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PERCEPTIONS OF CENTRAL GAUTENG OCCUPATIONAL HEALTH NURSES OF THEIR TRADITIONAL AND EXPANDED ROLES

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science in Nursing

Johannesburg, 2012

DECLARATION

I, **Eunice Mutava**, declare that this research report is my own work. It is being submitted for the degree of Master in Nursing in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

Work used or cited in this research report has been appropriately indicated and acknowledged both within the text and by means of complete references.

Signature _____

(Eunice Mutava)

Date _____

The research report has been approved for submission by the supervisor, Ms. Agnes Alice Huiskamp.

DEDICATION

This work is dedicated to these very special people in my life:

My daughter, Nokutenda Ennicah Mutava

who was deprived of motherly love and presence that came with the heat of this study

My parents, Carson and Nelda Matingo

who have taught me the ethics of basic hard work and to always do my best

PUBLICATIONS AND PRESENTATIONS ARISING FROM THIS STUDY

Matingo-Mutava, E. & Huiskamp, A.A. (2012). **What we say we do is not exactly what we do…or is it? Perceptions of Central Gauteng occupational health nurses of their traditional and expanded roles.** Poster presentation at the University of the Witwatersrand Faculty of Health Sciences Research Day and Postgraduate Expo, 19 September 2012. *Theme: Clinical Research and Therapeutics for Health*. Poster number: CR/TH-P-12

ABSTRACT

Title: Perceptions of Central Gauteng occupational health nurses of their traditional and expanded roles

Background: The majority of the published literature alludes to the evolution of the occupational health nursing practitioner (OHNP) role from a traditional to an expanded role yet there are comparatively few notable studies that have attempted to explore the significance that OHNPs place on both these roles, the extent to which they enact these roles in the workplace and the amount of time they dedicate to these roles.

Purpose: The overall purpose of the research was to investigate the perceptions that OHNPs have of their traditional and expanded roles in their current occupational health nursing (OHN) practice.

Methodology: Using a survey method, occupational health nursing practitioners (n = 150) who practiced and are members of a professional society of occupational health practitioners in the Central Gauteng district were invited to complete a self-administered, structured questionnaire about their perceptions of their traditional and expanded roles. The questionnaire composed of 27 specific task items that reflect OHN practice role activities divided into eight major areas of OHN practice. The items were measured on a 5-point Likert scale ranging from 1 (not significant) to 5 (extremely significant) and participants were also required to estimate in hours, in any given week, the time they believed they dedicated o each of the eight major areas.

Main outcome measures: The main outcome measures of the research were perceptions of the OHNPs of their traditional and expanded roles and the time devoted to these roles in their current practice.

Findings: A total of 102 questionnaires were completed, yielding a response rate of 68%. The majority of the OHNPs generally regarded their traditional and expanded roles as moderately significant indicating that the roles were at least performed to some extent in their practice. Nevertheless, OHNPs regarded the roles in the traditional domain highly (mean rating = 3.29) than those in the expanded domain (mean = 2.84). Managing an occupational health service (mean= 3.60) and assessment of workers health (mean = 3.61) activities received the highest rankings whereas research-related activities had the lowest (mean = 2.39). On average OHNPs spend 35 hours per week in OHN practice of which 39.7% is spent in management of occupational health services, 33.1% in worker health assessments, 27.1% in rendering curative services, 16% in health promotion activities, 14% in health education activities, 14% in rehabilitation services, 12% in workplace assessments and 9.7% in research-related activities. The perception of the significance of core areas appeared to be mainly dependent on availability of occupational health and safety personnel and the OHNPs job title. Also comparisons made between perception of roles and time devoted to those roles revealed that there were gaps between what they perceived as significant and amount of time dedicated to roles.

Conclusions: OHNPs regard both traditional and expanded roles as moderately significant in their current practice. However gaps existed between perception of individual roles and amount of time spent in those roles. In this instance data revealed higher perception of expanded roles yet time devoted to these roles was less than that devoted to traditional roles where the perception of the roles were relatively lower.

Implications for OHN practice: Knowledge of what entails significant practice from the OHNPs' perspective is a good needs assessment technique as it indicates where training and continuing education should be targeted. Also, acknowledgement of the gap that exists between perception of a role and the actual time spent in that role indicates where strategies to reduce role ambiguity, role conflict and resulting occupational stress have to be directed.

