughts with the

Step	Actions
	group.
7. Sharing collective discoveries.	• Facilitators should have a discussion with each group after every round to share what they heard and to determine whether their interpretations of the discussions were correct. • A harvesting round is performed where facilitators, the mediator and researcher discuss data. • After the harvesting round general feedback should be provided to the participants and the facilitators.

1.9.2.3.1 Setting the context

The researcher suggested that a literature review (please refer to chapter 2 of this study) could produce new insights into the problem and generate potential research ideas in consultation with management and based on the interpretation of the hospital's statistics. The literature review was discussed with management who declared their goodwill to the research project (please refer to addendum G of this study). The researcher specified the anticipated logistical needs regarding the dates and venues to be used by considering the hospital's programme. The two senior managers identified and appointed the independent mediator with a specific role (please refer to table 1.1 of this study). The mediator was responsible for selecting and recruiting participants (please refer to section 1.9.2.2 of this study) as well as obtaining informed consent (please refer to addendum C of this study). The participants communicated with the mediator and not with the researcher because the researcher did not wish to influence participation or to create any negative connotations in case some nurses decided not to participate in the current study.

Facilitators were chosen to conduct the World Café sessions, based on their job descriptions and training provided they were not nurse managers (please refer to table 1.3 of this study). Facilitators signed a confidentiality agreement and received training regarding the World Café method, ethical principles, management of field notes and management of audio recording devices from the researcher. Specific criteria for the facilitators were that they:

- Were involved in training in the participating hospital;
- Had established some form of rapport with the nurses who could use his/her knowledge of individual participants to motivate them to be actively involved during each data collection session; and
- Were nurse educators and training facilitators who had demonstrated an interest in the improvement of nursing care within the hospital.

Table 1.3: Characteristics of facilitators

No	Total years post basic training	Current position	Trained educator	Focus area in the hospital
1	18 years	Learning and development facilitator.	No	Coordination of all training done at the hospital.
2	17 years	Clinical facilitator.	Yes	Facilitates learning in specialised units such as adult intensive care as well as all other training in the hospital.
3	17 years	Clinical facilitator.	Yes	Facilitates learning in wards such as in the maternity ward as well as collective training in the hospital.
4	10 years	Senior professional nurse.	Yes	Senior nurse in charge of medical unit.
5	3 years	Infection control practitioner.	Yes	Coordinator of infection control.

The five trained facilitators collected narrative data on one day during February 2017 (Schieffer *et al.,* 2004:1-7) in the form of field notes and audio recordings. Field notes are a written account of the things the facilitator hears, sees, feels, experiences and thinks about during the course of the data collection process (Botma *et al*., 2010:217). Each facilitator compiled descriptive notes during every round of the World Café session (please refer to attached CD). Facilitators could also write reflective notes after the event portraying their speculations, feelings, problems, ideas, hunches, impressions and prejudices (Botma *et al.,* 2010:218). All interviews were recorded with five separate audio recording devices, one at each table. Due to the nature of this method, participants felt at ease and participated constructively. Within the discussions, additional questions and new thoughts and ideas emerged due to the natural flow of discussions. Every table had general questions, which were used to start the conversation. These general questions were:

- What do you see as hand hygiene?
- Do you think hand hygiene is important?
- Do you know that hand hygiene is monitored in the hospital?
- Who do you think should be responsible for hand hygiene?

1.9.2.3.2 Create a hospitable space

A hospitable space refers to the training room at the hospital that was transformed to portray an inviting and cafe-like atmosphere. The sound proof training room is on the premises of the hospital but not in a different building. The facility is private and access is controlled with a pin pad. The room is carpeted and one wall faces the outside with windows dressed in blinds. Different multimedia was available in the area. Tables and chairs were loose standing and arranged according to preference. These characteristics of the training room enhanced the participants' privacy. Tables were covered with tablecloths in different colours with displayed snacks. Data were collected during two sessions – one in the morning and one in the afternoon. This enabled more people to participate and also afforded nurses on night duty a chance to participate before or after sleeping. There were five tables each with its own facilitator and with a different research question for discussion (refer to table 1.4 and figure 3.1 of this study). Every session required a minimum of 10 people per session or 20 people for the two sessions out of a possible 143 (N=143, n=22) participants. An adequate number of nurses participated in each, and the conversation continued although all questions were not dealt with simultaneously. The mediator welcomed participants inviting them to take seats at any table; the researcher welcomed everyone present. The proceedings of the day were discussed and time was allocated to ask questions. If participants wanted to discontinue their participation, they were allowed to. The five questions on the tables were also addressed in order to ensure that all participants understood what was expected of them.

1.9.2.3.3 Encouraging everyone's contribution

It was important to encourage everyone to actively participate and not only contribute their time but also their ideas and perspectives. However, if some nurses wanted to listen at times, without talking themselves, they were allowed to do so (Brown & Isaacs, 2005:41).

1.9.2.3.4 Exploring relevant questions

Based on the literature review and on discussions with two senior managers, questions were predetermined for the World Café session. Five questions were formulated with one question per table (please refer to table 1.4 of this study). A theoretical framework (as discussed in section 1.6.2 of this study) directed the researcher in formulating these questions and enabled the activation of the interpretive descriptive process (Thorne *et al*., 2004:4). The current themes of the sessions were early life experiences, motivation and intentions, cultural beliefs, training and possible changes to implement in future.

1.9.2.3.5 Connect diverse perspectives

As participants moved from table to table their diverse perspectives were shared and thoughts and ideas connected.

Table 1.4: Questions used during the World Café sessions

Table number	Theme	Theory	Type of determinant	Reference	Question
1	Early life experiences regarding specific hand hygiene practices taught during early childhood and the years before commencing with nursing training.	HBM (WHO, 2009:86).	Intrapersonal determinant of modifying factors exploring the variables of age and knowledge and the perceived susceptibility to be at risk of disease (Glanz *et al.*, 2008:47).	Most hand hygiene practices are embedded before the age of 9 but as early as potty training age (WHO, 2009:86).	"Describe the information shared with you regarding hand hygiene from your earliest childhood memories"
2	Motivation and intention to practice hand hygiene.	HBM (Glanz *et al.,* 2008:47).	Intrapersonal determinant of individual beliefs exploring perceived benefits (Glanz *et al*., 2008:47).	A description of motivation for practicing hand hygiene as described in an article by Godin *et al*. (2008:6).	"What motivates you to wash your hands when caring for a patient? Please elaborate..."
3	Cultural beliefs of the individual influencing hand hygiene practices.	SCT (Glanz *et al.,* 2008:171).	Interpersonal determinant exploring environmental factors of social norms and social relationships (Glanz & Bishop, 2010:403).	Insight whether there are cultural barriers and if they are present what they are (WHO, 2009:78).	"What are the cultural beliefs and behaviours that influence your hand hygiene behaviour? Please elaborate..."
4	Training regarding hand hygiene during the professional nursing career.	SCT (Glanz *et al*., 2008:171).	Interpersonal determinant exploring personal factors of knowledge, expectations and attitudes (Glanz *et al*., 2008:171).	Testing aspects of knowledge, intentions, and outcome expectancies as discussed by Whitby *et al.* (2007:3).	"Discuss your perceptions on whether you think you were sufficiently trained regarding hand hygiene? Please elaborate...."
5.	Changes that the individual might perceive should happen in order to increase hand hygiene compliance.	SCT (Glanz *et al.,* 2008:171).	Interpersonal determinants exploring behavioural factors of practice and skill (Glanz *et al*., 2008:171).	Exploring personal self-efficacy beliefs and the ability to bring about change (Glanz *et al*., 2008:171).	If you could change current practices what would you change, why do you think it should change and how would you go about implementing the change?

1.9.2.3.6 Listening together for patterns and insights

Facilitators were trained to identify patterns and insights by listening attentively. One had to listen for distinctive patterns within the groups when analysing narrative data and compare it with the notes made during the relevant session.

1.9.2.3.7 Share collective discoveries

After the five rounds had been completed, the facilitators had a harvesting round during which they shared collected data with the whole group by using their compiled field notes and plotting the main themes on a white board (Brown & Isaacs, 2005:40). After this phase the researcher, mediator and the facilitators shared what they had heard and identified any emerging patterns of thought in the specific groups. Definite clarifications of group dynamics, patterns and insights were addressed.

1.9.2.4 Data analysis

During the analysis two different data sets were used, namely the audio recordings and posters that were constructed during the data collection process. During the analysis, data were organised into themes and codes in order to group similar ideas and thoughts together. Each group's data were analysed independently in order to identify specific patterns. Thereafter data sets were analysed in conjunction with each other to identify similar and/or different themes. The researcher transcribed all recordings (please refer to addendum D of this study). The coding was done by hand independently by the researcher and the co-coder who also assisted with cross-checking (Creswell, 2014:203). When themes and patterns were repeated with the analysis of subsequent groups' data, it was accepted as indicating that saturation of data had occurred (Grove *et al.,* 2013:371). Content analysis of voice recordings was done according to the six steps described by Creswell (2014:197):

- **Step 1**: Data were organised and prepared by transcribing the interviews, condensing the field notes and sorting and arranging the data.
- **Step 2**: The researcher examined the data and started forming a general sense of the type of information and its meanings.
- **Step 3**: All the data were coded by bracketing chunks of data and assigning a word that described a specific portion.
- **Step 4**: Codes were organised into themes.

- **Step 5**: The chronological evolvement of themes were visually depicted.
- **Step 6**: During the final step the researcher asked the question: “What were the lessons learned?”

Thematic analysis was used to analyse the field notes. The process of thematic analysis entailed the following steps (Vasmoiradi *et al.,* 2013:402):

- **Step 1**: Familiarising with data – transcribing, reading and noting initial ideas.
- **Step 2**: Generating initial codes – identifying interesting features of the data.
- **Step 3**: Searching for themes – collating codes into themes.
- **Step 4**: Reviewing themes – checking if themes worked with specific coded extracts and generating a thematic map.
- **Step 5**: Defining and naming themes – refining themes and generating a definition for each theme.
- **Step 6**: Producing the report – the final data analysis opportunity.

The main difference between the two methods of analysis is that content analysis allows the researcher to quantify data in themes based on the frequency of its occurrence while thematic analysis is a purely qualitative, detailed, and nuanced account of data (Vasmoiradi *et al.,* 2013:401). As suggested by Vasmoiradi *et al.* (2013:403) combining these two methods of analysis was suited to the novice researcher as it provided her with a clear understanding of the whole process of coding. The co-coder received the following documents electronically:

- The proposal;
- Transcriptions of voice recordings; and
- Field notes compiled by the facilitators.

The researcher and co-coder compared their codes for differences and similarities before they reached consensus to categorise the data.

The researcher identified recurrent themes and noticed patterns in the data (Thorne *et al*., 1997:174) during the second order analysis following the first order analysis. The researcher examined and re-examined a range of alternatives (Thorne *et al.*, 2004:5) of the studied phenomenon. This approach attempted to find the deeper meaning and to answer the question

"what happened here" or "what am I learning about this" (Thorne *et al.,* 1997:174) with subsequent identification of themes, categories and subcategories (please refer to Chapter 3 section 3 of this study).

1.9.3 Role of the researcher

The role of the researcher was extensive, commencing with the research plan and including the data collection, analysis and synthesis, as well as compiling the research report, providing feedback to participants and disseminating the results (Botma *et al*., 2010:203), comprising the following aspects:

- The researcher was requested by the hospital's management to conduct the study;
- The researcher drafted the proposal and obtained scientific approval from INSINQ focus area for Quality in Nursing and Midwifery at the NWU, Potchefstroom campus;
- The researcher obtained authorised permission from the director of the company as well as goodwill permission from the hospital's general manager;
- The researcher obtained ethical clearance from the Health Ethics Research Committee (HREC) at the North-West University (NWU-00352-16-S1);
- The researcher trained the mediator about sampling, selection, recruitment, obtaining informed consent and ethical decision making;
- The researcher selected and trained facilitators. Training entailed in-depth discussions about the study's background, the sampling rationale, obtaining informed consent as well as the signing of non-disclosure agreements, using recording devices, making field notes and providing feedback about the field notes to the participants as well as adhering to ethical considerations pertaining to this study. Facilitators were also trained about the utilisation of the World Café method of data collection;
- The researcher booked the venue for the research;
- The researcher welcomed and ensured that participants understood that there would be no punitive actions regardless of what the data might reveal and that participants could withdraw at any stage during the research, identities would be protected during dissemination of data and if any discomfort should be experienced, debriefing opportunities would be available to participants;
- The researcher remained responsible to analyse, synthesise and disseminate the data; and

- There are two data sets and the researcher was responsible to combine the two sets of data in a final report after content and thematic analyses had been completed.

1.9.4 Dissemination of research results

The results of the research were reported according to the directives of management and all participants were invited to the feedback sessions. Feedback was done verbally and a Power-Point presentation was used to enhance the quality of the feedback. During the session all new evidence regarding hand hygiene, the interpretation of hand hygiene by nursing personnel as well as their perceived barriers were presented as this will represent the burning issues regarding hand hygiene as faced by nurses. The researcher will submit an article for possible publication to an ISI-listed journal, Health SA Gesondheid (please refer to chapter 3 of this study).

1.10 Measures ensuring rigour: trustworthiness

Strategies from various authors (*with specific reference to* Krefting, 1991; Lincoln & Guba, 1985) were combined by Botma *et al.* (2010:232) and Polit and Beck (2012:584) to ensure rigour in qualitative research. Rigour, known as trustworthiness in a qualitative research design has four epistemological standards: truth value, applicability, consistency and neutrality with a fifth standard of authenticity (Botma *et al*., 2010:232). These standards were adhered to by applying the following strategies:

1.10.1 Truth value

According to Botma *et al.* (2010:233) truth value determines whether the researcher has established the truth of the findings. Truth value is enhanced by credibility. In order to adhere to credibility the researcher spent a prolonged time in the field and engaged with hand hygiene literature enabling the setting of the background and problem statement for the study. Peer review was done by discussions with supervisors.

1.10.2 Applicability

Applicability refers to the ability to apply the findings of the study to different contexts and groups (Botma *et al.*, 2010:234). Readers of the study will decide on the transferability based on the thick description of the context. The World Café design will also ensure a thick dense description of data (Brown & Isaacs, 2005:40) (please refer to section 1.9.2.3 of this study).

1.10.3 Consistency

Consistency considers whether the same findings will be yielded if the study was replicated with the same participants in a similar context (Botma *et al.,* 2010:233). The strategy to ensure con-

sistency is dependability. Dependability was ensured by coding and recoding the data (please refer to 1.9.2.4 of this study). A co-coder ensured inter-coder agreement or cross-checking of emerging codes and themes (Creswell, 2013:203).

1.10.4 Neutrality

According to Botma *et al.* (2010:233) neutrality refers to freedom from bias during the research process. The standard of neutrality was ensured with reflexivity. The researcher declared personal biases and own interpretation of the study area before the research commenced. The researcher declared that as a registered nurse interpreting data she had a certain degree of bias, which had been discussed with peers during reflective sessions.

A mediator was appointed to recruit participants who were given enough time to consider participation. Facilitators on the day of the study ensured that the outcomes of the study were not influenced in any manner whatsoever.

1.10.5 Authenticity

According to Botma *et al.* (2010:234) for qualitative research to be seen as authentic the reader of the research will be invited into the world of the participants by showing a range of different realities. The researcher aimed to show a range of realities by choosing a diverse sample so that the readers and users of this research could be transferred into the world of the nurse.

Rigour is critical to an interpretive descriptive study (Thorne *et al.,* 1997:175). In the current study the researcher relied on the field notes of the facilitators to link the context of the different data gathering sessions. In order to convince the research report's readers of the interpretation of the study's findings, the researcher provided sufficient information about the analysis to prove that the analysis was grounded within the data (Thorne *et al.,* 1997:175). According to Thorne (2014:1), in the applied world of interpretive description, there are standards that should be adhered to in order to ensure credibility as discussed in sections 1.10.6-1.10.11 of this study.

1.10.6 Representative credibility

Representative credibility was ensured by taking identified concepts from the literature to the facilitators and asking them "what is your understanding of the following….?" Their answers were compared to what was found in the literature ensuring that concepts were grounded in data and representing the sample's shared reality (Thorne *et al.,* 1997:175).

1.10.7 Interpretive authority

Interpretive authority was adhered to by declaring concepts during the training of facilitators and mediator, as well as by having hand hygiene literature discussions, to ensure that everyone involved had a clear understanding of the phenomenon that was being investigated. This was particularly important to ensure that knowledge could be applied to questions asked and that answers were relevant to the phenomenon being investigated.

1.10.8 Disciplinary relevance

The researcher ensured disciplinary relevance by focusing the study on nurses and ensuring that the problem statement, aims and objectives and methodology were focussed on the nursing discipline (Thorne, 2014:1). Dissemination of results also took place within the field of nursing.

1.10.9 Moral defensibility

The researcher showed responsibility and accountability towards research participants by adhering to the ethical principles as discussed in section 1.11 of this study.

1.10.10 Pragmatic obligation

The pragmatic obligation, as discussed by Thorne (2014:1), from within interpretive description stems from the ability to apply the research to the study's participants without proof that the findings had been developed. The researcher adhered to the pragmatic obligation by formulating recommendations based on the findings of the study (please refer to Chapter 4 of this study).

1.10.11 Contextual awareness

Credibility should be enhanced by ensuring that the reader of the research understands the context of the research (Thorne, 2014:1) and this was ensured by providing a rich discussion of the current study's findings (please refer to Chapter 3 of this study).

1.11 Ethical considerations

In order for this study to be conducted ethical clearance was obtained from the Health Research Ethics Committee (HREC) of the NWU (NWU-00352-16-S1) (see addendum A) as required in terms of the Ethics guidelines of the Department of Health (DoH, 2015:11). Data collection commenced after ethical clearance had been obtained according to set norms and standards (DoH, 2015:11). This study made use of human participants and therefore great care was taken

to adhere to the principles of beneficence, justice and respect for persons throughout the research process.

1.11.1 Privacy and confidentiality

There are numerous legal requirements within South African legislation that protect individuals' privacy. The Protection of Personal Information Act (4 of 2013) is one of these laws stipulating that there may be no unlawful collection, retention, dissemination or use of personal information. In order to adhere to this requirement the researcher ensured that all information regarding the participants was de-identified according to the 18 identifying elements discussed in Grove *et al*. (2013:171). During the analysis of this study's findings names, geographical data, all dates (such as birth dates), telephone numbers, email addresses and personnel numbers were removed. Every participant received information regarding participation and there was no unlawful or secret collection of data. During the selection process the mediator knew the names of the participants; once participants decided to participate they were de-identified by assigning a number to each participant which was also used during the transcription and dissemination of data. Participants were informed that no manipulation to participate or to share any information would occur. When explaining the study to the participants they were informed that they had rights to privacy and confidentiality. Confidentiality is grounded within the premises that anyone may choose with whom to share information, people are allowed to keep secrets and the person who accepts the information will maintain confidentiality (Botma *et al.*, 2010:17). Sensitive information might be shared during a session but because of de-identification no one except other participants within the group would know who shared specific information. For this reason there had to be group rules regarding confidentiality and the sharing of information. The researcher, mediator, participants, facilitator and co-coder signed a confidentiality clause that prevented them from identifying participants and from disclosing information, thus enhancing confidentiality. Facilitators were trained to start the conversation but then to sit back and let the conversation proceed without making any remarks or displaying bias. According to the Department of Health (DoH, 2015:34) guidelines, the researcher has no mandatory reporting obligation of any sensitive information unless there is an indication of direct harm to another person. Therefore this study's sensitive information was not shared unless there could be a direct threat to another person. This helped to protect the privacy of the participants.

1.11.2 Risks and benefits

Doing the risk/benefit ratio is only a subjective exercise as it is difficult to determine the value of a single risk as opposed to a potential benefit (Botma *et al.,* 2010:24). Benefits should always outweigh risks.

1.11.2.1 Risks of harm

There was no risk of physical, social or dignitary harm. This study did not focus on deep emotional themes but rather on cognitive behavioural aspects which should not incur discomfort or harm. No participant experienced emotional distress due to partial confidentiality. This study might have had an element of psychological harm as some participants might have felt that self-disclosure occurred by answering questions about their personal experiences such as: *"Describe the information shared with you regarding hand hygiene from your earliest childhood memories".* There was no coercion to answer questions that might lead to psychological harm. Facilitators were trained to remain neutral and not to engage in any arguments. Experiencing this type of harm, to a certain degree, could be regarded as being acceptable (Botma *et al.*, 2010:22).

Some participants might have experienced some economic harm as they were not on duty on the day of data collection and had to incur some additional travel costs. An analysis was made of travelling costs within the area and participants travelling by public transport were reimbursed accordingly by the researcher. The TIE (time, inconvenience and expenses) principle was not used as participation is voluntary and only travelling costs were paid. The hospital uses an Integrated Staffing Model (ISM) where registered and enrolled nurses work closely together and combining these categories was not regarded as a risk.

1.11.2.2 Benefits of participation

There was no direct benefit of the study for individual participants. The indirect benefits to this study included possible new insights into hand hygiene practices which could lead to meaningful recommendations and improvement of the quality of care in this hospital. If transfer of knowledge gained during this study would occur, the proposed quality improvement measures would be tested throughout the hospital group and if successful this could contribute to improved care for patients receiving care in any of the group's hospitals. The study had a medium risk and the benefits outweigh the risks.

1.11.3 Informed consent

The informed consent process took place after recruitment of participants (please refer to table 1.1 and addendum C of this study). The principle of respect was adhered to by allowing every person the right to self-determination by implementing informed and voluntary consent (Grove *et al.,* 2013:171). The advertisement was written in understandable English as this is the official language of the company and drafted according to the proposal that had been handed in at HREC (please refer to addendum B of this study).

1.11.4 Permission

Once scientific and ethical clearance had been obtained the proposal was presented to the review board of the company who gave a letter of approval. The research was only conducted after an ethical certificate (NWU-00352-16-S1) had been obtained from HREC.