Key words: occupational health nursing, nurses' perceptions, role, Role Theory, traditional and expanded role, self-administered questionnaire

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NOMENCLATURE

AAOHN	American Association of Occupational Health Nurses
COIDA	Compensation for Occupational Injuries and Diseases Act
FOHNEU	Federation of Occupational Health Nurses in the European Union
MHSA	Mine Health and Safety Act
OH&S	Occupational health and safety
OHN	Occupational health nursing
OHNP	Occupational health nursing practitioner
OHS	Occupational health services
OHSA	Occupational Health and Safety Act
RSA	Republic of South Africa
SANC	South African Nursing Council
USA	United States of America
WHO	World Health Organisation

1.0 CHAPTER ONE: ORIENTATION TO THE RESEARCH

1.1 Introduction

This chapter provides an orientation to the research. The research aimed at investigating the perceptions of occupational health nursing practitioners (OHNPs) in a central district in the Republic of South Africa (RSA) of their traditional and expanded roles.

The perception of the employees of their role is a critical component in today's contemporary workplace. This is because it is a key determinant of an individual's performance. A misty perception of the role is likely to result in underperformance by and underutilisation of the potential of the individual (Saha, 2008). It has been suggested that role perception and actual role content are intrinsic predictors of job satisfaction (Marriner-Tomey, 2004; Lu, While and Barriball, 2007). Although a number of factors influence the role that an OHNP adopts, chief among them is the working environment. However, Chang (1994) found that it is not always possible to influence the working environment and thus focus should be on altering the perceptions and beliefs of the practitioners themselves. The OHNP has certain perceptions about their role and management and employees may have some differing opinions about that same role. This discrepancy may lead to role conflict which makes it important to explore what their own perception of their role is.

As work processes and practices have changed from agrarian and industrial into a technological and service age so too have the hazards facing employees and consequently the role of the OHNPs has developed in response to this transition (Health and Safety Executive, 1999). Transforming the healthcare system to meet the demand for safe, quality, and affordable care will require a fundamental rethinking of the roles of many healthcare

professionals, including nurses. Regardless of this, the principles of occupational health nursing (OHN) remain the same. The role is a preventative, proactive role focusing on hazard identification, risk assessment, environmental monitoring, health surveillance and hazard controls in the workplace (Sines, Appleby and Raymond, 2001) which are all aimed at preventing or reducing any ill-effects or harm to employees from their work activities.

However, the OHN's role is continually evolving to meet the changing needs and goals of clients, the emphasis today being on prevention rather than cure. In light of this, regarding the expanding roles and especially the paradigm shift from focusing on individual workers to that of working populations as well as an adoption of a preventive/promotive approach, the OHNPs need to clearly articulate this role.

In the following section (see 1.1 background) an overview to the research problem is provided.

1.2 Background to the research problem

The background overview discusses the contemporary South African workplace, occupational health, OHN practice in the 21st century as well as an overview of local, regional and international studies that have been conducted on the role of the OHNP.

1.2.1 The contemporary South African workplace and occupational health

The workplace has changed in a number of ways (Konkolewsky, 2005) driven by globalisation and technological advancement or change and the changing nature of daily tasks (Farr, Patterson, Witheriff and Wilks, 1994) which is important especially how the changes are likely to affect the future training needs or work of the occupational health and

safety professionals including OHNP professionals and the delivery of occupational health services. Several factors are prominent in the changing workplace for instance the rapid growth of a number of jobs in the service sector, changing nature of the relationship of the worker to the workplace in that this relationship is increasingly less permanent or long term and flexible so that the delivery of health now needs to be more associated with the worker and not necessarily delivered just at the workplace. This has been paralleled with a substantial growth in the development of OHN roles especially in the management of chronic conditions and working with people in vulnerable groups (RSA, 1997).

The contemporary workplace in the RSA has also undergone many changes and is still transforming through new and changed laws such as the amended Occupational Health and Safety Act (OHSA), 1993 (Act 85 of 1993 as amended) as amended and its regulations, the Mine Health and Safety Act (MHSA), 1996 (Act 29 of 1996 as amended), the Compensation for Occupational Injuries and Diseases Act (COIDA), 1993 (Act 130 0f 1993 as amended), the Skills Development Act, 1998 (Act 97 of 1998), Employment Equity Act, 1998 (Act 55 of 1998) and the Basic Conditions of Employment Act, 1997 (Act 75 of 1997) (Huiskamp, 2002).

The provision of health and healthcare in the RSA contemporary workplace has been parallel with three major issues. Firstly, is a constantly changing environment such as increased work in the informal sector (Cox and Williamson, 2001; McDonald and Sanati, 2010) and an increase in jobs in the service sector. The latter has meant an increased emphasis on health promotion and employee wellness strategies. Secondly, there have been demographic trends that are altering the profile of the workforce, for example, the ageing worker, increased feminisation of the workforce, more disabilities and cultural diversity. Thirdly, new and emerging risks such as an increase in psychosocial problems

and health risks associated with technological advancement not only develop the OHN role but challenge the traditional OHN roles as well.