1.11.5 Recruitment, selection and treatment

Please refer to section 1.9.2.2 of this study. In addition to this, the principle of justice was ensured by not excluding nurses based age, race or gender.

1.11.6 Incentives

There was no incentive for participation. During the session there were refreshments on the tables and a light lunch, funded by the researcher, was served. There was a lucky draw during each session with a monetary price.

1.11.7 Relevance of the research

As hand hygiene behaviour is a daily task within the hospital the researcher is of the opinion that it is definitely relevant to modern nursing as there are no other similar published studies. This research addresses responsiveness by applying the principles of the Nuremberg Code (Grove *et al.,* 2013:161) through addressing issues of voluntary participation, the right to withdraw, protection of participant and conducting a study with minimal risks (Botma *et al.*, 2010:2). During a comprehensive literature review no evidence was found that behavioural determinants have been investigated in South Africa and therefore this study will contribute towards the body of knowledge regarding hand hygiene practices within South Africa. The WHO (2009:86) suggested that behavioural determinants of hand hygiene should be investigated and studies in this regard are worth doing and could contribute towards the body of knowledge within the health sciences. The study is also relevant as poor hand hygiene compliance had already been highlighted within the chosen setting.

1.11.8 Data storage

The data sets consisted of:

- Informed consent, confidentiality agreements and wavering of liability.
- Electronic voice recordings during the World Café sessions.
- Field notes made by facilitators.

- Researcher notes during debriefing session with facilitators.
- Transcriptions of raw data.

After the data had been collected (please refer to section 1.9.2.3 of this study) it was handed over to the researcher for analysis (please refer to section 1.9.2.4 of this study). Electronic transcriptions were mailed to the co-coder to ensure that scientific integrity of the data was maintained. Data sets of the co-coder were password protected and destroyed once the study had been completed. Data were de-identified by assigning numbers to participants.

The researcher must store all information and data for the period of seven years and it remains the property of the NWU. Data would be transferred to the NWU in the form of a dissertation. Data sets are stored in the lock-up facility of the researcher. Voice recordings were deleted after the researcher had completed the transcription process. All transcriptions were done by the researcher and then saved in a password protected folder on her personal computer. Informed consent, confidentiality agreements and field notes would be shredded when the electronic copies are deleted after the seven year period. Numerous confidentiality agreements had been signed by everyone involved in the study. Participants were aware that such agreements had been signed. Research results were shared with the senior managers who requested the research to be conducted. No data left the borders of the country.

1.11.9 Position of the researcher

The researcher is a registered nurse within the organisation and part of the nursing management of the hospital. She positions herself as a person with a true passion for her profession with quality improvement as her first and foremost task. The researcher is a nurse educator and believes that her profession is noble and the people around her are trying their best in difficult circumstances. Within this research the researcher positioned herself as a registered nurse with a concern for hand hygiene. The researcher identified with other nurses as she was present in the hospital's wards as part of her daily work. There might have been some conflict of interest as from a managerial perspective the study was conducted to improve perceived poor hand hygiene. From the researcher's perspective the study was conducted to gain new understanding of the phenomenon of hand hygiene. The researcher informed management that the study might not yield the type of information that they had anticipated when they requested investigation. The current study's findings would rather produce improved insight into current hand hygiene compliance practices. This study would thus not solve the problem of poor hand hygiene compliance but rather provide possible reasons for and new understanding about current hand hygiene compliance shortfalls. The researcher chose the World Café methodology in order to protect the participants as this is one of the few methods where the researcher can make use of

mediators and facilitators without being actively involved during the data collection process. Due to numerous on-going quality improvement projects in the hospital, the researcher had established rapport with the nurses as she had to conduct investigations in their work areas and she also implemented some projects. The researcher has good communication skills and one of her daily tasks was to visit the wards and speak to the nurses. Doing this study could possibly enhance the quality of patient care and provided an opportunity to nurses to share their thoughts concerning reasons for poor hand hygiene compliance.

During informal conversations many registered and enrolled nurses spoke openly regarding some of their barriers and by formalising their interpretations with a formal research project the researcher hopes to give a voice to nurses within the organisation which will lead to improvement and enhanced performance. Numerous people within the organisation have expressed views that hand hygiene compliance could be a behavioural deficit. The researcher regarded this to be a bold statement requiring research to prove or disapprove it. The researcher has no bias regarding the behavioural determinants that had to be investigated because this type of study has not been conducted and information shared will be new and insightful to everyone involved. The researcher was well known within her organisation and had implemented various quality improvement initiatives that had been rolled out to other hospitals within the group. This shows that her opinion was valued and that she could be trusted. The researcher's motto of "work smarter and not harder" was known within the hospital group. This work ethic of simplifying complex strategies will ensure that nurses know that their information will lead to a simplified strategy to adhere to hand hygiene and will not mean extra work.

1.11.10 Scientific integrity

One senior study supervisor from the INSINQ research focus area at the School of Nursing Science and a co-supervisor from the Africa Unit for Transdisciplinary Health Research (AUTHeR) of the NWU supervised the methodology; it was refined and adjusted to ensure the best possible outcome. The researcher did not change, manipulate, fabricate or falsify any data. Literature on the topic was reviewed extensively and the researcher was of the opinion that the chosen methodology was safe and yielded rich narrative data (Mouton, 2014:240). As the focus of this study was to explore learned behaviour that would eventually lead to training and support, a dialogic method, in this instance the World Café method, was suitable. Scientific integrity was maintained by implementing the previously discussed principles of trustworthiness. The researcher used a co-coder who ensured that no falsification or manipulation of data occurred.

1.11.11 Professional competence

The Curriculum Vitae of the researcher as well as study leaders were attached to the ethics application. The researcher attended the HREC ethics training in February 2016. The researcher is a novice researcher but was guided by the study leaders regarding the planning and execution of the World Café sessions.

1.11.12 Disruption of service

Quality patient care is the focus of the researcher. In order to ensure that there was no disruption of the service, participants had to request to be off-duty on the day of the study. In order to ensure that all shifts were able to participate, two sessions were organised. This ensured that all nurses would not be absent from the hospital's units at the same time. As this was a management initiated research project, the sessions were booked on the official training calendar as World Café sessions. Participants did not need to book for the sessions.

1.12 Research report structure

The dissertation will be presented in chapter format as follows:

- **Chapter 1:** Overview of the research.
- **Chapter 2:** Literature review on hand hygiene concepts.
- **Chapter 3:** Article: "Killing me softly" – the realities of nurses' behavioural determinants on hand hygiene compliance in a private hospital, for submission to Health SA Gesondheid and presented according to the technical requirements of the journal and APA reference style.
- **Chapter 4:** Conclusion, evaluation, limitation and recommendations.

1.13 Summary

The research proposal described a qualitative, interpretive, descriptive contextual study. This study explored behavioural determinants of hand hygiene that impact on hand hygiene compliance. The study was designed to adhere to ethical principles and trustworthiness and was undertaken in the private health sector. The World Café design chosen for this study was a suitable design as it enabled participants to engage in socially acceptable conversations with long term benefits to society. This study is unique in many ways as it shows the specific behavioural patterns of nursing personnel working in South Africa. The WHO guideline on hand hygiene in healthcare (WHO, 2009:146), suggested in a proposed research schedule that amongst other, the key determinants of hand hygiene behaviour should be researched in developed and devel-

oping countries regardless whether it is private or public healthcare taking all categories of HCWs into consideration.

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CHAPTER 2
LITERATURE REVIEW OF HAND HYGIENE CONCEPTS

2.1 Introduction

In Chapter 1 the researcher presented comprehensive background information regarding hand hygiene and the impact of poor hand hygiene on the healthcare system. The research problem was formulated and the most appropriate methodology was selected. During this chapter the researcher aims to present a critical analysis and synthesis of current literature regarding hand hygiene, behavioural determinants, nurses and the private healthcare setting in South Africa.

2.2 Search strategy

This literature review was conducted to critically appraise existing knowledge (Botma *et al.,* 2010:63) about behavioural determinants, hand hygiene, nurses and private healthcare and to synthesise what is already known and what is still unfamiliar about this research problem. The literature review forms the basis of evidence-based research approaches (Bryman *et al.,* 2011:94) and not only summarises previous literature but also critiques what is already known and identifies the gaps in the existing literature. The title of the study was used to identify concepts central to the study as well as keywords (Botma *et al.,* 2010:64), listed as:

- Hand hygiene (hand washing, hand disinfection, hand sanitisation);
- Behavioural determinants;
- Nurse (registered nurse, enrolled nurse, and nurse practitioner); and
- Private healthcare.

A computerised literature search was conducted to identify sources relevant to this study. A dedicated librarian of the NWU assisted the researcher. The following search engines were used: Google Scholar, Science Direct, EbscoHost, and BioMed Central, Whiley, Sage and PubMed which contain numerous data bases. The Boolean operators “and” and “or” were used. A total of 34 300 articles were found for the time period 2006 to 2016 containing the phrases hand hygiene, nurse, behavioural determinants and private healthcare systems. The researcher chose a ten year period for the search (Grove *et al.,* 2013:101). Historical references were added if relevant to the study. References were excluded on the basis of being inappropriate to this specific research project, based on the specific discipline in which the research would be under-

taken and inaccessible research due to financial implications, such as paying expensive fees to download and/or print articles/documents from some websites.

2.3 Conceptual framework

The conceptual framework, presented in Figure 2.1, directed the structural outline as well as the search strategy for the literature review. It served as a graphic depiction of the key words central to the current study and directed the literature review.

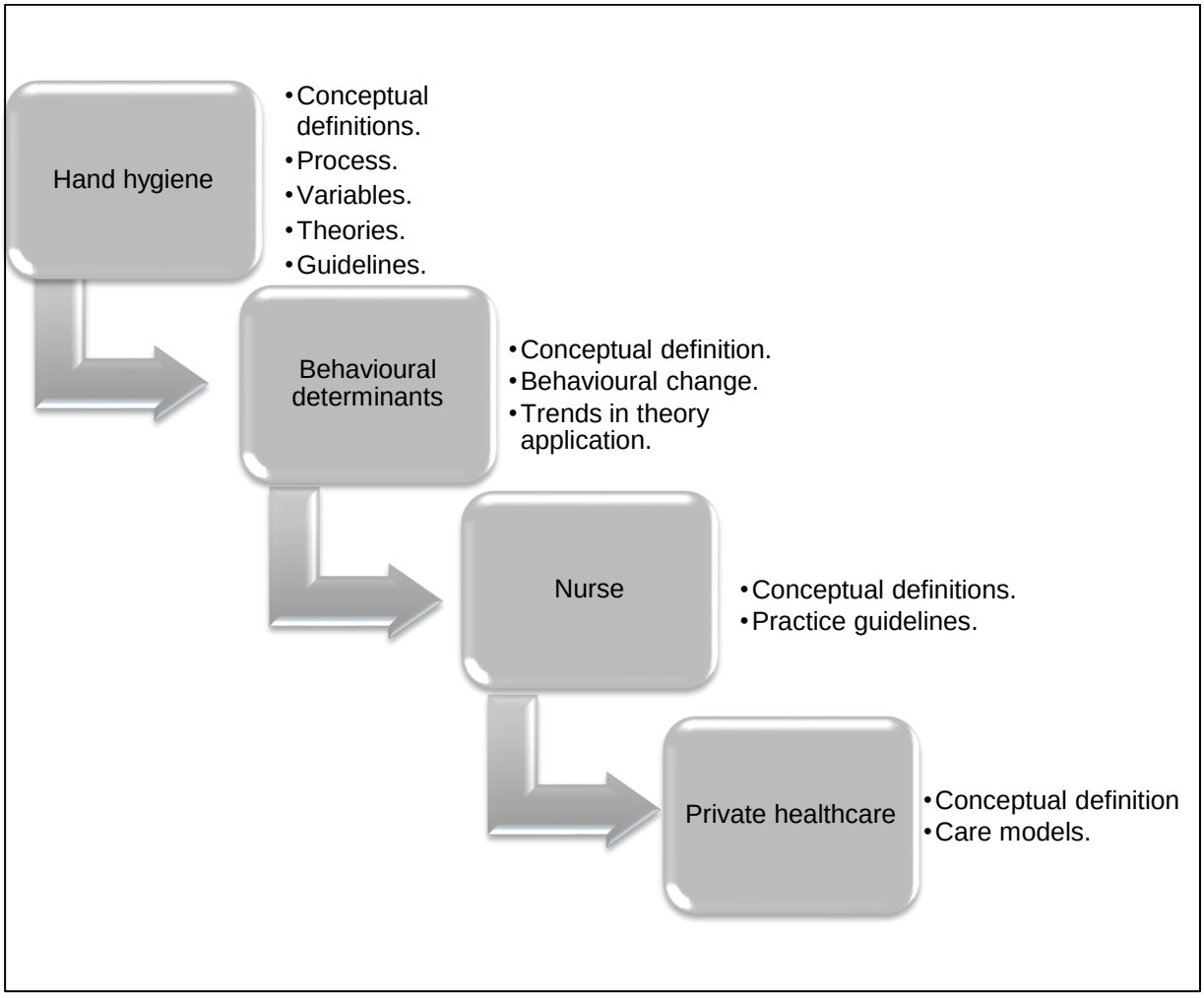

Figure 2.1: Conceptual framework guiding the literature review

The concepts central to this study (hand hygiene, nurse, behavioural determinants and private healthcare system) will be discussed by addressing conceptual definitions, processes, models and theories and current national and international guidelines.

2.3.1 Hand hygiene

Hand hygiene compliance is regarded as being the most important pillar of infection control (IHCI, 2014:3). However, optimal hand hygiene compliance is not adhered to in most healthcare institutions (WHO, 2009a:164) which might contribute to mortality and morbidity rates.

2.3.1.1 Conceptual definitions for hand hygiene

Hand hygiene has been defined in Chapter 1 (please refer to section 1.2 and 1.7) but the definition does not describe the scientific process of hand hygiene nor its interrelated variables.

2.3.1.2 Process of hand hygiene

Hand hygiene is a "do it yourself" process comprising five steps (wet, lather, scrub, rinse and dry) to reduce healthcare-associated infections (CDC, 2016:1). The first step in the process of hand hygiene is to wet the hands and this should preferably be done with fresh running water (WHO, 2009a:134). One of the reasons for poor hand hygiene compliance is the lack of equipment and poor water quality impacting negatively on compliance in some third world countries (WHO, 2009a:133). The second step in the process is to lather the hands with soap or alcohol-based hand rub. The amount of soap/alcohol-based hand rub should be enough to cover the surface of the hands (WHO, 2009a:153). Literature shows that nurses use mostly one millilitre or less soap while the correct amount of soap is between three and five millilitres (Larson *et al*., 1987:371). It seems as if soap quantity is an aspect about which nurses might have a severe knowledge deficit. The third and most important step in the process of hand hygiene is to scrub the hands. This step comprises six different phases (please refer to figure 2.2 of this study) but there is a significant difference in how these steps are interpreted and executed by different healthcare workers (Joshi *et al.*, 2013:1). The fourth step in the process is to rinse the hands preferably in clean running water and then to dry the hands with a single clean paper towel. If clean running water is not available the process becomes troublesome. Drying the hands are of the utmost importance as wet hands spread organisms more easily (WHO, 2009a:31). In practice there is not always access to clean dry paper towels which might facilitate the spread of micro-organisms. Although the process of hand hygiene is well described in the literature there is a gap between what is described in literature and the effective execution of hand hygiene in practice. Specific variables play a role during every step of the process influencing hand hygiene compliance.

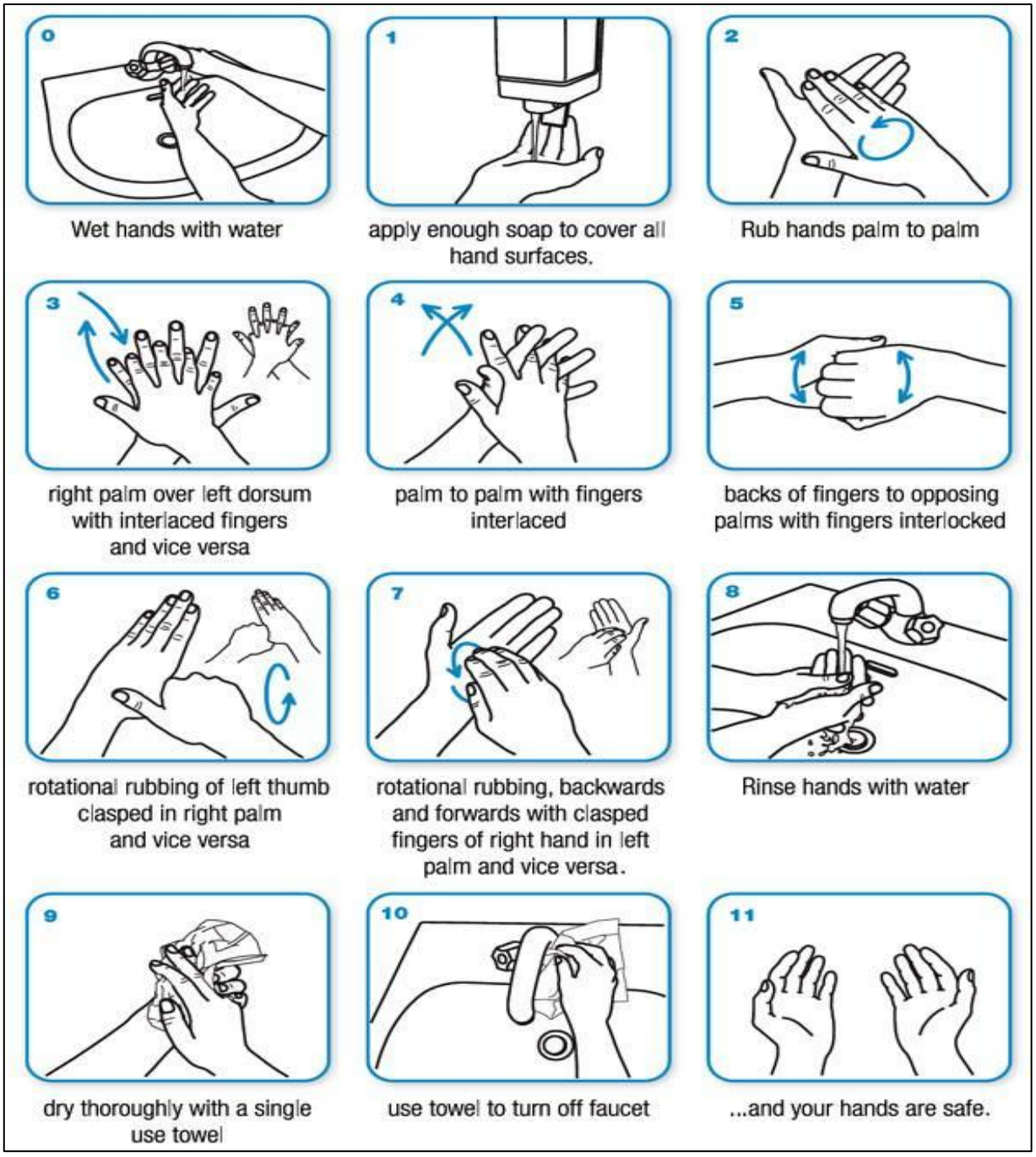

Figure 2.2: Steps in scrubbing hands (WHO, 2009a:156)

2.3.1.3 Variables of hand hygiene

The process of hand hygiene is best described by investigating different variables (please refer to figure 2.3 of this study) that impact on hand hygiene. The constant variable during hand hygiene is the skin, while dynamic and changing variables are the types of hand hygiene employed and the types of soap used. Each variable has a pertinent role to prevent the transmission of micro-organisms impacting on the five step process of hand hygiene.

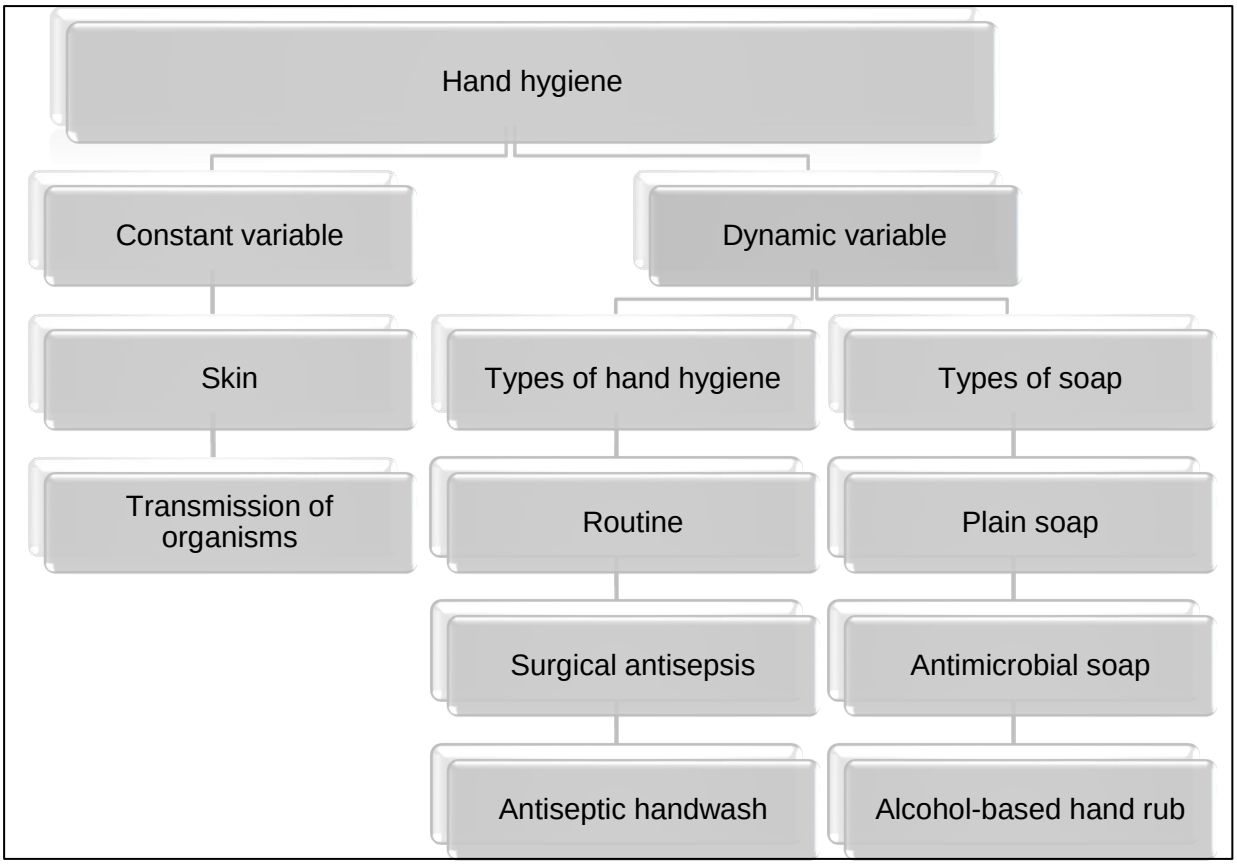

Figure 2.3: Constant and dynamic variables impacting on hand hygiene

As the largest organ of the human body, the skin is the first line of defence against infection by reducing the ability of micro-organisms to adhere to and invade the skin (Percival *et al.,* 2011:14). Human skin is colonised with bacteria that can be divided onto transient, easy to remove flora colonising the superficial layers of the skin and resident flora that are attached to the deeper layers of the skin with more resistance to be removed (CDC, 2002:2). Transient flora is believed to cause healthcare-associated infections (HAI's). Normal skin flora varies from person to person but is believed to be consistent for a specific person (CDC, 2002:2). The fact that some organisms are easier to remove influences the type of soap as well as the type of hand hygiene that should be practised.

When the defensive barrier of the skin is disrupted, the skin becomes a source of infection as only healthy skin can resist colonisation with invading pathogens (Percival *et al.,* 2011:19). Optimal conditions for the skin include that the moisture content of the skin should be low, the pH acidic, the salt content high, squamous cell shedding continuous, various antimicrobial peptides present, the stratum corneum intact and fatty acids, lipids and immunoglobulins should be present (Percival *et al.,* 2011:14). Excessive washing as well as mixing techniques such as washing with soap and immediately following it with alcohol based hand rub could cause dermatitis which might influence hand hygiene compliance adversely. Biofilms are micro-organisms that

are formed on biotic (skin) substances (Hall-Stoodley & Stoodley, 2009:1034) and 80% of infections can be attributed to biofilm formation (Nusbaum *et al.,* 2012:1). Gram positive as well as gram negative organisms remains pathogenic on inanimate objects for months and healthcare workers might not even be aware of the presence of these organisms (Kramer *et al.,* 2006:130). Healthcare workers touch unseen biofilm and their hands could become colonised transferring the micro-organisms from the environment to patients (Hu *et al.,* 2015:36). Up to 16% of the touchable surfaces in a patient's room are touched during a single direct contact and after 12 contacts this increases to 40% (Kampf & Kramer, 2004:863). Hands become the transporters of organisms and inadequate hand hygiene facilitates the process of transfer of pathogens. For this reason it is important to understand the role of the skin in the transfer of micro-organisms. Nurses complain that excessive hand hygiene irritates the skin leading to reduced hand hygiene compliance. However, the literature indicates that there are preventive measures to reduce skin irritation (WHO, 2009a:153). Transferring organisms from the skin (hands) takes place in five sequential steps as discussed in section 1.2 of this study. The five sequential steps of transmission of pathogenic micro-organisms are acknowledged by Pittet *et al.* (2006:641).

The type of bio burden on the hands determines which type of hand hygiene is indicated (Todd *et al.*, 2010:1939). Routine hand washing which is practised for instance before meals, is an informal type of hand washing with normal soap and with a duration of 15-30 seconds (CDC, 2013:1) that removes loosely adherent transient flora (CDC, 2002a:S9). In the wards plain soap is available at every wash basin. When aseptic procedures are done such as basic wound care, an antiseptic hand wash is required with antimicrobial soap. Antimicrobial soap contains an antiseptic agent in a sufficiently strong concentration to inactivate micro-organisms and suppress their growth (WHO, 2009a:2). Antimicrobial soap dislodges transient disease-causing organisms from the skin before they are removed with water and the friction of the drying process. Antimicrobial soap should be taken to the care area when an aseptic procedure is performed. The third method of hand hygiene involves surgical antisepsis, performed in operating theatres before performing any invasive procedure. This can be done with either antimicrobial soap or alcohol-based hand rub. Although the CDC (2013:1) suggests a scrub of 2-6 minutes' duration, most healthcare institutions apply a five minute scrub procedure (WHO, 2009a:55). Alcohol-based hand rub is an alcohol containing preparation in liquid, gel or foam form that has been designed to be applied to the hands in order to inactivate micro-organisms (WHO, 2009a:2) and does not necessitate any rinsing or drying, making this a popular method in third world countries where clean water sources might not always be available. The nurse should have the necessary knowledge to choose not only the method of hand hygiene but also the correct soap for the method practised. Informal interviews with nurses revealed that they believed that hand hygiene with soap and water is superior to alcohol-based hand rub. However, the literature shows that

alcohol-based hand rub is as effective as washing with soap and water when hands are not visibly soiled (CDC, 2002a:S27). In the facility where the current study was conducted, there was no proof that nurses had been sufficiently trained in the different hand hygiene methods and in the application of hand hygiene principles. Consequently, this aspect was addressed during the data collection sessions.

2.3.1.4 Models and theories impacting on hand hygiene

There are different models and theories impacting on the execution of hand hygiene. A model worthy of mentioning is the Transtheoretical Model of Change. People are at different stages of readiness to change (Glanz & Bishop, 2010:402) and as soon as the individual starts thinking about change, starts planning for the change, adopting new habits and maintaining the new habits for long term healthier behaviour (Glanz & Bishop, 2010:402) change is possible. Increased hand hygiene compliance can be predicted once the constructs of this model have been investigated. The theory of planned behaviour is another theory impacting on hand hygiene with the main premise that motivation and the ability to perform an action are prerequisites for an action to take place (Boston University, 2013:1). The main constructs of this theory are behavioural intent influenced by attitudes and the subjective evaluation of the risk and benefits of the expected outcomes (O'Boyle *et al*., 2001: 352). The Health Belief Model (HBM) and the Social Cognitive theory (SCT) were the theories in which this study was grounded. This model and theory could be linked to both hand hygiene as well as behaviour as described in section1.6 of this study.

According to the HBM, if people believe that a disease is risky or even life-threatening, this might increase their likelihood of taking action to minimise the risk (Meyer *et al.,* 2011:17). Although the initial focus of the HBM was on predicting why people did not use preventive services (such as routine chest x-rays to detect tuberculosis), the focus shifted to preventing diseases and detecting diseases early (Glanz & Bishop, 2010:402). The HBM is based on five constructs (as shown in figure 1.1) which need to be understood in order to apply the HBM to any specific situation.

The HBM (as described in section 1.2; 1.6 and figure 2.4) refers to an individual's subjective perception of the risk of becoming sick, the perceived severity of the risk, the belief that certain actions would be beneficial and that action taken would be to his/her benefit without being too costly (Kretzer & Larson, 1998:246). An individual will weigh the benefits of performing a health action (hand hygiene in the case of the current study) to determine whether or not it is cost effective, time consuming or inconvenient (BU, 2013:1). If the person has self-efficacy he/she will be able to perform certain behaviours if a stimulus triggers an action in response to internal or

external cues (BU, 2013:1). Thus one can deduct that if an individual realises that he/she is susceptible to a serious infection there would be adherence to universal precautions such as hand hygiene (Kretzer & Larson, 1998:247). The HBM's limitations include that it does not consider environmental or economic factors, assuming that everyone has the same amount of knowledge about disease, not taking personal attitudes and beliefs into account, not taking habitual behaviours into account and assuming that cues to action are widely prevalent (Redding *et al.,* 2000:181) and therefore the HBM should preferably be applied to health-related situations in conjunction with other models.

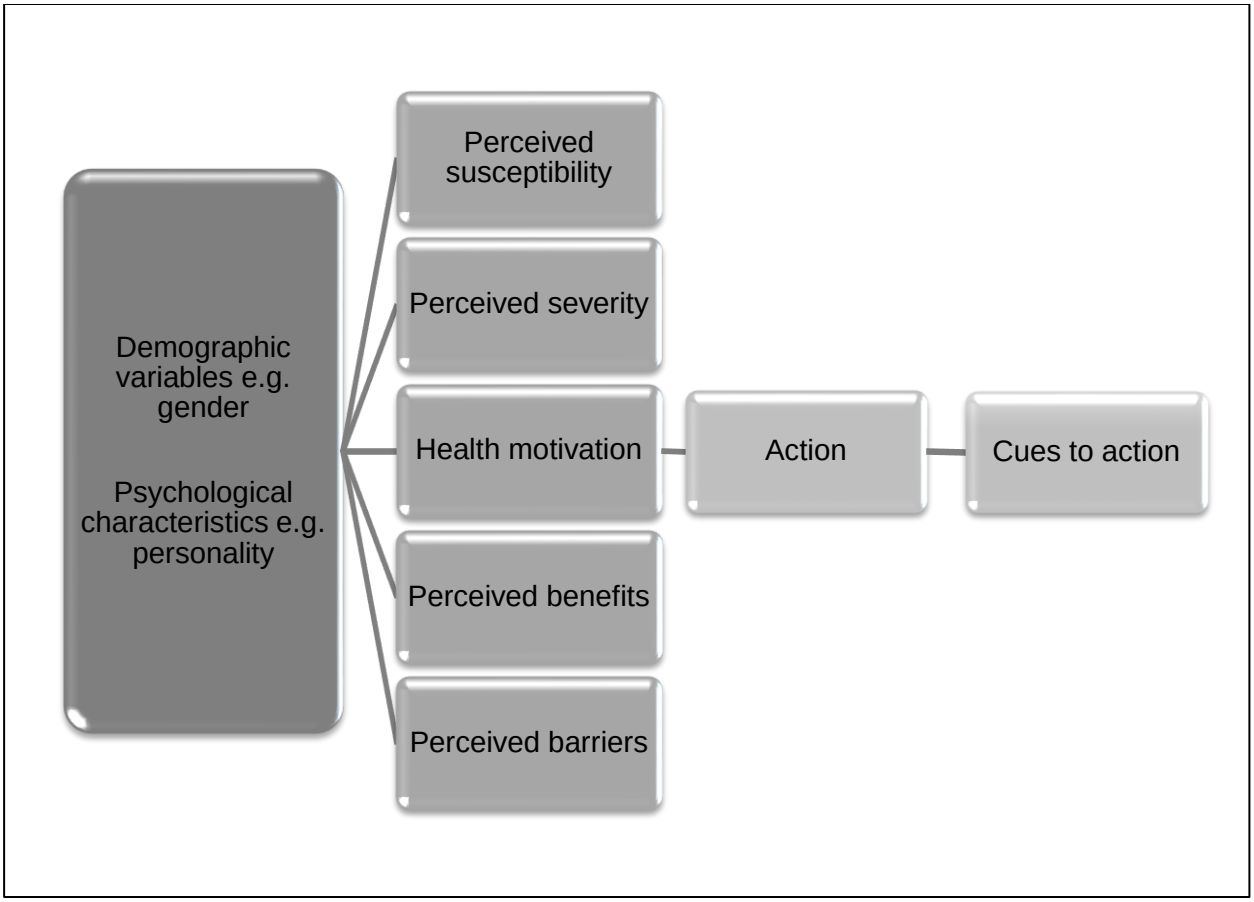

Figure 2.4: Graphical depiction of the HBM's major tenets (Abraham & Sheeran, 2005:31)

Social Cognitive Theory (SCT) has been described and discussed in sections 1.2 and 1.6 of this study. The central concept of the SCT is reciprocal determinism implying that behaviour is influenced by personal factors, social factors and the environment (see Figure 2.5) (BU, 2013:1). The most important personal factor is self-efficacy as a person has to believe in being efficient to succeed in any goal (Bandura, 1989:1176) and self-efficacy is also relevant to the HBM. Behaviour is controlled by an individual with certain cognitive processes as well as by the environment through social stimuli (Bandura, 1989:1175). People learn by watching and observing

others (Glanz & Bishop, 2010:403). When learning commences, reinforcement of learned behaviour determines whether a person will continue or discontinue with such learned behaviour. Whenever certain behaviours take place there are anticipated consequences of that behaviour which comes from previous experience (BU, 2013:1). If health-related behaviours require to be changed, a person should be able to persist and believe in his/her actions as a person can be both an agent for change and a responder to change (Glanz & Bishop, 2010:403). Many nursing interventions, as well as the lack to perform critical steps during an intervention, stem from the environment in which the nurse is taught. In the nursing profession there is a considerable amount of learning that takes place via direct observation of peers. If the SCT is applied, learned behaviour through observation might not always be the appropriate behaviour. Consequently the SCT is applied to the current study in order to identify which behavioural determinants influence current hand hygiene practices among the nurses participating in the current study. Criticisms against the SCT include that it is very broad and difficult to test in totality (Linke *et al.,* 2014:7).

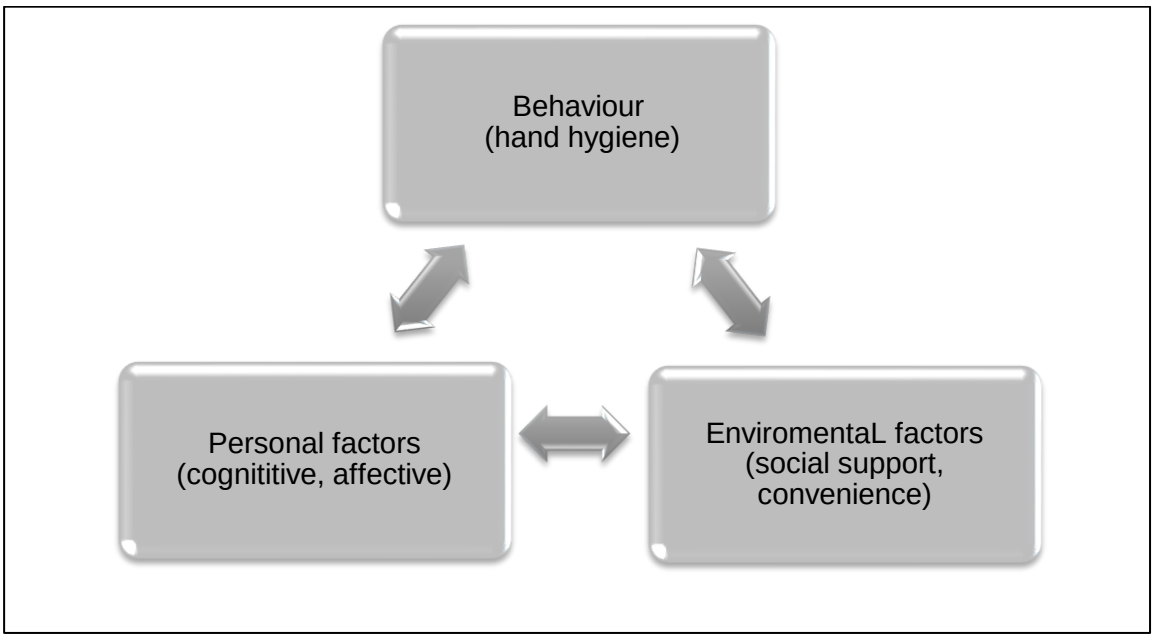

Figure 2.5: Graphic depiction of reciprocal determinism (Linke *et al*., 2014:7)

Although there are numerous theories and models impacting on hand hygiene, most cannot be applied in isolation but should rather be applied in conjunction with another relevant theory. International guidelines also refer to some of these theories and their implications for hand hygiene compliance.

2.3.1.5 International and national guidelines pertaining to hand hygiene

The two major role players with regard to hand hygiene are the WHO and the CDC. The WHO (2005:1-31) drafted a guideline named "Clean Hands are Safer Hands" which formed the basis for the WHO (2009:100) guideline "Clean Care is Safer Care". In this guideline the international community was introduced to the "five moments of hand hygiene" as described in section 1.2 of this dissertation. These five moments were introduced to provide healthcare workers with clear advice on the integration of hand hygiene practices and to foster a positive outcome evaluation by linking specific hand hygiene actions to specific infectious outcomes in patients (WHO, 2009a:100). The five moments of hand hygiene are displayed in every ward of the hospital that participated in the current study. However, it remained uncertain whether the science behind the "five moments of hand hygiene" was fully comprehended. This aspect of hand hygiene was explored during the posing of specific questions mentioned in table 1.4 (question 4). Although the "five moments for hand hygiene" designed by the WHO has a user-centred approach literature suggests that the quality of the information and training provided to healthcare workers might be questionable (Sax *et al.,* 2007:9). The WHO published a document on the implementation of a multimodal strategy for hand hygiene (WHO, 2009b:1-48). The multimodal approach to hand hygiene gives a structured approach to improving hand hygiene by suggesting a system change within healthcare organisations, training and education, evaluation and feedback, reminders in the workplace as well as an institutional safety climate (McGuckin *et al.,* 2011:14). The comprehensive hand hygiene guideline of the CDC was published in 2002 (CDC, 2002:1-48). There is currently no official South African hand hygiene guideline but reference is made to the WHO's guideline (2009a). Ministers of Health from 139 countries (including South Africa) have pledged to promote the WHO's "clean care is safer care". South Africa also forms part of the 18 000 health facilities in 179 countries that joined the "WHO SAVE LIVES: Clean your Hands"-campaign but is not part of the 50 countries that have already developed their own national campaigns (WHO, 2016:1). A hand hygiene campaign was launched by Dr Aaron Motsoaledi (Minister of Health South Africa) in 2014 to raise awareness of proper hand hygiene amongst government sector employees (DoH, 2014:1). This has not yet become an annual campaign. Although hand hygiene is not a new concept, the WHO (2009b:6) stated that many facilities worldwide have not even started addressing the issue and are not able to show sustainable and long-lasting improvements.

Because of the complexity of the nursing profession there are numerous challenges within hospitals (figure 2.6) influencing hand hygiene practices (Smiddy *et al.,* 2015:296-274). Long working hours, shift-related fatigue, nursing shortages, workload and demands of the profession (Dai *et al.,* 2015:859) play a role in the application of proper hand hygiene and the execution of published hand hygiene guidelines. The hospital where the research was conducted, had an overall

bed occupancy of 73% and an intensive care unit (ICU) with a bed occupancy of 110%. Thus challenges existed but it was unknown whether or not these challenges affected hand hygiene. Many current challenges of hand hygiene such as knowledge, the use of cues and social influences could be explained by investigating the behavioural determinants of the nurses who participated in the current study.

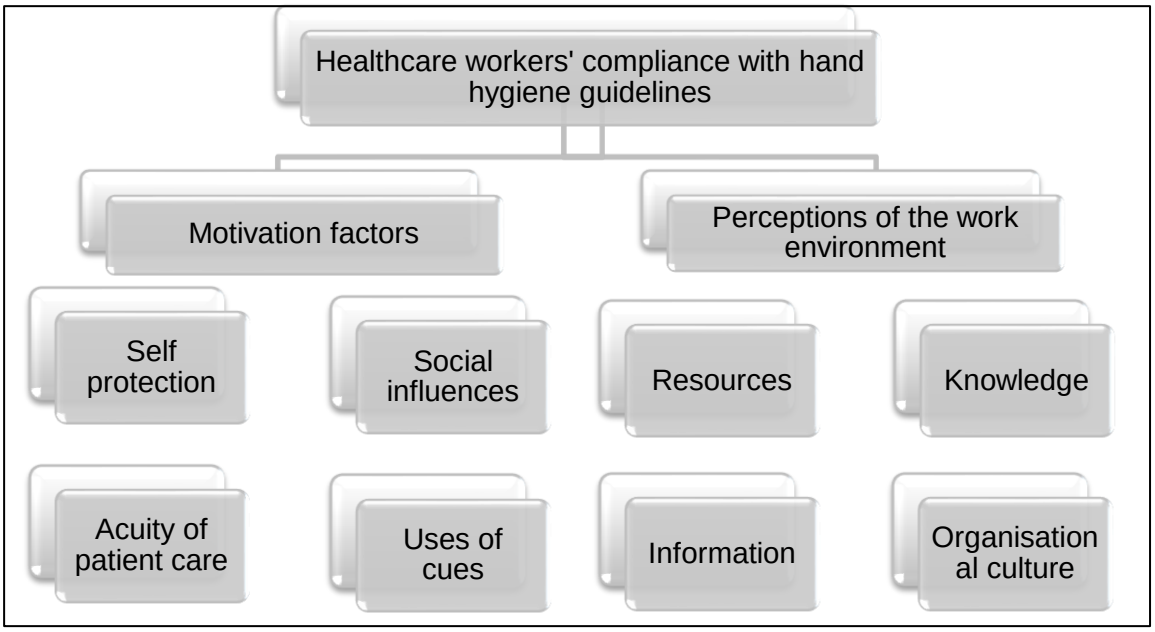

Figure 2.6: Hand hygiene challenges (Smiddy *et al*., 2015:296-274)

2.3.2 Behavioural determinants

Determinants of behaviour are central to the current study as certain behaviours take place in the presence of these determinants but are omitted in the absence of these determinants.