1.2.2 Occupational health nursing in the 21st century

Evidence suggests that as the workplace has transformed and the healthcare system expanded so too has the evolution of the education and roles of the OHNPs in such a way that the nurse practitioners now enter the workplace qualified to provide more services than had been the case previously (South African Nursing Council [SANC], 1999; Geyer, 2002).

The majority of the published literature alludes to this evolution of the OHNPs' role from a traditional to an expanded role yet there are a comparatively few notable studies that have attempted to shed light on the significance that the OHNPs place on these roles, the extent to which they enact these roles in the workplace and the amount of time they dedicate to these roles. Occupational health nurses are expected to engage in a variety of traditional curative activities as well as expanded role activities focusing on injury prevention, health promotion, wellness, management and research (Mellor and St. John, 2007). In the RSA this can be attributed to the fact that OHN in the RSA is a relatively new specialty with a history spanning less than a century (Grainger and Mitchell, 2003) as well as the fact that lifelong learning, the culture of research in nursing and evidence- based practice is not yet fully integrated into the practice of occupational health nursing. Moreover, a variety of historical, cultural and policy barriers limit the OHNPs' ability to contribute to widespread and meaningful change (Bryant-Lukosius, DiCenso, Browne and Pinelli, 2004). Also because of an orientation away from institutionalised populations, the OHN practice in the nursing arena has been marginalised as it has been perceived as a

stand-alone speciality outside the traditional nursing role, involving skills not normally allied to nursing such as formal risk assessments and hazard identification (Lusk, Disch and Barkauskas, 1988).

Yoo, Ashworth and Boore (1993) argue that the quality of healthcare should be judged according to the perceptions of those who provide it. Although there is scant research regarding the OHNPs' role perception in the RSA, albeit Africa as a whole, there are studies that have been conducted in the United States of America (USA) (Lusk et al, 1988, American Association of Occupational Health Nurses [AAOHN], 2007), Turkey (Esin, 2008), Canada (Jergen, Bonner and Strasser, 2009), UK (Harrison, Harris and Maw, 2005), Australia (Mellor and St. John, 2007; Mellor and St. John, 2009), Brazil (Marziale, Hong, Morris and Rocha, 2010) and Asia (Arino, 2003; June and Hong, 2003; Yun-ping, OiSaeng and Mei Chang, 2008) on the subject. These studies revealed slight differences in role perception among OHNPs. This variation is largely due to different levels of education and training for OHNPs in different countries, variation in the nurses' social and professional status, academic qualifications, expertise, as well as the different legal requirements and healthcare cultures which exists in member states (Federation of Occupational Health Nurses in the European Union [FOHNEU], 1995). Their findings emphasize that although the OHNPs had moved from a healthcare curative perspective (the traditional remit of occupational health) to a new expanding OHN role that encompasses workplace health promotion, injury prevention, management and research, the traditional illness-based models of practice continue to dominate and remain a key task for OHNPs (Rossi, Heinonen and Heikkinen, 2000) but the expanded roles were of increasing importance with more time being needed for them in the future OHN practice (Mellor and St John, 2007).

The traditional role of the OHNP is documented in literature as being largely illness-based and utilises a disease-oriented, task-based, medical model of practice (Read, 2004). The role thus encompasses those elements of nursing that relate to providing curative treatments, rehabilitation, counselling employees regarding health risks, providing follow-up of employees for workmen's compensation claims and health assessments (Rossi et al 2000; Mellor and St. John, 2007). The expanded role of the OHNP on the other hand is based on wellness models of health which are consistent with the public health domain. The role includes such functions related to health promotion and education, risk reduction through workplace risk assessments and surveillance, environmental health as well as those functions that centre on the increased professionalisation of OHNPs (Mellor and St John, 2007), namely research and its dissemination and utilisation and management. Read (2004) provides another perspective on role expansion. According to Read (2004), role expansion is the extent to which nurses do not just take on a responsibility for additional tasks but the extent to which they achieve authority over the nature of their practice. It is, according to this author, about nurses taking their own initiative, doing their own thinking and making their own decisions based on their own experience and education to improve practice for the benefit of the patients and clients.

Studies also show that the traditional role of the OHNP of providing direct care was perceived as a central and prominent part of the OHNP's role in current practice in Mellor and St. John (2007) and it has been highlighted that this function will remain a key task for OHNPs, despite the expansion and diversification of the OHN role or occupational health services as whole (Rossi et al, 2000: 370). The findings from Grainger and Mitchell (2003) and Kalampakorn (2003) studies to explore the status of OHN services show that the expanded roles of research, management and environmental health continue to play a limited role. On the contrary, Marziale et al (2010) in their survey study developed to