2.3.2.1 Conceptual definitions

Behaviour is defined as action that a person takes in response to an external or internal event (Michie & Johnston, 2012:1). A behavioural determinant is any factor which strongly influences and affects behaviour (Nuggent, 2015:1). In order to understand the drivers or determinants of behaviour it is important to interpret theories of behaviour. This is the case because theories of behaviours attempt to explain the reasons why certain behaviours occur as well as theories of change that explain change processes (Davis *et al.,* 2015:326). Davis *et al.* (2015:327) define theory as "a set of concepts and/or statements with specifications of how phenomena relate to each other". A systematic review on theories identified 82 theories in 276 articles that could predict behaviour with only two articles compiled in Africa and none in South Africa (Davis *et al.,* 2015:327). Four of the theories were dominant and were described in 63% of the articles. These dominant theories included the Transtheoretical Model of Change (TTM), Social Cognitive The-

ory (SCT), Theory of Planned Behaviour (TPB) and the Information-Motivation-Behavioural-Skills Model (IMB). Of this 63%, Social Cognitive Theory (SCT) comprised 11% and the Health Belief Model (HBM) was described in 3%. The main theories for the current study are the HBM and the SCT, providing appropriate theoretical frameworks for the application of hand hygiene compliance as discussed in sections 1.6 and 2.3.1.4 of this study.

2.3.2.2 Applying theory and models to implement behavioural change

As hand hygiene is a sequence of events (please refer to section 2.3.1.2 of this study), it is seen as behaviour. The main reason why behaviour should be investigated is to design and implement change strategies. The three main reasons for using a theory to design interventions include that interventions are more likely to be effective if they target the causal behavioural determinant/s, if there is an understanding of what works and what doesn't and if the interventions and evaluations are grounded in theory (Michie *et al.,* 2008:662). Twelve theoretical domains have been identified that could influence behaviour (French *et al.,* 2012:2).

The 12 domains required for change compare well with the HBM and SCT chosen for the current study and provide an extensive framework of intervention components (French *et al.,* 2012:2) (please refer to table 2.1 of this study). Once the process of identification of the behavioural determinants has been completed, implementation strategies can be planned and tested (refer to figure 2.7 of this study). For any behaviour to change or to be addressed, it is important firstly to identify the determinants of that behaviour, then decide on the behavioural change technique and apply it to the behaviour which should then lead to an improved execution of that behaviour (Michie *et al.,* 2008:663). By determining the cause of the problem and by applying causal modelling the problem can be addressed (please refer to figure 2.8 of this study).

Table 2.1: HBM and SCT compared to the 12 domains of factors influencing clinical behaviour (French *et al.,* 2012:2)

12 Domains of behaviour change	Health Belief Model interpersonal factors impacting on behavioural change	Social Cognitive Theory intrapersonal factors impacting on behavioural change
Knowledge	Knowledge	Knowledge
Skills	Perceived self- efficacy	Practice
Emotion	Personality	Attitude
Belief about capabilities	Perceived self- efficacy	Self-efficacy
Beliefs about consequences	Perceived Benefits/Barriers	Expectations
Motivation and goals	Perceived self- efficacy	Self-efficacy
Memory, attention and decision	Perceived susceptibility	Skills

12 Domains of behaviour change	Health Belief Model interpersonal factors impacting on behavioural change	Social Cognitive Theory intrapersonal factors impacting on behavioural change
Environmental context and resources	Socio economic status	Social relationships
Behaviour regulation	Personality	Social norms
Social influences	Socio economic status	Social norms
Social/professional role and identity	Social economic status	Access in the community

If all factors of the preceding discussions are considered, then it can be deducted that behavioural change is central to the problem of hand hygiene. By applying change theories, recommendations would be possible if intrapersonal and interpersonal determinants of hand hygiene are investigated enabling the target behaviour change to take place. This study thus focussed on the first step of causal modelling, namely the determination of any behavioural determinant that negatively impacts on hand hygiene compliance. Changed behaviour is the outcome of behavioural change interventions (Michie & Johnston, 2012:1). Without determining the cause of deviant behaviour, progress in any behavioural deficit will be difficult.

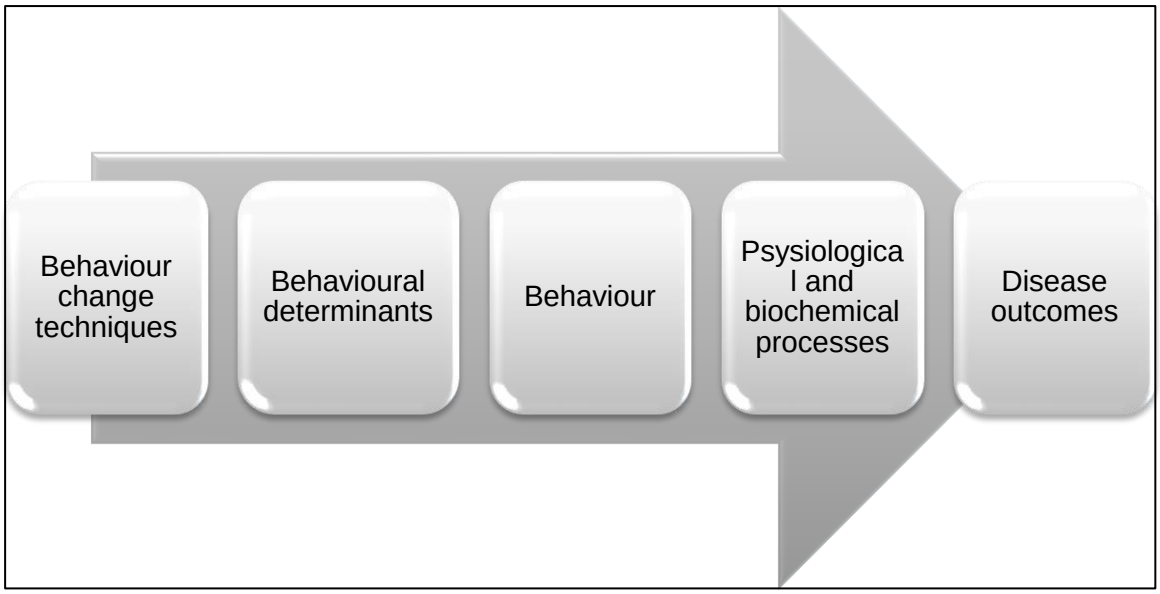

Figure 2.7: Adding behavioural changes to causal modelling (Hardeman *et al*., 2005:678)

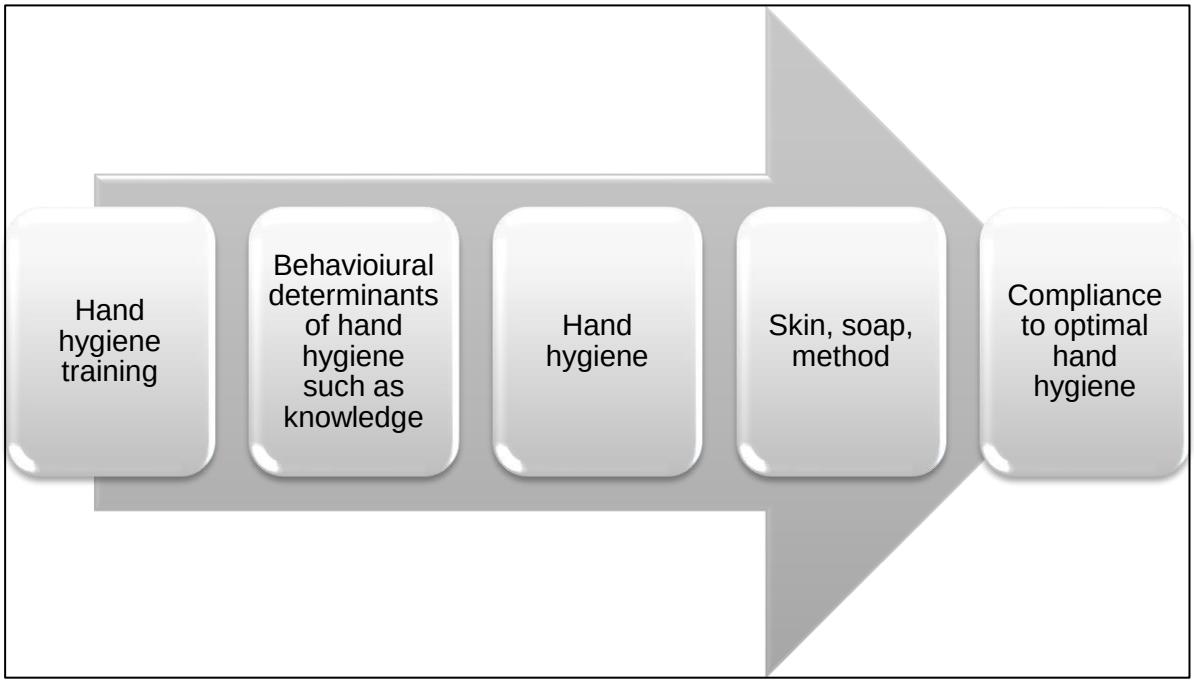

Figure 2.8: Adding behavioural changes to causal modelling- adopted for hand hygiene (Hardeman *et al*., 2005:678)

2.3.2.3 International and national trends in nursing theory application

Although there is criticism in the application of the HBM as a lone standing model in nursing research this model is one of the models that has been used most often in health behaviour research (Linke *et al.,* 2014:4). However, the SCT has been identified as a comprehensive

model of behaviour change with a strong foundation for health promotion research (Linke *et al.,* 2014:7). The most important aspect regarding the choice of theory is to choose a theory that matches specific goals of a study (Linke *et al.*, 2014:11). There is proof that some international guideline developers applied the SCT (WHO, 2009:85) when drafting their guidelines. In a study by Piras (2016:52) the conclusion was reached that social influences impacting on nurses' behaviours represent an underdeveloped domain in nursing science. The researcher could not find relevant studies within the South African context where behavioural determinants had been investigated or used to draft hand hygiene-related guidelines. The behaviour of nurses regarding hand hygiene cannot be addressed unless the behavioural determinants have been identified.

2.3.3 Nurses as the primary executers of hand hygiene

Hand hygiene is practised by different types of healthcare workers but for the current study focussed on registered and enrolled nurses.

2.3.3.1 Nurse defined

Registered and enrolled nurses have been defined in Chapter 1 (please refer to section 1.7 of this study). The International Council of Nurses (ICN) defined nursing as the care of all types of people regardless of age or groups and in any setting. Nursing is "the promotion of health, prevention of illness, and care of physically ill, mentally ill, and disabled people of all ages, in all healthcare and other community settings". Nursing is to provide a safe environment by drafting health policies and managing different health aspects (ICN, 2002:1).

2.3.3.2 Nurses' practice guidelines for hand hygiene

One of the biggest challenges within nursing is to promote and optimise care within the frameworks provided for nurses (Meyer *et al.,* 2011:123). Not everyone working in a nursing unit is cognitively at the same level, yet they are expected to provide care meeting the expectations of others. Nursing has an important psychomotor component where certain skills should be present to perform daily nursing tasks. In the hospital where the current study was conducted there are two guidelines and one evaluation instrument to guide the nurses' hand hygiene practices. These include the corporate hand hygiene policy providing basic background information about what is expected from every person regarding hand hygiene while caring for patients. This policy is available in all the hospital areas. In addition to this there is a basic nursing procedure on how to perform basic hand hygiene, discussing hand hygiene in-depth and guiding practice. Before a nurse can be found competent in hand hygiene, the content of the procedure has to be studied as cognitive skills are tested before an evaluation is conducted by a clinical facilitator.

These questions test basic knowledge such as the indications for performing hand hygiene, the five moments of hand hygiene as well as which areas should be cleaned during hand hygiene. The psychomotor skills of the nurse practitioner are then tested by direct observation. The outcome standard for this guideline is that the nurse should be able to perform safe basic hand hygiene within 10 minutes. A definite shortcoming is that there is no formal hand hygiene module during which nurses are taught about the science of hand hygiene, the five moments for hand hygiene or the multimodal methodology of hand hygiene. Hand hygiene is regarded within the hospital group as one of the most basic procedures and staff members should be declared competent in this procedure every two years. In spite of these procedures, hand hygiene compliance has remained troublesome, causing the researcher to investigate a new approach where behaviour is studied. The hospital where the current study was conducted has an annual hand hygiene campaign and hand hygiene is a priority and key performance indicator that is measured on a monthly basis.

Nursing practice is governed by the SANC and the Nursing Act (33 of 2005). There is no legislative differentiation between nurses working in public and private hospitals. The Nursing Act (33 of 2005) delineates the scope of practice (SANC 1984: R2598) for registered nurses as well as for enrolled nurses. Although these scopes differ, hand hygiene is not described as a single prescription but it is a prerequisite for most of the prescribed actions.

The SANC regulation on acts and omissions (SANC 1985: R387), describes instances where the SANC may take disciplinary steps if certain actions are not performed. An analysis of the relevant acts concluded that sub-optimal hand hygiene is contravening legislation of the nursing profession. Regulations and acts pertaining to nursing are applied in private and public healthcare institutions without any differentiation. As the setting for this study was a private hospital it is important to discuss the private healthcare system in South Africa.

2.3.4 The private healthcare system in South Africa

Healthcare delivery in South Africa has been described as dysfunctional with numerous inequalities stemming from racial and gender discrimination that formed part of the country's political background (Coovadia *et al*., 2009:817). In South Africa there are two mainstream healthcare systems, namely private and public healthcare systems. The current study focussed on the private healthcare system as this is where the study was requested.

2.3.4.1 Conceptual definition of private healthcare

Private healthcare has been defined in Chapter 1 (please refer to 1.7 of this study). In addition it is important to define the term medical aid scheme and also to show why this is important to the

current study. According to the Medical Schemes Act (131 of 1998) a medical scheme is registered under section 24(1) of the act and takes liability for healthcare rendered in return for a premium or contribution. The medical aid becomes the most important role player in managed healthcare where decisions regarding service providers are made for patients by their funder or medical aid scheme (Hattingh & Jooste, 2011:389).

2.3.4.2 Care models in private healthcare

There are two types of care models. Firstly it is the overall model of the hospital and then the specific care model followed in every functional unit of that specific hospital. Nursing care is complex and care models for nursing care depends on the type of patient and the facility in which care is rendered (Anon, 2012:1). Models described in the literature, that are not widely used, include the shared governance model and the case method (Berman *et al*., 2008:111) but the same source describes differentiated practice, functional nursing, team nursing, primary nursing and progressive patient care nursing models. The team nursing model involves nursing care with a team leader, usually a registered nurse and various lower categories of nurses. The effectiveness of the team is influenced by skills, understanding the scope of practice, having knowledge of other team members, personality and work ethic (O'Connel *et al.,* 2006:14). This care model may impact positively on hand hygiene if the team leader has sound knowledge of each team member's ability to perform effective hand hygiene procedures, but if managerial abilities are lacking, hand hygiene may be negatively impacted.

The functional nursing care model is a task-orientated approach which might cause fragmented care overlooking many aspects of care (Berman *et al.,* 2008:111). A care model like differentiated practice is more suited in care areas like critical or neonatal care where the nurse must meet specific job requirements to work in a specific area (Berman *et al*., 2008:111). Literature describes patient-focused care but there are fundamental differences between patient-focused care (Berman *et al*., 2008:111) where service and care are brought to the patient and patient-centred care where the patient becomes the centre with the right to make his/her own decisions regarding his/her care (Landers *et al.,* 2012:S11). The care model which is more suitable for the setting of the current study is the progressive patient care model where patients are placed in units based on their needs determined by their degree of illness or on the need for specific specialised services (Anon, 2012:1). Although current hand hygiene in the participating hospital is measured per unit, it remains unclear whether or not this type of model impacts on good hand hygiene compliance. It does not really matter which care model is used, hand hygiene should be optimal in every care area, but the pressure experienced by nurses might negatively influence compliance. There are emerging patient driven care models where the patient becomes the centre of care (Swan, 2009:492), being well informed and participating in decision making.

In such a care model the focus is rather on prevention as a health outcome and the delivery of good quality care. Hand hygiene compliance will be one of the procedures monitored by the patient (Swan, 2009:492). In the private sector, one of the most important concepts regarding care is managed care emphasising cost containment without compromising the quality of care (Hattingh & Jooste, 2011:386). As healthcare is a commodity it has become increasingly important that the patient gets what he/she pays for. If there is poor care, the medical aid scheme as well as other funders have the right to make certain decisions on behalf of the patient regarding the choice of hospital (Hattingh & Jooste, 2011:386) and loss of income for the hospital becomes a reality.

The hospital group in which the current study took place, has embarked on a patient driven care model built on specialist orientated, multidisciplinary health-care services. More recently, this hospital group adopted a new strategic initiative which is a patient-centred model. The core idea of this strategy is about value creation for patients. The strategy defines value as: Value = Quality/Cost. Value refers to the value that a patient perceives to get for his money, quality refers to the health outcomes of the patient and cost refers to the full-cycle cost to the patient of achieving optimal outcomes (Anon, 2016:1). As the patient is the centre of care, one of the focus points is to lower costs to the patient and the funder (medical aid scheme). This patient-centred approach enforces a focus on drivers of quality of which optimal hand hygiene is a key indicator. Patients are increasingly well informed regarding health and health-related issues. Therefore a patient-centred approach, where the patient is involved in decision making, could be to the advantage of the patient, the funder and the hospital concerned (Landers *et al.*, 2012:12-17).

Should a patient contract a healthcare associated infection (HAI) due to poor hand hygiene, the patient will stay in the hospital for longer which will affect costs. In a fixed fee structure, there are negotiations with medical aid schemes fixing the cost of healthcare per admission. If a patient should contract a HAI the risk for the hospital group is high with smaller profit margins. When critically looking at the current model of health service delivery within the group, as well as the risk involved for both the patient, the funder and the hospital and with cost being a driver in healthcare, poor hand hygiene compliance will affect quality, safety and costs and in the process the patient will be harmed.

2.4 Summary

Hand hygiene could be regarded as a basic activity of critical importance in the risk management of patient safety. However, hand hygiene remains a very personal process that is difficult to monitor. Hand hygiene is influenced by psychological theories impacting on the behaviour of

the nurse. Current guidelines are a director to the international community and their application might be problematic within an emerging economy like South Africa where infrastructure and availability of resources influence hand hygiene practices. South Africa lacks national guidelines to guide and direct hand hygiene in South Africa. Hand hygiene behavioural change depends on the behavioural determinants and the application thereof by nurses. Practice guidelines are available to nurses in the hospital where the current study was conducted yet, it seems as if poor hand hygiene compliance remains a behavioural issue as evident from poor hand hygiene compliance rates. The private healthcare environment is acutely aware of quality care and positive patient and organisational outcomes as cost drivers and that poor hand hygiene practices impact negative on this aspect.

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CHAPTER 3
ARTICLE

Article title: “Killing me softly” – the realities of nurses’ behavioural determinants on hand hygiene compliance in a private hospital in South Africa

For submission to the following journal: Health SA Gesondheid

3.1 Introduction

Chapter 2 presented a literature review regarding hand hygiene as concept; the conceptual framework guiding the study; hand hygiene processes, variables, models and theories as well as national and international guidelines, applied to private healthcare where possible to do so. Thereafter a general discussion on behavioural determinants as applied to hand hygiene, with specific reference to the Health Belief Model and Social Cognitive Theory; both serving as theoretical assumptions underlying the current study, followed. In this chapter results are presented in a manuscript format for publication in *Health SA Gesondheid* titled, *"Killing me softly" – the realities of nurses' behavioural determinants on hand hygiene compliance in a private hospital in South Africa".* The reference style used by the American Psychological Association (APA) was maintained throughout the manuscript.

3.2 Authorship

According to the International Committee of Medical Journal Editors' (2017) the required four criteria were adhered to as follows:

ICMJE criterion	S Coetzer	R van Waltsleven	P Bester
Substantial contributions to the conception or design; acquisition, analysis, interpretation of data for the work.	X	X	X
Drafting the work or revising it critically for important intellectual content.	X	X	X
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Agreement to be held responsible for all aspects of the research, ensuring that questions related to the accuracy or integrity of any part of the work were investigated and resolved in an appropriate manner.	X	X	X
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MANUSCRIPT

Title: “Killing me softly” – the realities of nurses’ behavioural determinants on hand hygiene compliance in a private hospital

Short title: Behavioural determinants on nurses’ hand hygiene compliance

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ABSTRACT

Background

Hand hygiene, a cornerstone of good infection control principles, remains a struggling patient safety initiative influenced by behavioural determinants. Despite hand hygiene training and awareness campaigns, compliance remains low. This study determined nurses' behavioural determinants regarding hand hygiene practices in one private hospital in South Africa.

Method

A qualitative, interpretive descriptive and contextual design was adopted to conduct the study in a private hospital with 143 full time employed registered and enrolled nurses (N=143, n=22). An all-inclusive, purposive sampling led to data collected through two World Café sessions. Five questions, based on the Health Belief Model and Social Cognitive Theory were formulated. Content and thematic analysis was followed by process analysis and a consensus discussion between the coder and co-coder.

Results

Five themes were formulated namely, realities of different knowledge bases; established hygiene patterns; misalignment of organisational processes; continuous effort towards operational efficiency and disintegration of the caring relationship. Categories and sub-categories emerged showing the entwined nature of knowledge and behaviour.

Conclusions

The following behavioural determinants of hand hygiene compliance were identified: age and childhood memories, different knowledge bases, perceived susceptibility, perceived threats and perceived personal benefits. Hand hygiene cannot be strengthened by organisational initiatives only. There is a complex interplay between embedded knowledge and habits, challenged healthcare practice realities, disintegration of the patient-nurse relationship and an instrumental view of hand hygiene from the organisation. Multi-level recommendations are proposed.

Keywords - hand hygiene compliance, behavioural determinants, nurses, private healthcare, and World Café sessions

Abbreviations

CDC – Centers for Disease Control

HAI – Healthcare associated infection

HBM – Health Belief Model

HCW – Healthcare worker

LMIC – Low and middle income countries

PPE – Personal protective equipment

SCT – Social Cognitive Theory

WHO – World Health Organization

1. Introduction

Semmelweis, the ‘saviour of mothers’ and hand hygiene activist could never foresee in 1847 (Cwikel, 2008) that hand hygiene challenges would return within modern medicine to claim innocent lives. Poor hand hygiene compliance is potentially detrimental to patient outcomes, resulting in increased mortality and morbidity (Mani, Shubangi & Saini, 2010). Healthcare associated infections (HAIs) are a worldwide patient safety issue (Allegranzi et al., 2013) with the risk of HAIs 20 times higher in low and middle income countries (LMICs) than in developed countries (World Health Organization [WHO], 2013). Quantitative studies conducted in Switzerland (Pittet & Boyce, 2001), Canada (Mertz et al., 2011) and the United States of America (Palmore & Henderson, 2013) concluded that poor hand hygiene compliance is an international dilemma. The recent outbreak of cholera and Rift Valley fever on the African continent raised many concerns regarding infection control practices within healthcare facilities. The “perfect storm” within a healthcare facility (such as a hospital), comprises four aspects, namely: infectious patients, inadequate resources, sick healthcare workers (HCWs) and poor hand hygiene compliance, exacerbating the potential for unfavourable patient outcomes (Branch-Elliman, Price, Bessesen, & Perl, 2015). To reduce unfavourable patient and HCW outcomes, Branch-Elliman, Price, Bessesen, and Perl (2015) suggested that infection control principles should be based on four pillars, namely exposure reduction; proper administrative controls; facilitating environmental controls and HCW protection through good hand hygiene principles and wearing personal protective equipment (PPE). In addition, the WHO (2007) described standard precautions to prevent transmission of pathogens as good hand hygiene practices; environmental cleaning; wearing of PPE; management of sharps and safe injection practices; healthcare risk waste management; prevention and management of needle stick; linen management and cough etiquette as universal precautions. Within every standard precaution there is an element of hand hygiene compliance, with knowledge and behaviour as two central themes, making hand hygiene compliance a complex reality. This was confirmed in China (Luo, He, Zhou, & Luo, 2010) and Nigeria (Amoran & Onwube, 2013), where inadequate knowledge and behaviour regarding standard precautions prevented the effective implementation thereof. Therefore, hand hygiene, as an

essential systems- and behavioural change integrated within standard precautions, has been challenged for more than 150 years (Centers for disease control and prevention [CDC], 2002).

Although literature concludes that behavioural determinants play a critical role in hand hygiene adherence (Glanz & Bishop, 2010), practical, multilevel recommendations remain unavailable. Policy makers postulate that if HCWs have access to the full multimodal approach ensuring that all the requirements for hand hygiene are available, then hand hygiene compliance will increase. Requirements for hand hygiene compliance include access to clean water, towels, soap, alcohol rub, training and education, hand hygiene practices monitoring and feedback (WHO, 2009), Yet, Mazi, Senok, Al-Kahldy, and Abdullah (2013) concluded that sustaining good hand hygiene practices is difficult despite the full multimodal approach as there remains a lacking element. Arguing that behavioural elements play a role but behavioural change is complex, the CDC (2002) and the WHO (2009b) suggested further explorations. The gap presented as insufficient qualitative exploration on the behavioural determinants of nurses' hand hygiene is an essential component for enhancing hand hygiene compliance. The HBM and the SCT presented as functional theoretical framework to explore behavioural determinants acknowledging that hand hygiene implies cognitive and conviction elements (please refer to Chapter 1 figure 1.1 of this study).

2. Method

A qualitative, interpretive descriptive and contextual design was followed to allow a multidimensional understanding and viewpoint within a complex system (Thorne, 2016) of a private hospital. The setting was a 202-bed private hospital, of one of the three major private hospital groups in South Africa, in the Mpumalanga Province, challenged with hand hygiene compliance and being aware of the necessity thereof for positive patient outcomes. The hospital, the only private healthcare facility in a 90 kilometre radius, offers multiple services including intensive care for neonates and adults, orthopaedic and general surgery, maternity care, paediatric care, theatre and emergency medicine on a fee-for-service principle. A total of 143 registered-and enrolled nurses work in the hospital, as well as 53 auxiliary nurses. The hospital group's ethics

committee and the hospital's executive management supported the study. Ethical clearance was obtained from the Health Research Ethics Committee of the North-West University (NWU-00352-16-S1). The hospital manager, serving as gatekeeper and the nursing service manager appointed an independent mediator, not employed by the hospital, to assist with recruitment and to reduce selection bias. The mediator invited prospective participants where after a purposive, voluntary sampling of employed registered and enrolled nurses (N=143) realised. Participants had to be registered or enrolled nurses (registered as such by the South African Nursing Council); full time employed at the hospital; not in a managerial position; declared competent in basic hand hygiene procedure by means of internal service-learning; willing to participate voluntarily in a World Café data collection session and fluent in either Afrikaans or English as business language. The mediator obtained informed consent on the day of data collection. Facilitators, selected according to their qualifications (registered nurses with an additional registration in health science education); received training on interviewing skills by the researcher regarding the World Café method (Brown and Isaacs, 2005) over four training sessions prior to data collection. The World Café sessions were utilised as an ideal data collection method, enabling the consolidation of multiple views on a cognitive-behavioural level and was conducted in an interruption-free and comfortable venue on the premises of the hospital during off duty time. Data were collected in two sessions to include as many nurses as possible. Five questions (please refer to table 1.4 and figure 3.1 of this study) based on the main concepts of the HBM and SCT directed the World Café questions, implying five tables, each with a central question and hosted by a facilitator per table. Upon arrival, after completing informed consent, participants were invited to take random seats at any table. The mediator coordinated the data collection process. Each table utilised 15 to 20 minutes to discuss the question at hand. Participation was digitally voice recorded and A2 papers with pens were also provided to depict ideas. The duration of full round World Café sessions lasted between one and two hours. The World Café sessions were interactive, positive cyclic processes whereby the facilitator (also the host) stated the question and summarised the previous groups' discussions. The facilitator was responsible to ensure a conducive environment around the table, enabling active participation, utilising communication

techniques such as active listening and interviewing skills such as clarification, paraphrasing and summarising. Facilitators kept field notes. During the first session, each table had an active participation of three participants per table plus the host. Thereafter the World Café was repeated where two participants were participating per table with seven in total. Although data saturation occurred in the first World Café session, an additional session with seven participants was conducted to ensure optimal participating opportunities for nurses and to control that no more new themes emerged from participants (N=22).

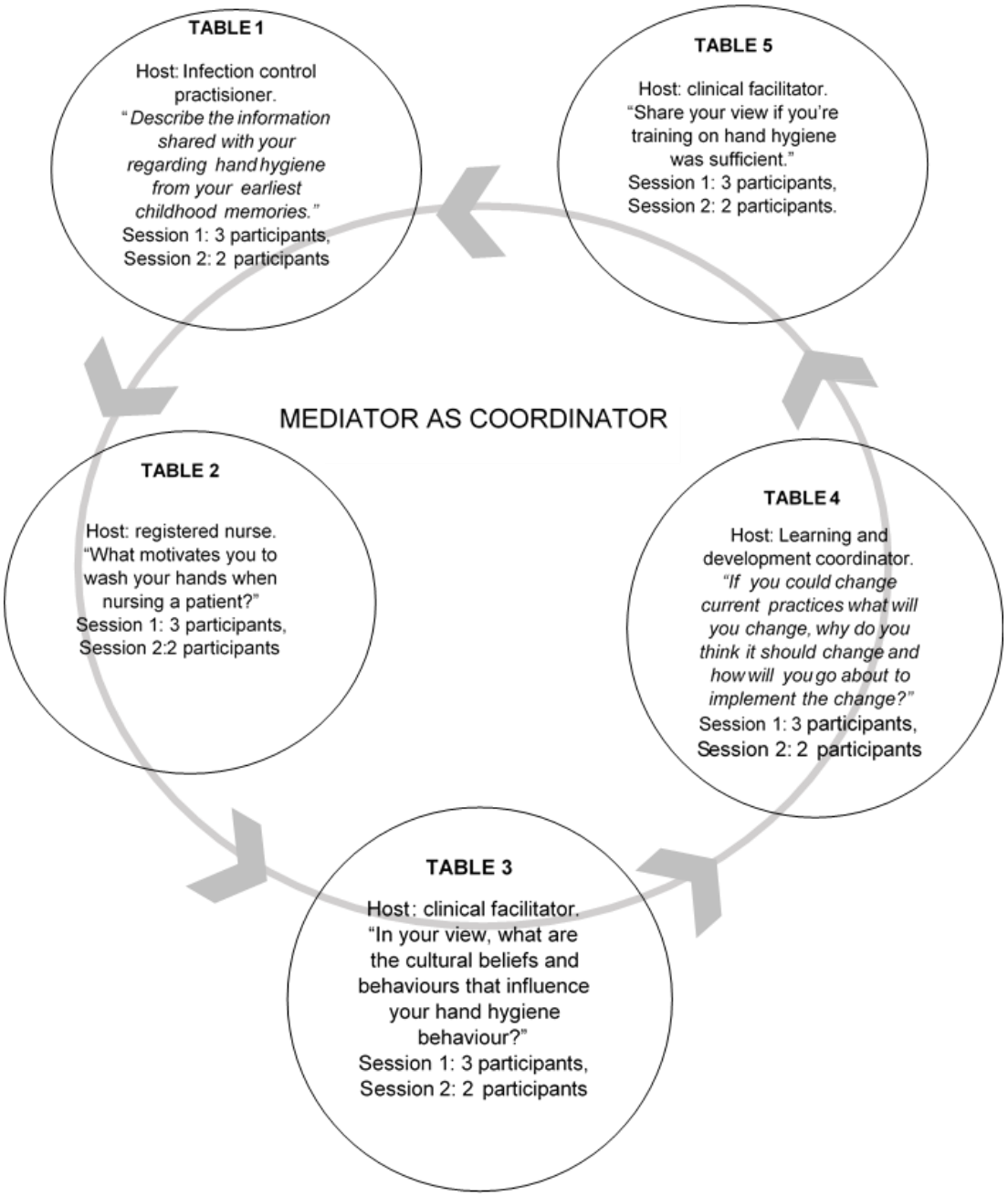

Figure 3.1: Table settings for the World Cafe sessions

Digital voice recordings were transcribed by the researcher followed by content analysis according to the Tesch's first eight steps as described by Creswell (2014). Thereafter a second order analysis, also referred to as process analysis, typical to interpretive description according to Thorne (2016), followed. Second order analysis enabled the researcher to move from "pieces to patterns, patterns into relationships and relationships to a new whole" (Thorne, 2014). Five themes, 13 categories and nine subcategories were formulated (please refer to figure 3.2 of this study). Principles to enhance trustworthiness suggested by Lincoln and Guba (*as cited in* Botma, Greeff, Mulaudzi & Wright, 2010) namely truth value, applicability, consistency and neutrality were applied. The researcher ensured truth value by engaging with literature and data over a prolonged time. The detailed description of the research process as well as the context, strengthened transferability and ensured adherence to the standard of applicability. Following a pre-approved research protocol, regular peer discussions and utilising a co-coder and reaching a consensus discussion strengthened consistency. Neutrality was enhanced when the researcher declared her own bias, regarding the study, and because the researcher was not directly associated with recruitment of participants nor with data collection. Conformability was enhanced though reflexivity and field notes and by formulating the interview schedule from the HBM and SCT as part of a comprehensive literature review. A fifth principle was added to trustworthiness, namely enhancing authenticity (Botma et al*.,* 2010) which was enhanced by exploring the lived experiences of nurses within their natural environment and by utilising the World Café data collection sessions that enabled a relaxed and active contribution. In addition to this the researcher added aspects of credibility as described by Thorne (2014). These standards are specific to interpretive descriptive inquiry and are used to ensure the credibility of the study. In order to ensure representative credibility and interpretive authority the researcher declared and compared constructs found in literature during the review with findings of the study. Questions during the World Café sessions were drafted after an extensive literature review ensuring that it will be representative of the phenomenon being studied. As this study focussed on nurses, disciplinary relevance was ensured within the boundaries of pre-drafted ethical principles. Recom-

mendations from this study (please refer to Chapter 4 of this study) ensured a pragmatic obligation.

3. Results

The five themes, 13 categories and nine subcategories are graphically depicted (please refer to figure 3.2 of this study). Themes indicated that hand hygiene does exceed beyond processes and infiltrates behaviours, habits and relationships. Nurses' knowledge, whether scientific, accurate or embedded, impact on hand hygiene practices and should not be approached as a standard knowledge foundation. Regardless whether knowledge is based on science it becomes a practice reality influencing hand hygiene execution. The existence of the instrumental relationship between nurses, patients and the organisation implies diversity, which impact on hand hygiene practices. There is a misalignment between organisational processes, nurses' attempts to echo organisational demands of operational efficiency and the nurse-patient relationship. Poor hand hygiene practice, as an essential element in risk management, is one of many signs of the disintegrated caring relationship within the nursing profession. In addition, the following behavioural determinants according to the HBM and SCT have been found to be central to the research (please refer to Chapter 4 table 4.1 of this study).

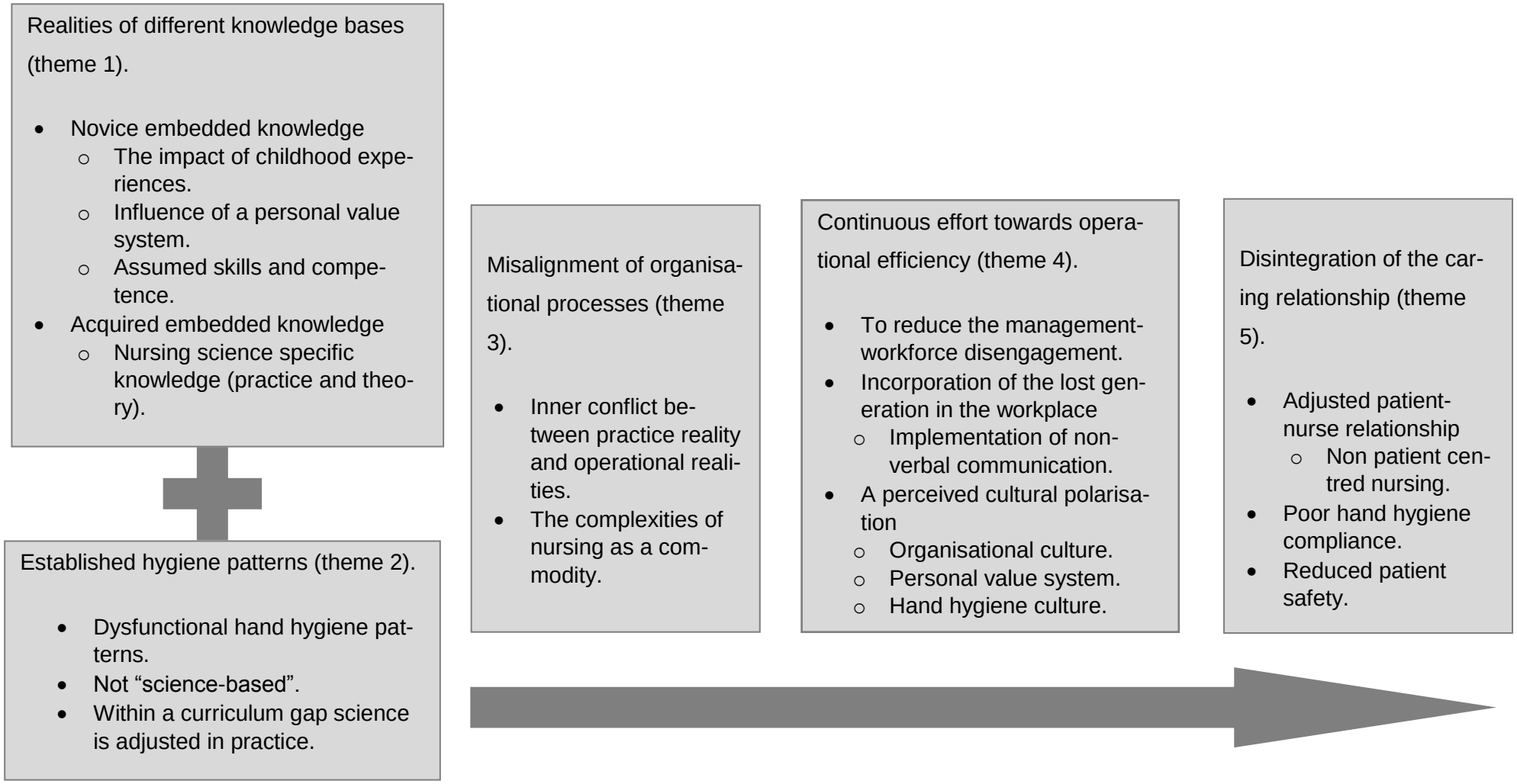

Figure 3.2: Themes, categories and subcategories emerging after second order analysis

3.1 Theme 1: Realities of different knowledge bases

Participants stated that they entered the nursing profession as novices but with existing knowledge and acquired embedded knowledge. Embedded knowledge, both novice or acquired, are deeply rooted knowledge that are part of nurses' unconscious everyday life. *"It's embedded knowledge that you have, so you'll have it forever. Something that no one can take away".* Nurses noted that managers often negate the powerful reality of nurses' embedded hand hygiene-related knowledge. Novice embedded knowledge refers to childhood experiences of hand hygiene, the influence of personal value systems on the professional growth and development and nurses' assumed skills and competence. Childhood experiences refer to hand hygiene-related memories of nurses "*when I was four or five years old".* According to nurses their novice embedded knowledge entails their childhood experiences of hand hygiene linked to nurses' physical (availability of resources) and social environment (social setting) as well as their cognitive growth and development until puberty. Nurses remembered that during this period they, as children, were mostly taught by their parents, relatives or significant others, such as teachers, but could not remember clearly what was taught to them. The second novice embedded knowledge refers to nurses' personal value systems which they recalled became their principles guiding behaviour and giving definition to character. Nurses' perceived assumed hand hygiene skills and competence as the third type of novice embedded knowledge, entailing all the different hand hygiene-related attributes nurses are expected to demonstrate based on their qualifications and training. For example, it is expected that a nurse should comprehend the theory of hand hygiene and demonstrate her clinical competence.

The current study's participants also referred to nursing science-specific knowledge that they had acquired during their formal training to develop hand hygiene skills. When entering the workforce the nurse had embedded knowledge and the employer assumed that this hand hygiene-related knowledge, skills and competencies were present. Yet, nurses are not assessed on their hand hygiene competence upon entering employment. "*So we were taught in school*

during practical the way we did our practicals you know we were never taught in details how to do it. So they were not even following whether we are doing it right or not."

3.2 Theme 2: Established hygiene patterns

In addition to nurses having embedded knowledge about hand hygiene, they also present with established hand hygiene patterns that influence hand hygiene behaviour. Nurses acknowledged that early childhood hand hygiene practices developed into dysfunctional hand hygiene habits becoming part of everyday nursing practice. Hand hygiene habits "*…become(s) a routine….*" and aren't based on science only. Nurses voiced that when they entered the workforce their hand hygiene habits paired with embedded knowledge impeded on hand hygiene procedures within the hospital. In addition, hand hygiene habits and embedded knowledge could lead to the misinterpretation of fundamental scientific hand hygiene theory. Nurses further explained that the realisation of gaps in hand hygiene training with deficits in the interpretation and execution of fundamental hand hygiene principles results in poor hand hygiene compliance which becomes the norm *"On my own I wouldn't wash my hands if nobody is looking"*.

3.3 Theme 3: Misalignment of organisational processes

Nurses voiced that the misalignment between organisational processes disrupts hand hygiene within the hospital. On the one side the private hospital as part of a larger organisation drives patient safety and risk management initiatives. On the other side, it becomes extremely complex for nurses to adhere to these initiatives within the daily practice realities of high patient turnover against available staff mix. Within the process of dealing with the realities of different knowledge bases, pre-established hand hygiene patterns as well as the practice- and operational realities, organisational processes become indistinct. Nurses voiced their inner conflict knowing what is the right thing to do but being unable to do it, *"No honestly, you don't….you don't stop at a tap when you running around like for example in casualty when the place is chaos you don't like to stop and make sure you wash your hands".* Nurses explained that they perceive nursing being presented as a commodity within private healthcare, with nurses to function between caring needs of patients and expectations from the employer viewing quality of care as a business de-

cision "*But it is very difficult because they are now saving on the Hibiscrub. They put one in the dressing room……you have to walk around and look for soap"* and *"it was first at each patient but now they took it away because they said we're wasting".* The conflict is experienced within both categories of nurses participating in the study. Nurses know what the job requirements are yet at times organisational constraints influence the ability to function optimally.

3.4 Theme 4: Continuous effort towards operational efficiency

The fourth theme that emerged from the nurses' perceptions related to their sustained efforts towards operational efficiency. Yet, operational challenges occur within busy hospitals when necessary stock, maintenance and equipment cannot be provided timeously, *"…sometimes it works and sometimes it doesn't and the batteries are flat then it takes time for it to be replaced. When it's empty they replace it quickly but when the battery or something is broken it takes time to replace. You don't get it immediately".* Nurses voiced disengagement between what is expected from them by hospital management against the everyday operational challenges that impact negatively on the management-workforce relationship. *"….I get so frustrated because there's never soap or there's most of the time not."* Nurses expressed that reporting issues to managers on unit level does not help and adds to their frustration *"…and then you only report it so many times".* In addition to operational challenges, intergenerational dynamics within the workplace surfaced whereby Generation Y (described as a "lost generation" because of their altered communication pathways in a technologically advanced era) prefers non-verbal communication about hand hygiene yet some of the participants described non-verbal reminders as annoying *" It is annoying because you hear the bell immediately after you just washed your hands and then you have to wash your hands again and for them it's like you haven't because they have not seen you".* Nurses reported increased non-verbal communication media such as posters, brochures and written reminders about hand hygiene. It is presumed that nurses will find non-verbal communication, posters and reminders as self-explanatory. When asked about information shared regarding hand hygiene some of the nurses expressed *"we get a lot of information"*. But nurses complained about non-verbal information and communication overload

related to hand hygiene generally, without addressing the scientific knowledge gap. Regardless of increased non-verbal communication media, nurses voiced ignorance about intergenerational differences by hospital managers comprising mostly the Baby Boomers.

Nurses described three different cultures related to hand hygiene at play within the hospital, namely an organisational culture, personal values and hand hygiene procedures. These cultures are polarised. The organisational culture entails the general working climate whereby the hospital, as part of a larger private healthcare hospital group, operates according to a business model rendering healthcare at a fee-for-service. Within the organisational culture, efficient and cost-effective care is essential. The organisational culture presents the vision, mission and philosophy of the hospital group as well as the values, beliefs, attitudes and behaviours shared daily amongst employees *"……honestly speaking here we are professionals so we are under the culture here so we have to do what we are supposed to do….."* Nurses acknowledged the hospital's organisational culture, the influence thereof on their own personal value systems and the discomfort that arise when hand hygiene procedures that conflict with their personal values should be followed. The second culture refers to nurses' personal value systems whereby hand hygiene procedures are conflicting with cultural and religious norms. The symbolic process of cleansing with water and removing of jewellery implies different meanings to different cultures. One nurse described it as "… *an ethical dilemma*" and ignoring one's own culture as raising *"feelings of guilt".* Another nurse stated that *"…in the procedure it say we're not allowed to wear any jewellery so for us especially with the wedding bands it's a thing of once you married it stays on it shouldn't come off…".* The third culture at play is the procedural hand hygiene culture as part of risk management within the hospital that advocates hand hygiene in all aspects of care. This risk management implements awareness, implementation and evaluation of hand hygiene practices.

3.5 Theme 5: Disintegration of the caring relationship

The final theme concerned nurses' perceived disintegration of the caring relationship between nurses and patients that impacted on hand hygiene and risking disengagement within the work-

force. Nurses acknowledged that they were more self-centred and less patient-centred in their work (including complying with hand hygiene standards) *"….so it's not about people it's also about yourself" and "also I don't want to take it home so actually that is why I wash my hands before I go home".* Nurses stated that poor hand hygiene compliance and reduced patient safety reflected a decreased accountability of nurses towards their patients' safety. Nurses expressed feelings of disgust after touching a patient *"sometimes you even feel disgusted after you even washed your hands"* speaking to the critical essence of nursing where the soft therapeutic touch of the nurse should represent caring and nurturing of the sick.

4. Discussion

Hand hygiene non-compliance exceeds procedural misalignment but is the result of interdependent dynamics between nurses and the organisation in which they function.

4.1 Application of themes to the Health Belief Model and Social Cognitive Theory

The HBM, dealing with intrapersonal determinants of behaviour, is based on the premise that nurses will practise good hand hygiene for personal benefit regardless of barriers. During analysis of the data it became evident that the constructs of *age,* as found in *childhood memories,* and the realities of *different knowledge bases* which presented as novice or acquired knowledge, lead to dysfunctional and adjusted science influencing hand hygiene compliance. Nurses practise hand hygiene due to their *perceived susceptibility* and their *perceived threat* but mostly for *personal benefit*. SCT was a more appropriate theoretical framework to explore behavioural determinants of health.

The quality of pre-nursing knowledge could be a possible reason for poor hand hygiene compliance after post basic training. Biran et al. (2014) confirmed that teaching hand hygiene to children is essential. Whitby et al. (2007) concluded that children understand the basic concepts of hand hygiene and could master hand hygiene principles from a very young age. However, the quality of information provided to children is significant (Curtis, Danquah & Aungur, 2009) and adults might not always be equipped with the necessary knowledge, such as using soap and water (not only water) when practising hand hygiene. Although this aspect is not nursing-

specific, it emphasises the fact that childhood learning about hand hygiene might be a lacking element. The study of Whitby et al. (2007) with children, mothers and nurses as participants concluded that hand hygiene patterns of childhood translated into nursing practice. The contrary of novice embedded knowledge can be found in acquired embedded knowledge which is gained through nursing-specific education and training. No evidence was found in the literature regarding nursing-specific hand hygiene training in South Africa testing the nurse's hand hygiene compliance. However, there is ample evidence of hand hygiene as a practical procedure leading the researcher to believe that a theory-practice gap exists presenting the nurse with the opportunity to integrate embedded and acquired hand hygiene knowledge that are not science-based into daily practice.

Addressing the theory-practice gap related to hand hygiene in the nursing curricula, as experienced in a hospital in Great Britain by nurses, is documented by Mortell (2012) as an essential step towards improved hand hygiene compliance. Mortell (2012) has been unable to comprehend the reasons for the gap but suggested that infection control training regarding hand hygiene is inadequate and that more emphasis should be placed on the moral and ethical obligation towards improved hand hygiene compliance. It is also suggested that nurses feel indifferent towards evidence-based recommendations regarding hand hygiene. Agbedia (2012) stated that because patients expect skill, independence, autonomy and expertise from nurses, hospitals are obliged to employ nurses with high cognition and novice training strategies. However, Mortell (2012) contradicted these requirements and advocated for nurses with high moral and ethical values to improve hand hygiene compliance. Testing cognitive nursing skills, associated with acquired embedded knowledge, as a pre-employment requirement could not be found in the literature. The focus should not be on testing but rather be on providing continuous training and compliance feedback (Mortell, 2012). This is in line with the multimodal approach as suggested by the WHO (2009b) which not only advocates for the supply of hand hygiene equipment and consumables but also addresses the importance of continuous training and feedback.

Nursing entails an extended practice role (Scott, Matthews, & Kirwan, 2013) requiring technical and clinical skills, diverse physical and psychological patient demands and organisational challenges in staffing – all factors impacting on the quality of care. In a study with 754 participating nurses done by Whitby et al. (2007), investigating the reasons for poor hand hygiene compliance amongst nurses, nurses indicated that a lack of time and the demands of the job influenced hand hygiene compliance. Beuadoin and Edgar (2003) described non-nursing task as "hassles" influencing patient care. The operational "hassles" included staffing, schedules, working conditions, work flow, team work, training of new staff, technological demands and equipment and materials. Nurses are expected to render safe patient care yet they are also expected to manage operational needs. Nursing has become a commodity with the exchange value for care in the hands of the organisation (Goodman, 2016); leaving the nurse sandwiched between value-based care and patients' expectations of value for money. Furthermore, current procedures should be designed to accommodate the Veterans, the Baby Boomers, Generation X and Generation Y nurses as suggested by Agbedia (2012), taking the characteristics of each generation into account. As stated by Eckleberry-Hunt and Tucciarone (2011) generation Y can never be forced to fit into generalised moulds and integrating this generation into the workforce requires a new way of thinking. Disengagement of the workforce is due to the different needs of the generations and the intricate relationship between the organisation and the nurse. Disengagement of nurses in Australia due to health-systems change, job characteristics, working conditions and lack of respect was concluded by Wall (2015). Wall (2015) recommended that an organisation should have transformational leadership, support for the employee and trust-building management behaviour to reduce disengagement.

Patient-centeredness is a worldwide phenomenon. A systematic review done on 31 nursing papers by Kitson et al., (2012) identified the core constructs of patient-centeredness from within nursing as the characteristics and attributes of the nurse, the context in which care is rendered, how care is delivered and the expected outcomes. The most important construct for nursing would be the relationship between the patient and the health professional which will encompass

knowledge and skills. Hand hygiene is one of the key patient safety strategies, according to the WHO (2009a). However, the intricate balance between the individual, knowledge, skills and the organisation influence the relationship with the patient leading to non-patient centred nursing. Job demands (Jourdain & Chênevert, 2010) cause emotional exhaustion for the nurse and a reduced level of professional commitment.

5. Conclusion

Hand hygiene non-compliance is more complex than what was originally predicted and therefore dynamics within the workforce and organisation need further exploration. Based on the constructs of the HBM and the SCT, the behavioural determinants of age, early childhood memories, different knowledge bases, perceived susceptibility and perceived threats as well as personal benefits from hand hygiene were isolated. The realities of different knowledge bases and established hand hygiene patterns, as identified in themes 1 and 2, have been found in the literature. Hand hygiene training modules within nursing could not be found in the literature. Despite training nurses in higher education institutions, there remains a practice-theory gap in evidence-based hand hygiene practices. The misalignment of organisational processes could disrupt the continuous efforts of nurses to ensure operational efficiency, cause disengagement of the nurses over time. Nurses could become disengaged towards their patients leading to non-patient-centred nursing care. In general, nurses would comply better with hand hygiene practices if they perceive it to be to their benefit and not necessarily to the benefit of the patients only. Nursing practice might encounter challenges due to potential conflict between the organisational culture, nurses' personal value systems and the risk management drives within private hospitals. The limitations of this study are that findings are only applicable to one hospital and further research will have to be conducted before findings can be generalised. Future research should be aimed at exploring the transition of knowledge from theory to practise, ethnographic exploration of nurses' value systems impacting on hand hygiene compliance, exploration of the roles and responsibilities of health professionals and patients in patient safety and hand hygiene and

an exploration of patient safety outcomes based on a caring model of nursing as an inside-out process.

6. ACKNOWLEDGEMENTS

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8. AUTHOR CONTRIBUTIONS

S.C. was the researcher, R.v W. and P.B made conceptual contributions. S.C. wrote the manuscript.

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CHAPTER 4
EVALUATION, LIMITATIONS AND RECOMMENDATIONS

4.1 Introduction

This chapter concludes the research report. It presents an evaluation of the completed research process and the initial central theoretical statement, aim and objectives. Limitations are declared where after recommendations are formulated for nursing practice, future research and policy development.

4.2 Conclusions

The HBM and the SCT served as the theoretical assumptions underlying this study. The researcher identified the applicability of the HBM and SCT to acquire a better understanding of nurses' behavioural determinants concerning hand hygiene. The HBM and SCT directed the questions asked during the World Café sessions. The HBM deals mostly with predicting behaviour according to belief patterns (Rosenstock *et al.*, 1988:175). These aspects were applicable to intrapersonal determinants of hand hygiene, closely linked to theme 1: realities of different knowledge bases (please refer to manuscript section 3.1 of this study), theme 2: established hygiene patterns (please refer to manuscript section 3.2 of this study) and theme 5: disintegration of the caring relationship (please refer to manuscript section 3.4 of this study) of the research results. Nurses' willingness to practise hand hygiene for personal benefit and protection are rooted within the HBM as identified by the current study's findings. The SCT explores the origin of behaviour and the intricate interaction between personal, behavioural and environmental factors (Glanz & Bishop, 2010:40). During interpretation of the current study's research results, the applicability of the SCT became evident in theme 3: misalignment of organisational processes and in theme 4: continuous effort towards operational efficiency (please refer to manuscript sections 3.3 and 3.4 of this study) which highlight the interaction between nurses and the hospital.

Based on the research results, the following conclusions were reached:

- Hand hygiene is a basic nursing procedure that requires skill and knowledge (please refer to section 2.3.1 of this study).

- Hand hygiene compliance might be partially rooted within the premises of the SCT and the HBM and constructs of these theories can enhance the understanding of hand hygiene compliance or non-compliance (please refer to table 4.1 of this study).

- Individual compliance does not depend only on the individual but also on the complex relationship between the hospital and the individual.
- Poor hand hygiene compliance might be the result of conflict between different value systems impacting on the nurse.
- There is a disintegration of the caring relationship between the nurse and patient, non-patient centeredness is increasingly evident.
- Determinants are situation dependent and might impact positively or negatively on the hand hygiene behaviour of nurses.

4.3 Evaluation of the study

The study is evaluated according to the following themes:

4.3.1 Research aim and objectives

The study aimed to determine the behavioural determinants of nurses regarding hand hygiene in one private hospital. The research aim was reached as behavioural determinants were determined and results constructed. The objectives were to explore and describe nurses' hand hygiene practices in the participating private hospital, with the focus on behavioural determinants, by means of conducting a qualitative explorative study and to make recommendations. Recommendations have been formulated for future research, policy makers and nurse managers.

In addition, the results depict how complex health systems could impact on hand hygiene and eventually patient outcomes.

4.3.2 Research methodology

A qualitative, interpretive descriptive and contextual design was appropriate because the nurses' subjective experiences of hand hygiene and behavioural determinants explored by means of World Café sessions, provided sufficient data during the interviews (saying with words) and written notes (writing of words). The conducive environment during the World Café sessions contributed towards openly sharing information. Data collection continued until data saturation (n=22) occurred. The researcher identified the 'knowable' (Thorne *et al.,* 2004:5); revealing the intricate and reciprocal relationship between nurses and the private hospital and behavioural determinants. Interpretive description mobilised the researcher to look beyond the obvious and

to construct knowledge beyond the perceptible and through secondary data analysis discover a new truth.

4.3.3 Central theoretical statement and theoretical framework

The research results meet the central theoretical statement as declared in Chapter 1. An extensive literature review regarding hand hygiene and hand hygiene practices assisted the researcher to gain in-depth knowledge regarding hand hygiene.

4.3.4 Trustworthiness

The five epistemological standards as described in Botma *et al.* (2010:233) were adhered to as follows:

Truth value: The researcher engaged with available national and international literature regarding hand hygiene as well as other relevant topics over a period of three years (2015-2017). Second order analysis was conducted and a consensus conversation was held with an independent co-coder. The researcher reflected continuously on the research process, kept field notes and discussed the research process and findings with her supervisors.

Applicability: Although the research findings are only applicable to the participating hospital in the Mpumalanga Province of South Africa, the detailed description of the context and methodology might ensure that this study could be conducted in other, similar settings.

Consistency: The appointment of a co-coder ensured consistency and the research report serves as an audit trial. The researcher declared the inclusive and exclusive criteria for the participants for the study.

Neutrality: The researcher declared her own biases before the study commenced and used an independent co-coder. A mediator was appointed to assist with recruitment and to obtain informed consent as well as for moderating the data collection process. Facilitators conducted the World Café sessions and the researcher was not involved.

Authenticity: This standard was ensured by providing a truthful and faithful reflection of the different realities as experienced by the participants. The diversity of the sample enabled the researcher to see the phenomenon from various perspectives.

In addition to the above mentioned epistemological standards the researcher adhered to additional standards as described by Thorne, (2014:1) to ensure credibility (please refer to section 1.10 of this study).

4.3.5 Health research ethics

Ethical considerations including the principles of autonomy, beneficence and non-maleficence were adhered to (please refer to section 1.11 of this study).

4.4 Limitations of the study

The following limitations were identified during the course of the current study:

- Due to extremely busy operating theatre schedules on the day of data collection, nurses working in operating theatres were unable to participate.
- No demographic data such as age, gender and ethnicity of the participants were collected. Such information might have provided additional dimensions to the findings.
- The research findings are only applicable to one participating hospital and more inclusive studies will need to be conducted before the findings could be generalised to all registered and enrolled nurses working in the specific private hospital group.

4.5 Recommendations

Recommendations will be suggested for nursing practice, future research and policy development. There were numerous touch points within the five declared themes which were rooted within the premise of HBM and SCT and due to the theoretical involvement recommendations grounded in theory should also be made (please refer to sections 4.5.1 - 4.5.3 of this study).

Table 4.1: Identified constructs from HBM and SCT contributing towards the formulation of recommendations

Theory	Construct applicable to the current study
Health Belief Model	Age of nurses.
	Knowledge level of nurses regarding hand hygiene and compliance.
	Perceived susceptibility; perceived threat; perceived barriers; perceived self-efficacy; perceived benefits of hand hygiene.
Social Cognitive Theory	Social norms and social relationships of nurses within the private healthcare facility.
	Nurses' expectations of hand hygiene and compliance.
	Knowledge levels of nurses regarding hand hygiene and compliance.
	Attitudes of nurses regarding hand hygiene.
	Self-efficacy of nurses regarding hand hygiene.

4.5.1 Recommendations for nursing practice

Recommendations for practice are essential because this study originated from a practice reality whereby the researcher was requested by nurse managers to explore the reasons for poor hand hygiene compliance. The following recommendations for nursing practice in the participating hospital have been formulated based on the current study's findings:

- Informal category specific and cognitively acceptable training sessions should be provided to nurses regarding critical aspects such as the type of soap to be used, the desirability of using hand rub versus hand washing and the management and prevention of skin irritations.

- A seminar should be organised with hospital management, highlighting the practice-related frustrations experienced by nurses regarding the infrastructure aspects impacting negatively on hand hygiene compliance, with a specific focus on the types and quality of taps.

- Nurse Managers should design and activate a quality improvement process to maintain, refill and replace empty soap and alcohol dispensers ensuring that nurses do not end up with empty dispensers.

- Improve employee engagement between management and nurses and present a platform for nurses to voice their hand hygiene compliance realities from a reciprocal bottom-up-top-down engagement.

- Activate a task group consisting of all categories of nurses assigned to improve hand hygiene within the hospital based on continuous quality improvement principles.

- Extend hand hygiene beyond the nursing profession by providing also a continuing professional development (CPD) course to medical practitioners highlighting the role of hand hygiene compliance and best practices in hand hygiene as an essential part of risk management and antibiotic stewardship.

- Disseminate these research results to nursing education institutions from a practice environment, urging them to review the current curriculum on hand hygiene compliance and to include best practices in hand hygiene in all curricula.

- Diversity training for all nurses as well as management to enable nurse managers to realise the complexity of workplace diversity within hospitals and among staff members, with specific focus on values, beliefs, religions, ethnicity, language and gender.

- Advocate that nurses should integrate the organisational culture, the employees' personal culture and the hand hygiene culture, as three definite and sometimes polarised cultures within one organisation, as this could help to reduce conflict.

- Advocate patient-centeredness as a caring model in hospitals, to strengthen the patient-nurse relationship and to reduce patient safety risks by all healthcare workers in the hospital. Focus on the benefits of increased hand hygiene and reduce perceived susceptibility, barriers and threats by empowering nurse practitioners with scientific knowledge that are cognitively suitable according to nursing category.

- Nursing management should execute a critical investigation of workflow, systems and current process involved in hand hygiene and develop action plans to suit the evolving healthcare environment.

- Improve self-efficacy of the nurse practitioner by acknowledging performance accomplishments, giving continuous feedback and allowing for comprehensive role modelling for newly qualified individuals.

- Offer refresher courses to practising nurses to update knowledge.

- The organisation should assist the nurse to have a strong sense of belonging and professional identity. Sense of belonging might be solved by identifying the education-practice gap and focussing on how to relate hand hygiene theory to practice.

- Implement a mandatory training programme regarding hand hygiene for all new employees and a mandatory yearly refresher programme for other employees.

- Investigate tolerability and acceptability within the organisation of products used for hand hygiene and use the information to motivate all users of products within the facility.

- Improve communication regarding visions, benchmarks and current trends within the organisation regarding hand hygiene to patients, visitors, family members as well as staff.

- Healthcare in South Africa is directed and supervised by the NDoH. Guidelines unique to the South African population have not yet been drafted. Such guidelines informing policy should take into consideration the dichotomous health systems that are complex and diverse, as a directive for practising effective hand hygiene.

4.5.2 Recommendations for future research

The following themes were identified to for potential future research projects:

- Baseline description of newly qualified health professionals' hand hygiene habits.
- Exploration of actions to facilitate nurse transition from training to practice regarding hand hygiene.
- Patient safety outcomes and nurses' support of a caring model of nursing as an inside-out process.
- Exploration of knowledge, attitudes and perceptions of healthcare personnel regarding infection control, hand hygiene practices and hand hygiene compliance.
- Ethnographic exploration into healthcare workers' values systems impacting on hand hygiene compliance.
- Quantitative study to explore the relationship between patient safety and hand hygiene.

4.5.3 Recommendations for policy

Policy makers should consider the following recommendations:

- Revision of hand hygiene policy to include the cognitive level of different categories by making it shorter and represented in an understandable manner.
- Revision of the policy on the placement of alcohol and soap dispensers in order to reduce the frustrations of nurses.
- Implementation of policy regarding the maintenance of soap and alcohol dispensers within hospitals to ensure that it is available every time and at every point of care without exception.

4.6 Summary

The aim of this chapter was to evaluate the research by applying specific criteria. Although there has been some advancement in the science of hand hygiene there is still a long road ahead for nursing managers and practitioners before improvement will be evident. Hand hygiene is entangled with complexities, which might be personal or organisational and without a deeper understanding of the complexities, real advancement might be impossible. Second order analysis of data showed that the intricate relationship between knowledge and behaviour influences more than hand hygiene and that poor hand hygiene compliance is a reflection of a disintegrated non-patient centred relationship between nurse and patient. The analysis of data as-

sisted the researcher to make recommendations in a diverse healthcare organisation acknowledging the realities which nurses face.

The results of the research have been prepared in the form of a manuscript for peer review and submission to Health SA Gesondheid. The researcher committed herself to disseminate research findings to participants as well as the healthcare organisation. This chapter concludes the research report titled *Behavioural determinants of hand hygiene of nurses in a private healthcare institution: A qualitative exploration.*

4.7 References

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ADDENDUM A: HREC CERTIFICATE

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Tel: 018-285 2291
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19 January 2017

Dr R van Waltsleven
Nursing-INSINQ

Dear Dr Van Waltsleven

APPROVAL OF YOUR APPLICATION BY THE HEALTH RESEARCH ETHICS COMMITTEE (HREC) OF THE FACULTY OF HEALTH SCIENCES

Ethics number: NWU-00352-16-S1

Kindly use the ethics reference number provided above in all correspondence or documents submitted to the Health Research Ethics Committee (HREC) secretariat.

Study title: Behavioural determinants of hand hygiene of nurses in a private healthcare institution: A qualitative exploration

Study leader/supervisor: Dr R van Waltsleven

Student: S Coetzer

Application type: Single study

Risk level: Medium

You are kindly informed that your application was reviewed at the meeting held on 16/11/2016 of the HREC, Faculty of Health Sciences, and was approved on 19/01/2017.

The commencement date for this study is 19/01/2017 dependent on fulfilling the conditions indicated below. Continuation of the study is dependent on receipt of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation up to a maximum period of three years when extension will be facilitated during the monitoring process.

After ethical review:

Translation of the informed consent document to the languages applicable to the study participants should be submitted to the HREC, Faculty of Health Sciences (if applicable).

The HREC, Faculty of Health Sciences requires immediate reporting of any aspects that warrants a change of ethical approval. Any amendments, extensions or other modifications to the proposal or other associated documentation must be submitted to the HREC, Faculty of Health Sciences prior to implementing these changes. Any adverse/unexpected/unforeseen events or incidents must be reported on either an adverse event report form or incident report form at Ethics-HRECIncident-SAE@nwu.ac.za.

A monitoring report should be submitted within one year of approval of this study (or as otherwise stipulated) and before the year has expired, to ensure timely renewal of the study. A final report must be provided at completion of the study or the HREC, Faculty of Health Sciences must be notified if the study is temporarily suspended or terminated. The monitoring report template is obtainable from the Faculty of Health Sciences Ethics Office for Research, Training and Support at Ethics-Monitoring@nwu.ac.za. Annually a number of studies may be randomly selected for an external audit.

Please note that the HREC, Faculty of Health Sciences has the prerogative and authority to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process.

Please note that for any research at governmental or private institutions, permission must still be obtained from relevant authorities and provided to the HREC, Faculty of Health Sciences. Ethics approval is required BEFORE approval can be obtained from these authorities.

The HREC, Faculty of Health Sciences complies with the South African National Health Act 61 (2003), the Regulations on Research with Human Participants (2014), the Ethics in Health Research: Principles, Structures and Processes (2015), the Belmont Report and the Declaration of Helsinki (2013).

We wish you the best as you conduct your research. If you have any questions or need further assistance, please contact the Faculty of Health Sciences Ethics Office for Research, Training and Support at Ethics-HRECApply@nwu.ac.za.

Yours sincerely

Prof Wayne Towers

HREC Chairperson

Prof Minrie Greeff

Ethics Office Head

Current details: (13210572) C:\Users\13210572\Documents\HREC\HREC - Applications\2016 Applications\Applications 10-16 November 2016\NWU-00352-16-S1(R van Wattaleven-S Coetzer)\NWU-00352-16-S1(R van Wattaleven-S Coetzer)-AL\NWU-00352-16-S1(R van Wattaleven-S Coetzer)-AL.docm
14 February 2017

File reference: 9.1.5.3

ADDENDUM B: ADVERTISEMENT

INTERESTING RESEARCH TO BE CONDUCTED IN OUR HOSPITAL

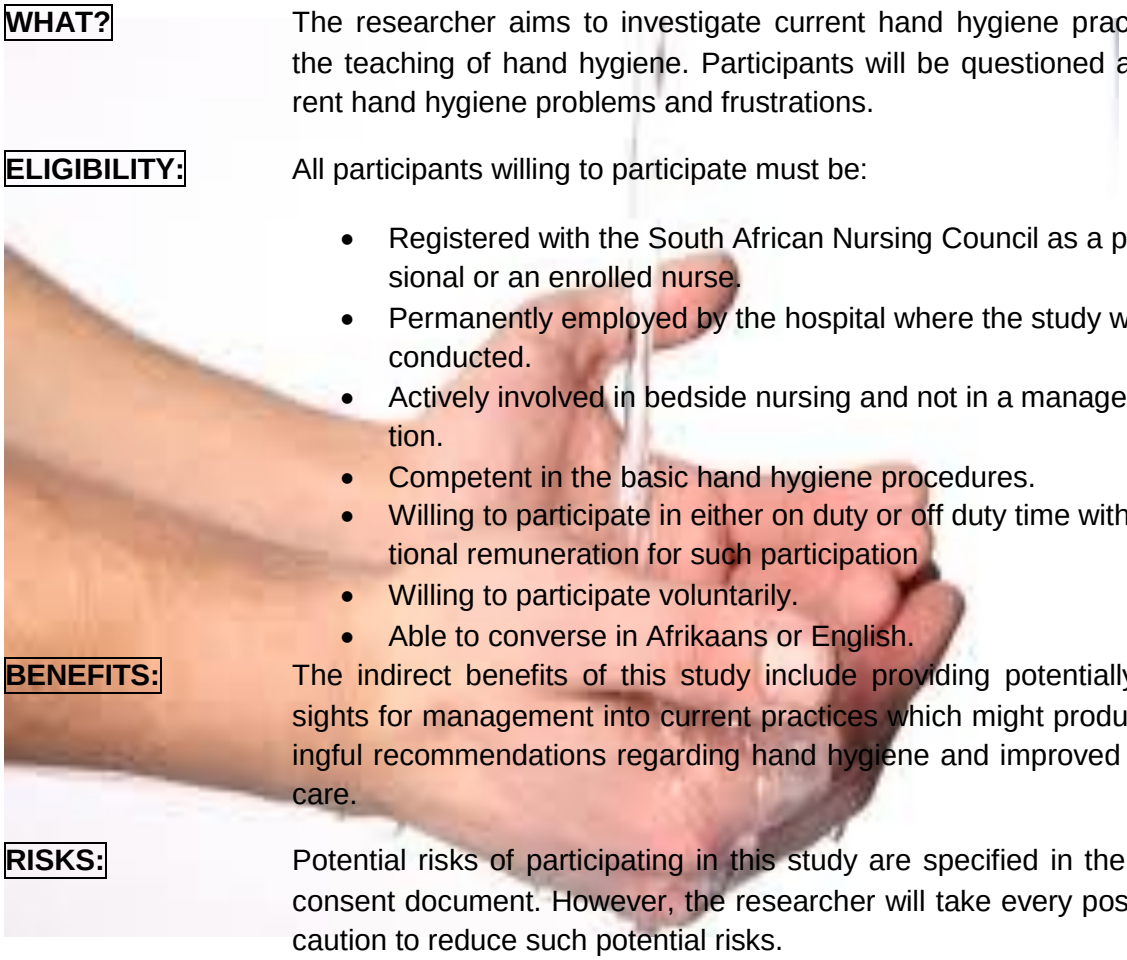
We are looking for participants to participate in a new study:

TITLE: Behavioural determinants of hand hygiene of nurses.

WHAT? The researcher aims to investigate current hand hygiene practices and the teaching of hand hygiene. Participants will be questioned about current hand hygiene problems and frustrations.

ELIGIBILITY: All participants willing to participate must be:

- Registered with the South African Nursing Council as a professional or an enrolled nurse.
- Permanently employed by the hospital where the study will be conducted.
- Actively involved in bedside nursing and not in a managerial position.
- Competent in the basic hand hygiene procedures.
- Willing to participate in either on duty or off duty time without additional remuneration for such participation
- Willing to participate voluntarily.
- Able to converse in Afrikaans or English.



BENEFITS: The indirect benefits of this study include providing potentially new insights for management into current practices which might produce meaningful recommendations regarding hand hygiene and improved quality of care.

RISKS: Potential risks of participating in this study are specified in the informed consent document. However, the researcher will take every possible precaution to reduce such potential risks.

COMPENSATION: There will be no remuneration for participation although public transport costs will be reimbursed to participants at a set rate. Your name will be entered into a monetary lucky draw.

CONTACT: For any enquiry about the research please contact:

Mrs Sonelle Coetzer

Cell: 0723596910

Email: sonelle67@gmail.com

ADDENDUM C: INFORMED CONSENT

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

HREC Stamp

INFORMED CONSENT DOCUMENTATION FOR REGISTERED AND ENROLLED NURSES TO PARTICIPATE IN A WORLD CAFÉ

TITLE OF THE RESEARCH STUDY: Behavioural determinants of hand hygiene of nurses in a private healthcare institution: A qualitative exploration

ETHICS REFERENCE NUMBERS: NWU-00352-16-S1

PRINCIPAL INVESTIGATOR: Dr Richelle van Waltsleven

POST GRADUATE STUDENT: Ms Sonelle Coetzer

ADDRESS: P O Box 11520
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2302

CONTACT NUMBER: 0723596910 or 0176388299

You are being invited to take part in a **research study** that forms part of my partial fulfilment of the requirements for the degree Magister Curationis at the Potchefstroom Campus of the North-West University. Please take some time to read the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is **entirely voluntary** and you are free to say no to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the **Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU-00352-16-S1)** and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records.

What is this research study all about?

- This study will be conducted at a private hospital in Mpumalanga and will involve semi structured interviews during a World Café session. The study is conducted by a Master student supervised by an experienced health researcher as well as a co-supervisor who has already completed a Master degree with the same methodology. Approximately 20-25 participants will be included in the study.
- The objectives of this research are to explore if there are behavioural issues that determine current hand hygiene practices in the hospital. This behaviour might be from early childhood until your current training and will explore how you perceive hand hygiene.

Why have you been invited to participate?

- You have been invited to participate because you are employed by the hospital where the research will be conducted and you also meet the following criteria:

  You are either registered with the South African nursing council as a registered or enrolled nurse and in full time employment of a private hospital in Mpumalanga. You have

completed the orientation at the institution which includes hand hygiene training and you have been found competent in the procedure of hand hygiene. You are responsible to ensure that all subcategories as well as other healthcare workers adhere to good hand hygiene. You have completed your basic training. You are actively involved in bedside nursing and currently not in a managerial position. You are able to express yourself in either Afrikaans or English. Your participation in the study will in no way influence patient care on the day of the study. Participation is voluntary and although you are in a subordinate position with me as the researcher facilitators will be appointed to conduct the session to ensure that you will not feel uncomfortable. You are willing to participate in either on or off duty time with no additional remuneration.

- You will be excluded if you do not meet the above mentioned criteria, you are not willing to participate or if you are an agency worker. The rationale for exclusion is that participation should be totally voluntary and agency workers are not always available.
- An independent mediator will be appointed that will be responsible for recruitment. The recruitment will take place during lunch and tea times.

What will be expected of you?

- You will be expected to attend a World Café session answering five questions regarding hand hygiene and to share your perceptions and thoughts regarding hand hygiene practices within the private hospital setting. The session will be approximately two hours and arrangements will be made in order not to disrupt nursing care to patients. It will be best if the session that you attend is not on a working day. During a World Café session there will be the same amount of tables than questions. Each table will have a facilitator who will be responsible to start the conversation as well as make field notes and tape recordings during the session. After 15 minutes you will be required to move to the next table and answer the next question.
- The questions that will be asked are as follows:
    - “Describe the information shared with you regarding hand hygiene from your earliest childhood memories”
    - “What motivates you to wash your hands when caring for a patient? Please elaborate...”
    - “Are there any cultural beliefs and behaviours that influence your hand hygiene behaviour? Please elaborate...”

- "Do you think that you have been sufficiently trained regarding aspects of hand hygiene e.g. the five moments, the actual procedure, cross contamination and organisms? Please elaborate...."
- "If you could change current practices what, why and how will you go about to implement the change

- You will have the right and responsibility to withdraw at any stage of the study without offering any explanation.
- You will be expected to sign voluntary consent that is only applicable to this study and information will not be used for any further study.

Will you gain anything from taking part in this research?

- There is no direct benefit to the study.

- The indirect benefit will be new knowledge available to the scientific community regarding hand hygiene practices which may lead to improved training initiatives within nursing. Your views will possibly assist in solving or improving a critical patient safety issue as it will lead to new insight into preventative measures.

- If transfer of knowledge gained during this study takes place, proposed quality improvement measures will be tested throughout the hospital group and if successful this will lead to improved care for patients receiving care in one of the group's hospitals.

Are there risks involved in you taking part in this research and what will be done to prevent them?

- The risks to you as participant in this study are that only partial confidentiality can be ensured which may lead to emotional distress but the researcher will ensure that what is known to facilitators, the mediator as well as co-coder will not be talked about by signing a confidentiality agreement. You may feel that there is a risk of punitive action but a written understanding will be given that no punitive measures will be taken for knowledge gained during the research. I will not participate on the day of the study but will only be

involved in planning, data analysis and dissemination of findings. You will be given a code and no names will be used.

- You may feel some psychological harm due to self- disclosure of personal information. At no time during the study will anyone be forced to answer or to participate.
- You might incur costs travelling to the hospital and buying your own refreshments and this will lead to economic harm. The researcher will pay travel costs of R50 for people travelling, refreshments will be served during the session and there will also be two monetary lucky draws during the session.
- There might also be the risk of legal harm. You will be protected from this by the researcher's undertaking not to make sensitive information public unless it is a direct threat to the safety of someone else.

How will we protect your confidentiality and who will see your findings?

- Anonymity will only be partial due to the nature of the World Café session. Group rules will be set before the study commences to protect participants. You will be protected by de-identifying all data and during transcription of data codes will be used to ensure that no link can be made to a specific participant.
- Partial confidentiality will be ensured by changing identifying data and deletion of the digital recordings once data have been transcribed. Reporting of findings will be anonymous. Only the researcher and co-coder will have access to the data which has been de-identified.
- All involved e.g. facilitators, mediator, researcher and co-coder will sign a confidentiality agreement.
- Field notes and transcriptions that are made during the sessions will be kept by the researcher in electronic form on an external device for seven years. Hard copies will be shredded once transcriptions are done. Voice recordings will be deleted after transcription. All data will be kept in the personal safe of the researcher at her home and electronic data will be password protected. The Ethics committee of the Northwest University will be granted access to the records if they wish to see it. None of the data will be allowed to leave the borders of the country.
- The facility used for the session is private and access controlled with a separate entrance which will also protect your privacy. On the day of the research the facility will be booked out and participants will be free to move around without being bothered.

- You will sign consent that is only applicable for this single study and data may not be used in another study.

What will happen with the findings or samples?

- This is a once off collection and data will be stored and analysed in Mpumalanga, South Africa where it will also be kept safe.
- The data might be used again if the researcher decides to further her studies. For any further studies it will again have to obtain approval by HREC.

How will you know about the results of this research?

- A date will be chosen on the monthly training planner where the results will be shared in a general manner to all personnel involved.
- As a participant you will be informed by the mediator of the date and time to become part of the process.
- Receiving feedback will also be your choice and it will also be voluntary. You are not obligated to attend the feedback

Will you be paid to take part in this study and are there any costs for you?

- This study is privately funded by the researcher with no external involvement.
- You will not be paid to take part in the study but refreshments will be available on the day of the study. If you are not on duty on the day of the research and you have to make use of public transport you will receive R50 to cover your transport costs.
- There will be a monetary lucky draw during each session.
- Refreshments will be served during the course of the sessions

Is there anything else that you should know or do?

- You can contact Sonelle Coetzer at 01706388299 if you have any further queries or encounter any problems.
- You can contact the Health Research Ethics Committee via Mrs Carolien van Zyl at 018 299 2089; carolien.vanzyl@nwu.ac.za if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I ……..……. agree to take part in the research study titled: Behavioural determinants of hand hygiene of nurses in a private healthcare institution: A qualitative exploration

I declare that:

- I have read this information/it was explained to me by a trusted person in a language with which I am fluent and comfortable.
- The research was clearly explained to me.
- I have had a chance to ask questions to both the person getting the consent from me, as well as the researcher and all my questions have been answered.
- I understand that taking part in this study is voluntary and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be handled in a negative way if I do so.
- I may be asked to leave the study before it has finished, if the researcher feels it is in the best interest, or if I do not follow the study plan, as agreed to.

Signed at (*place*) .....…..…….. on (*date*) ……...…….. 20....

....

Signature of participant **Signature of witness**

Declaration by person obtaining consent

I *(name)* ……..…… declare that:

- I clearly and in detail explained the information in this document to

  ……

- I did/did not use an interpreter.
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I gave him/her time to discuss it with others if he/she wished to do so.

Signed at (*place*) .....…..…….. on (*date*) ……...…….. 20....

....

Signature of person obtaining consent **Signature of witness**

Declaration by researcher

I *(name)* ……..…… declare that:

- I had the information in this document explained by……who I trained for this purpose.
- I did not use an interpreter
- I was available should he/she want to ask any further questions.
- The informed consent was obtained by an independent person.
- I am satisfied that he/she adequately understands all aspects of the research, as described above.
- I am satisfied that he/she had time to discuss it with others if he/she wished to do so.

Signed at (*place*) .....…..…….. on (*date*) ……...…….. 20....

....

Signature of researcher **Signature of witness**

ADDENDUM D: EXAMPLES OF TRANSCRIPTION

Question 1: “Describe the information shared with you regarding hand hygiene from your earliest childhood memories”

F- Facilitator

P – Participant

Café conversation 1

F – OK, so our question is to describe the information shared with you regarding hand hygiene from your earliest childhood memories.

P1 - When you come from the toilet wash your hands (everyone agreeing) before you eat wash your hands.

P2 - After playing wash your hands…. (Everyone agreeing).

P1 - When you play with something even if you washed it before playing or after playing, but when you touch something that is soiled wash your hands.

P2 - And even picking at your nose we were taught to do so… (Everyone agreeing).

F - And you said now something that is soiled so what was considered soiled?

P2 - Sand, mud…. Uhm.

P1 – As we grew up mud with water….

P2 - Even touching with animals, frogs you play with frogs, with worms.

P3 - And when you even play with water itself dirty water then you must wash your hands again.

F - OK, Do you think age influences hand hygiene?

P1 – Yes.

F - Why do you say so?

P3 – Uhm… As a child sister when they said all these things, you just thinking they are just creating more work for you.

P2 – Uhm….

P1 – And you don't understand……..

P2 – And it is annoying….

P3 – But as you grow yah….

P2 – You learn to understand the importance and they were helping you so….

P1 - So age is influencing.

F - OK can you explain to me, or I first I want to ask who taught you? You said all these memories you've got now from your childhood regarding hand hygiene.

P2 - Our parents uhm….

F - OK.

P1 - Our neighbours as well because at the time you were everyone's child in our community.

F – OK.

P1 - So if an adult comes across you and you're busy doing something and they'll tell you "go wash your hands".

F - OK, and do you think the different types of areas where people grow up like for instance in your community, do you think that maybe also influenced the memories that you got regarding hand hygiene? Like we all grew up on different places - the farm, the big city…..

P3 – The rural areas….

P2 – Yes.

F – OK, can you tell me a bit more about your memories regarding the area where you grew up?

P2 - We grew mostly farm life we had animals and stuff, so they were very like strict with us about washing our hands.

P3 – Yes uhm….

F - Can you maybe explain what do you understand with regards to embedded knowledge, what does that mean to you?

P3 - : Like it's kept in us knowledge that is within us.

P1 - Knowledge that no one can take away.

P3 - No one can take away. It is like implanted inside of you.

F - And do you think the things you were taught as a child regarding hand hygiene do you think that is embedded knowledge?

P3 - Yes.

P1 – Yes it is.

P2– Cause we teach our children now. Besides us being nurses like when they cough you tell them put your hand.

P1 – Uh…..

P2 – It is like it is in us already. Even if it is somebody else's child we like (laughing) put your hand in front of your mouth.

F - Anything else you can remember?

P2 – No sister we know we've been taught.

END OF CONVERSATION

Café conversation 2

F - OK the question is to describe the information shared with you regarding hand hygiene from your earliest childhood memories. So what can you remember as a child regarding hand hygiene.

P4 - Wash your hands because I said so, why because there's goggatjies on it. And that's that.

F - Can you remember when?

P4 - Oh gosh, first time I went to toilet….

P5 – Uh-huh

P4 - But I can remember when I was four or five years old.

P5 – Ja mens hoor dit van kleintyd af. [Yes one hears it since childhood].

F- OK, and in which instances do you need to wash your hands?

P6 - Before eating, toilet. When you go to church, go to bed…. Uhm (laughing)….

P4 – Don't forget church (laughing).

F - Uh-huh.

P6 – And that's all?

P4 – Ja, dit is maar moeilik om te sê. [Yes, but it is difficult to say].

F - OK and uhm then who taught you? Who's the person?

P4 – My mom.

P5 – Parents.

F – Parents?

P6 - And your grandmother.

F – OK.

P4 - Can't remember my grandmother my elder sister maybe ja [yes]….

P5 – Oh your grandparents were also very hectic on hygiene.

P4 – My elder sister maybe (clapping sound again) giving me a few slaps – go do the right thing (laughing).

F - And did you ever question the person that taught you to wash your hands?

P5 – Yes, ja…..you…..

P6 - Of course, you must be dirty.

P5 - Especially when you were a child then you don't wash your hands.

P4 - That's why I said they said "because I told you so" (laughing).

F - Uh, and did you understand why?

P5 - No we didn't really understand, they didn't tell you it's because of your germs nothing like that.

P6 – No they just say germs then you know OK your hands have to be clean. But it is so "lekker" ["nice"] to be dirty you just come from the mud.

F - (Giggling) OK…

P6–It was so nice. Real farm girl you play in the mud you get modder cookies and all those things, yeah those years it wasn't so… Firstly the climate wasn't so hot, we could have played outside all day and I don't think the germs was so bad like today.

P5 – From my side also I don't know I could be wrong but I don't think the germs was so bad like this.

P4 – Like today?

P5 – Like today.

P6 – Yes.

F - OK so with everything that we've discussed now do you think that age influences hygiene?

P4, 5, 6 - Definitely (all participants agreeing)

F – OK.

P6 - Because actually if you can tell what does a five year old understand about germs? Do you really have to be taught about germs? You need natural germs to build up your immunity.

P5 – I don't even let my grandchildren walk in town without shoes because of the germs. I tell them you never walk without shoes. I am very, very strict about that.

P4 - And you don't just drink water with your hands when you wash your hands in a public place. You don't know what germs have sat on that tap and stuff.

F - Do you think you are at risk for disease?

P4 - Disease or just like infection? Just disease

P6 - Of course,

P4 - I'm a smoker yes (laughing).

P6 - Not because of hand hygiene no. Everybody is at risk that's why you have to wash your hands so at least decrease that risk of becoming infected or diseased or…

P4 - And infection is so easy. Ja [yes] and it's not even through your hands, it's like sneezing and stuff and people if they don't wash. The first thing I think they said like over the TV it's the colds and flu that's why you have to wash your hands because it's still alive the bugs in your hands, now you sneeze and you greet the other and then this one sneezes and that's cross infection.

F – OK and then like everything we have discussed now, the memories you also have, can you tell me now maybe what do you understand about embedded knowledge? What is embedded knowledge?

P6 - Being raised since little it's the knowledge in your head that you know you have to do it. You not necessarily knew why you had to do it but you did it because you trusted your elders you trusted your parents to do that thing. So that is embedded knowledge.

P5 - Yeah they know better than you.

P4 - Now today being in the hospital facility you understand not telling you what germs is really, it's just you can get sick and please wash your hands, it's not good manners if you don't wash your hands, that's another thing.

F - OK so that's all the memories that you've got, that it's also not good manners if you don't wash.

P4 - I forgot about the good manners yes.

F OK.

END OF CONVERSATION

Café conversation 3

F - OK so the question is: describe the information shared with you regarding hand hygiene from your earliest childhood memories.

P7 – Uhm, that you must wash your hands before you eat, washing hands after toilet, prepare food.

F – OK.

P7 – Uhm…

F - Can you remember who taught you to do this?

P8 – From childhood it was my parents,

P9 - And at pre-school at crèche

P7 - At primary school

P8 – At primary school yeah, cause at our primary school, there was uhm we didn't have uhm like you go to the teacher and ask there was specifically toilet breaks for everyone so everyone will go in a line and go to the toilet and from the toilet to wash your hands so yeah so that's where we learnt we must wash our hands.

F – OK and when you did that did you understand why you are supposed to do that?

P9 – Uhm that there are infections in the toilet. And that uhm….

P7 - that you'll get sick if you don't.

P9 - Everywhere is dirty so every time you touch food or everything you must first wash your hands because every place is dirty.

F – OK do you think hand hygiene is influenced by age?

P8 – Yes.

F – OK, why?

P7- I think uhm at a young age you just do as you're are told but you don't actually understand the background of that. And then as you grow older you get to understand why are you're washing the hands and why is it important to do that.

F - Anybody else? Do you also all think that it is influenced by age? Do you all agree with what she's said?

P8, 9 – Yes (agreeing).

F - OK so what I understand is like what you said now is that a young child will only do what [it] is told but doesn't understand, OK. What do you think embedded knowledge means?

P7 - Embedded knowledge?

P8 - It's been told from a young age.

P9 - It's part of you (laughing).

F – OK.

P7 - It's instilled, culture.

F - OK and in the different areas, maybe where different people grew up, do you think maybe influences, maybe the memories, you've got of hand hygiene.

P7 – Yes….

P8 - Some people like people from the rural areas where they don't have proper sanitation or running taps they just uhm do things and they don't care if they wash their hands or not. Cause water is very scarce or it's very far to get the water. So they try to [use] as little water, as much water as they can so they use little water, so maybe washing hands and washing their food is not so important. Cause they don't have proper facilities.

F - OK. And can you remember when you were a child, did you ever question your parents or whoever told you to wash your hands and why, you spoke about infections and it's dirty but did you ever actually question them? Not really?

P8 – No not really.

F - Okay but you all just did what they said?

P9 – Yes.

F – OK.

P9 - Cause if you didn't wash hands you were going to get a hiding so you go and wash it.

F - Do you think that you are at risk for disease?

P7, 8, 9, Yes (all responding).

F- OK, so when you were small, did you also think about that?

P8 - Not really,

P7 - I think that now that we know because at a young age we didn't really know as I said that you were told we didn't. But now that we know infections and why it happens.

F – OK.

END OF CONVERSATION

Café conversation 4

F - OK so our question for today is to describe the information shared with you regarding hand hygiene from your earliest childhood.

P10 – OK.

F - Anyone can start.

P10 – (Giggle) all right the information that was shared with me uhm is when they at home they taught me when I wake up I must wash my hands before doing anything OK and then before preparing the food or eating, when you come back from toilet. That's how they explained to us. The clean hands are the healing hands so that is it.

P11 - Just to add up on that also before you eat, after blowing the nose, and when you came back from playing you must go to wash hands.

P10 - Especially if you've got pets.

P11 – Also ah…after playing with pets you must wash hands.

F - OK and who taught you this? This everything that you've told me now, who taught that to you?

P11 – Parents uhm……

P10 - Even at school we were taught like that.

P11 – Yes even at school…

P10 - Yeah parents and teachers. Even here (laughing).

F - OK, do you think hand hygiene is influenced by age?

P10 – Huh uh… no I don't think so

F - Why not?

P10 – Eeeeh because I think it's something that you, we grow up knowing it but you know not really realising how important it was but it was still there even with our grandparents, even if they didn't go to school but they knew that we must wash our hands, it doesn't have anything to do with age.

F – OK.

P11 - Because since you were told since you were small every time you don't wash hands you get scared that I'm going to get sick and you grow up with that thing.

F - Do you think when you were small you had a risk of getting disease?

P10, 11 - Yes (agreeing).

F – OK, you can talk.

P11 – Yes because….

F – You can talk.

P11 - They normally said that if you don't wash hands you're going to get sick, and maybe because you believe so, and if maybe sometimes you might get diarrhoea, you gonna say oh its maybe because I didn't wash my hands with soap.

P10 - As for me ah my grandparents we were in rural areas so washing hands was important because of diarrhoea and then the sickness because we used to use even uhm contaminated waters you know. It was very important and again at home uhm my father was having tuberculosis so for us it was important to wash our hands you know to protect us from every disease because even in the clinic when we were young we were still young but they taught us a lot due to my father.

F - OK anything else you want to add? Any other memories you've got?

P10 – Uhm (sighs).

F - Did you understand when you were small why your parents told you to wash your hands?

P10 - Not really we were just doing it because we were told you have to do this, if you don't do this then we'll punish you, out of fear.

P11 – Then you'll do it because you were scared.

F – OK.

P11 - And we were not even touching the sick people because the way we were so scared of being sick.

F – OK.

END OF CONVERSATION

Café conversation 5

F - OK so our question for today is; describe the information shared with you regarding hand hygiene from your earliest childhood.

P12 - Wash your hands before you eat, and after you've played outside. The whole day after school.

P13 - Washing your hands after the bathroom….make sure you wash your hands.

P14 - Make sure your nails are nice and clean underneath, like your nails are short so if you're playing and there is no dirt under your nails. So my mum always kept my nails nice and short to prevent dirty nails.

P12 - At school the prefects would also check it that it's nice and short.

P14 – Yeah, yeah, yeah.

F – OK.

P12 - And wash your hands after you blow your nose.

F - OK, do you think hand hygiene is influenced by age?

P14 – Uhm yes, I think so like you'll get these older people that say ag "jy sal nie dood gaan nie" of "ek sal nie dood gaan nie" [you won't die" or "I won't die"].

P13 – "Wat nie dood maak nie maak groot" ["what does not kill, makes you grow up"].

P14 – JA JA [YES Yes].

F – OK.

P14 – “I would eat with dirty hands I would work on a farm” and they didn’t have water available to wash their hands so the older people would say “ag nee dis nie nodig nie” [“oh well it is not necessary”].

P12 - They would also say that nothing has happened in the past so why would something happen now?

F – OK.

R14 – Did you want to say something?

P13 – Oh no.

P14 - And new age mommies like recently they read so much on the Internet about how many organisms are on their children’s hands. So they’ll always have hand sanitizer around their child. So as a younger child maybe your mother would be cleaning you from top to bottom with hand sanitizer. So also as a younger child you think OK so maybe it must be very important to now wash everything because you were brought up that way

F - So I just want to confirm [that] you do think age does influence [hand hygiene]?

P12, 13, 14 - Yes (agreeing).

F - Who taught you to wash your hands when you were a child?

P14 - My grandmother.

P13 - My mom and at school.

P14 - My grandmother was a nursery school teacher so and she dealt with a lot of snotty noses with the children, she taught me actually to wash my hands a lot because she had to do it as well working with the different children changing their nappies. She had to wash her hands regularly as well.

F - And when you were small did you realise or understand why your grandmother wanted you to wash your hands?

P14 - No I was just told to do so, so I did it (laughing).

P12 - When I grew up my mom would say because of the germs being a child you would question anything so you have to wash your hands. When we asked why my mom would say there is germs.

F - OK can you tell me what you think embedded knowledge means?

P12 - Common sense.

F – OK.

P12 - My father has this saying or has this belief that if you don't read you don't have common sense.

P14 – Laughing.

P14 - Being taught over and over like learning like a parrot like repeating a procedure all the time it becomes embedded in your mind. It's embedded knowledge that you have so you'll have it forever. Something that no one can take it away. It becomes routine (laughing).

F – Do you want to add anything?

P13 – We said everything else.

F - And in the different areas that you grew up in, do you remember something specific like in the different areas like in the farm, rural areas or in the city? Is there anything you can remember regarding that and hand hygiene?

P13 - So I used to visit like a grandmother in the rural areas there were like sort of a river so you had to jump that. So she would say you don't jump the river to my side without washing your hands because I don't know what you were doing that side. So that was like a saying to her. So every time when we go to her she would just say "Did you wash your hands before you jumped the river?"` So for us it was like that.

F – OK.

END OF CONVERSATION

Café conversation 6

F - My question for you is to describe the information shared with you regarding hand hygiene from your early childhood memories, so what can you remember regarding hand hygiene when you were small?

P15 - That you have to do it before you eat .

P16 -And after bathroom yes .

P15 – Ja [yes].

P17 – When you handle food you must also wash.

F - OK.

P15 - Or when you've played outside.

P16 - Even after when you scratch your body.

F – OK.

P17 – Is that true Mara my friend?

P16 – Yes.

P17 – I remember scratching, scratching we were even having "lekker krap" ["nice scratch" – probably referring to scabies] when we grow up, you just started scratching.

P16 - Not all of them used to say that some of them used to say that uhm.

F – OK.

P16 - Depends on whether you've got some funny thing growing on your body. Maybe you got a rash then you must make sure. Make sure you wash your hands before you can touch another person.

F - OK, so you remember these things who taught you that, who taught you to wash your hands when you were small?

P17 – It's my granny.

P16 - I grew up with my mother so, my mother. Yes.

F - OK, and do you think that hand hygiene is influenced by age?

P15 – Uh-uh not really no.

F - Why do you say that?

P15 - I just don't think that. It influences it like I've washed my hands. For me the influence was when I started nursing. So but I think if I knew at an earlier age I would have still washed my hands the way I am washing it now.

P16 - Yes it is, it is about age

P17 - Yes, when you were a child you were taught to wash your hands for hygiene purposes.

P16 – If I am washing nobody is looking I would not wash. Uh. On my own I wouldn't wash my hands if nobody is looking but now I know when to wash my hands I know when I've done something so I think I've grown.

P17 – Uh.

P16 – I understand most of the things on my own.

F – OK so I just want to repeat. If I understand correctly, so when you were small you didn't really understand why you should do it…

P16 – Yes…

F - But you did it because someone told you to wash your hands? But if they didn't watch you [then you] didn't do it.

P16 – I wasn't going to wash on my own (laughing)

F - OK, and just explain to me what do you understand by embedded knowledge, when you hear the word embedded knowledge what do you [think] what is that?

P16 - I think it's something that was embedded in you.

P17 – Isn't it like enforced?

F – You must tell me I am asking you now.

P15 - It's like a base, it's a basis that you grew up on. It's not going to go away, it's there.

F – OK and when you were small did you understand why you were supposed to wash your hands? Did you question your parents or your granny?

P16 - No we never question because they were scary to us.

P17 – I was scared of them. I had to wash my hands before I talk to one of them.

P16 - When you were small you don't ask questions they would tell you, I'm the adult you do.

P17 - Or if you don't wash you'll see a long worms (laughing).

P15 - My parents weren't really so bad about the hand washing, as long as you were very hygienic like when you shower and things but with my teacher they used to tell us that uhm if you don't wash your hands you are going to pick up bugs.

F – OK.

P15 – Nasty bugs….

P16 – My family when you have to go and eat … with a spoon or a fork it would take long, so when we were lots of us that were growing up as kids, so hands was the first thing that they made sure….we had to wash.

P17 – Sometimes we eat in one plate……

P16 – So most of them eating with the hands that's where we know we have to go and wash hands and wait for the plate to come.

F – Uh.

P17 – If you didn't wash you won't eat today.

P16 –They won't send the plate if you don't see the hands that are wet.

F - OK, anything else anybody else wants to add?

Respondent: With us I get so frustrated because my brother works underground and it always looks like he is never washing his hands because you can see like the black on his hands, and we have a thing that we have to pray before we eat so, then we hold hands and I never want to hold his hands. And then my parents get so angry.

END OF CONVERSATION

Café conversation 7

F - OK so the question is to describe the information shared with you regarding hand hygiene from your earliest childhood memories.

P18 - Oh. Aikona…. [oh no]

F - Yes your earliest child memories that you can think of.

P18 - They used to tell us we have to wash hands after toilet and before you eat. I think that is all.

P19 - And with me I was always told I had to sing happy birthday while washing and once it was done I can stop.

F - OK and did you know why you had to do that, did understand why?

P19 - We had to do it.

F - OK anything else you can remember?

P19 - Just before eating, after you use the bathroom or the toilet.

F - OK and who taught you to do this?

P18 - My mom.

F - Parents mostly. Anywhere else you were taught? Someone else who taught you to do this?

P19 - At school, the teachers yeah.

F - What can remember from school? What's the memory you've got there?

P19 - Before you would go out to lunch, you would all line up at like a basin.

F – OK.

P19 – You would all wash your hand and then get your lunch.

F- OK. And do you believe that age influences hygiene?

P19 - No, not the way you do it but the hand hygiene itself age doesn't affect because even as a small child I would still do it. The effectiveness is maybe not there but I would still do it.

P18 - But sometimes when you were young you used to ignore it but when you're getting older you know it's important.

F - And do you think it because when you're older you understand better why?

P18 - Yes.

F - As a child did you ever maybe or the people that taught you like your parents you said did you ever question that? Why are you supposed to do that?

P18 – Yes.

F – OK so your questions what did they say to you then when you questioned them.

P19 – It was a very long time ago…..

P18 - Your hands must be always clean before your eat. They gonna tell you are coming from toilet so you must clean yourself before you touch anything.

F – OK so I just want to see if I understand correctly so if you questioned them they said it's because it is dirty, did you understand that at all?

P18 - At that time yes

F - So if they told you it was dirty [what] then?

P18 - If it's dirty then you have to clean it.

F - And can you explain to me what does embedded knowledge mean, what do you understand by embedded knowledge?

P19 - Knowledge that was given to you when you were a child. As you grow up it's none changing.

F - And do you think that hand hygiene, the memories that you've discussed here now, do you think that is embedded knowledge?

P19 - Yes, because it came from such a young age …

F – OK.

P19 –Even now as an adult it becomes routine like.

F - OK, any other memories you have when you were small regarding hand hygiene?

P18, 19 - Not really (making agreeing sounds).

F - OK.

END OF CONVERSATION

Café conversation 8

F - OK, the question is to describe the information shared with you regarding hand hygiene from your earliest childhood memories. What can you remember when you were a child regarding hand hygiene?

P20 - We were always told to wash our hands after the toilet. Before you eat…

P21 - When you're coming from town and any public places.

P22 - Public toilets, if you played in the ground you're dirty. Even when you don't think you're not dirty you had to wash your hands (laughing).

F - OK and who taught you this?

P20 – Parents mostly.

P21 – Parents yeah.

P22 - But also in school when you went to the crèche they had these little bags that you had at the back of your chair with the wash cloth and soap and your own hand towel to dry. I remember the low placed basins and uhm so the kids could wash their hands.

F - OK, and did you understand why you were supposed to do that when you were a child?

P21 - No they told us that so you don't get sick?

F - OK, do you think that hand hygiene is influenced by age?

P21 -I guess the older you are the more you see the worth of it.

F - OK and when you were a child do you think it influences small children, the age, do you think it influences hand hygiene?

P20 - Yes it does because they don't do it properly…

P21 – No they don't…

P20 - Especially if they are doing it themselves, unless you help them yeah.

P21– They don't.

P22 – Yeah.

F - Can you remember, when you were a child, did someone help you always to wash?

P20 - My mom used to help and now I'm doing the same to my daughter if she's dirty if she was eating sweeties and stuff I help her, she is only one year and five months old (laughing).

F - OK, and what do you think embedded knowledge means?

P22 - Stuff that gets, oh what am I saying stuff but knowledge that gets laid down at an early age so uhm like norms and values ……

P20 – Basics….

P22 - Yeah….stuff that you grow up with that is embedded knowledge. Stuff that you are supposed to know I guess, but you had to learn it somewhere to know it.

F - Do you also think the different areas in which we grow up in influences hand hygiene, I mean like farm or city or rural area or…

P21 - Yeah

F - OK, why do you say that? Tell me a bit more

P20 - Some rural areas they are areas where there are no taps at the moment, they go to the rivers in order to get water, so they can't always wash their hands like wasting water.

P22 - So I guess water shortages also has an effect. To get back to uhm hand washing as a child, most of us who've grown up with a television so they also promoted on TV it's always Dettol…. keep your family safe, hygiene and then you get wet wipes these days, so it's so much easier these days to just wipe your hands instead of going to the tap to wash your hands.

F - OK so when you were a child can you remember that you saw these things on television as well regarding hand hygiene?

P20, 21 - No

F - Not really, OK. Anything else you want to add, any other memories you've got regarding hand hygiene?

P20 - What I know what I hear is that men don't really like washing their hands I don't know why it is maybe because they are lazy or what but even today I don't like sharing anything with a man. They don't wash their hands (laughing).

END OF CONVERSATION

ADDENDUM E: FIELD NOTES AND POSTERS COMPLETED DURING WORLD CAFÉ

Refer to attached CD.

ADDENDUM F: LETTER FROM THE HEALTHCARE EXECUTIVE

Blinded for confidentiality

RESEARCH APPLICATION – S COETZER

Date: 19 January 2017

FOR APPROVAL

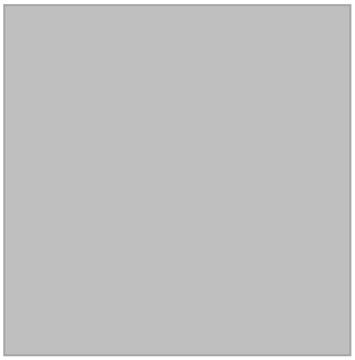
[redacted]

HR Executive

NOTES

Locality	• [redacted]
Value of Study	• Confirmed
Employee	• Yes
Topic/Title	• Behavioural determinants of hand hygiene of nurses in a private healthcare institution: A qualitative exploration
Impact	• One hospital – World Café sessions • Nurses: 20-25 participants
Supported by hospital	• Supported by: C Everton (Nursing manager)

ADDENDUM G: LETTER OF GOODWILL



6 December 2017

To Whom It May Concern

LETTER OF GOODWILL TO CONDUCT RESEARCH AT

I, the undersigned in my capacity as Hospital General Manager had numerous discussions with Mrs S Coetzer regarding poor hand hygiene performance within

I am aware that Mrs Coetzer planned on doing a Master Curationis at the Potchefstroom campus of the North West University. During our discussion we requested her to consider doing a hand hygiene study at our facility as this will not only be to the advantage of our hospital, community and patients but recommendations from such a study might influence had hygiene practices within the of hospitals.

I give permission for the study: Behavioural determinants of hand hygiene of nurses in a private healthcare institution: A qualitative exploration to be conducted at I acknowledge the fact that the proposed research obtained conditional ethical approval (NWU – 00352-15-S1) and I am also aware that the study will have to be approved by the office.

Kind regards

Hospital General Manager

Mrs S Coetzer

Clinical Risk Manager

ADDENDUM H: SELF REFLECTION

Narrative reflection of my experiences of hand hygiene in the workplace.

I have been a professional nurse for 28 years and I have an in-depth understanding about the complexities within a hospital. I have been monitoring and observing hand hygiene practices for seven years in the hospital where the study was undertaken. Regardless of personal effort, it remained a mystery as to why trained individuals neglect hand hygiene comprising a very important part of patient care. The organization provides soap, alcohol, water, basins and hand towels, as well as training, making it difficult to understand why these resources are not utilized optimally.

During the planning of the study, personal opinions and biases had to be bracketed. Since the study has been completed, I realize that such bracketing enabled me to find a 'new' truth regarding hand hygiene which has never previously been constructed to the best of my knowledge. During the past seven years none of my colleagues, fellow registered nurses and enrolled nurses, were afforded the opportunity to openly discuss hand hygiene and the frustrations and daily challenges faced while caring for vulnerable and ill patients. Hand hygiene compliance had been attributed to behavior without investigating the determinants of behavior causing the nurse practitioner to instantly look guilty of insincere behavior. The literature review of this study revealed that hand hygiene is complex. There is much more to hand hygiene than a mere visit to the basin. Hand hygiene is a scientific process which is not fully understood by everyone. Its improvement requires a collaborative effort from organizational- and hospital management. Poor hand hygiene compliance is not only attributable to the behavior of a nurse, but to many complexities influencing compliance and non-compliance. Hand hygiene compliance will never be improved without an in-depth understanding about and commitment from nurse managers to support and listen to nurse practitioners and to act according to identified needs and/or challenges.

I believe that nursing is embedded within beneficence and that most nurses do not want to perform maleficent behaviors. Regardless of personal beliefs, it should always be remembered that at the receiving end of our care is another human being worthy in the eyes of God and humanity and by practicing the act of hand hygiene we are recognizing the health and safety of the person in need of care. This study filled me with great empathy for the nurse practitioners rendering care in imperfect situations. However, I always expected perfection from the nurse practitioners without knowledge about their frustrations.

ADDENDUM I: EDITORS LETTER

Valerie Janet Ehlers

Nurse Consultant and Researcher

Emeritus Professor and Research Fellow: University of South Africa

Associate Editor: International Nursing Review (2014-2017)

(B Soc Sc (University of Natal), Honours B Soc Sc, BA Cur, Honours BA Cur, MA Cur, D Lit et Phil, Diploma in Development Administration, TAALKU-F for Diploma in Translation- Unisa))

CONFIRMATION LETTER: EDITING OF A DOCUMENT

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7 November 2017

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7 November 2017	I HEREBY CERTIFY THAT I HAVE EDITED THE FOLLOWING MASTER'S DISSERTATION: **Behavioral determinants of hand hygiene of nurses in a private healthcare institution: A qualitative exploration** For Ms S Coetzer St no: 1-9503-6177

Thank you

Prof VJ Ehlers