outline the roles and functions of OHNPs in Brazil and to compare them with those in the United States of America (USA) found that the nurses spend more time in managerial followed by consultant and educator responsibilities whilst those in the USA spent significantly more time in education/advisory roles. Similarly, in Yoo et al (1993) study of the OHNP's expectations in relation to the traditional role, where the nurses considered the categories of 'Care and Treatment' and 'Health Record' to be of low importance but expectations for 'Preventive Health Services' ranked high yet a lot of time seemed to be dedicated to the traditional roles of care. In Yoo et al (1993) the nurses indicated that one of the reasons they dedicated more time and concentrated on the traditional nursing services is based on the demands from the employers who want nurses to provide the immediate care necessary to maintain employees' fitness for work. Similarly, the early work of Lusk et al, (1988) highlighted that the time that an OHNP dedicates to OHN roles is, at least in part, a function of the expectations of employers, the nurses' perceptions of healthcare requirements in the workplace and their awareness of the contributions, potential or actual, of other occupational healthcare givers.

In investigating the expanded role of the OHNP, several studies provide an insight into the stance pertaining to this role. In Yoo et al (1993) study, they noted that nurses envisaged a wider role for OHNPs but were of the notion that they would require appropriate educational preparation for the expanded practice. Health policy development was reported as a priority activity in the expanded OHNP role in Sato (1997) study whereas the findings of Rossi et al (2000) revealed that OHNPs regarded the creation of quality systems and provision of cost effective services in order to generate improved profitability as a role that will be increasingly required in the expanded OHNP role. Mellor and St. John's (2008) study singled out 'Manages an occupational health service' as the only area that was a

substantial part of the OHNPs' expanded role whereas less time was devoted to other expanded areas.

The literature has thus revealed that contemporary occupational health nursing practice requires a paradigm shift from labour to a public health approach and from occupational health to workers health (holistically), with focus on the individual and population as well as on prevention and promoting health. This is based on the World Health Organisation (WHO) Health Promoting Workplace Model which not only incorporates risk identification strategies but also includes those areas that have been previously overlooked in such programs such as the environment and social and organisational determinants of health. Goldsmith (2007), however, points out that it is crucial the practice does not become eclipsed in a wellness agenda that focuses solely on health promotion and well being programmes. If this were to happen, according to him, occupational health nurses could run the risk of feeling and becoming increasingly deskilled and lose their unique identifier.

It would also appear from the studies that despite the likelihood of expansion and diversification of OHN, the services provided by the OHNPs continue to be consciously related to employer priorities and employee demand with seemingly little regard towards what the OHNP believes to be the important functions in their OHN activities. Also, findings suggest that OHNPs are not engaging fully in the expanded role activities, the focus still being primarily illness and injury based. Grainger and Mitchell (2003) suggest that since many of the workers in the RSA are not receiving any form of medical assistance, the OHNP thus provides illness-oriented services to increase productivity. Since perceptions are likely to shape the OHNPs' practices and their responses to the expanded role (Elsom, Hapell and Manias, 2008), it is imperative that these perceptions be explored.

In response, this research sought to investigate the OHNPs' perceptions of their traditional and expanded roles, with a focus on OHNPs practising in the Central Gauteng district in the RSA.

1.3 Motivation for the research

The promulgation of regulations relating to the course leading to registration of an additional qualification (SANC Regulation 212 of 1993 as amended), for instance, ensures that the nursing curriculum includes expanded roles components and the draft document for scope of practice from SANC proposes a curriculum for evidence-based nursing practice. Yet despite this training of OHNPs in advanced practice and the consequent expansion and diversification of the OHN role, there is still evidence which suggests discrepancies which exist in the wake of attempts to integrate the growing body of OHN knowledge provided to the OHNPs in OHN education and the limited application of that knowledge. Moreover, despite advanced training in OHN, currently certification by SANC does not consider the levels of study just additional qualification in an area of specialisation. The job descriptions which then result are not discriminating between professional, experienced and specialised leading to an overlap of the scopes of practice within the discipline. The consequences of this are role confusion and role ambiguity which results in frustration, conflict, prevention of the OHNP from optimising knowledge and skills and hampers collaboration and may even result in the deletion of the position and a high turnover (Lu et al, 2007).

Furthermore, the OHNPs face competition from other professionals in the field of occupational health and safety, which means they must be prepared to demonstrate their relevant skills, competencies and values to employers (Mellor and St John, 2009). It is

suggested that the OHNPs can achieve this by defining and delineating these roles (Sato, 1997) for themselves and their function within them as without their own perspective of what they expect to be doing in their roles, their role becomes one that is shaped by the expectations of other stakeholders which results in wide variations in how the role is interpreted (Bryant-Lukosious et al, 2004).

Thus if the contemporary workplace is to meet the demand for safe, quality and affordable healthcare, a fundamental re-thinking of the roles of many healthcare professionals, including nurses, will be required. Until the OHNPs can define their exact core skills, values and requirements, they will be limited in their ability to fulfil their needs and strengthen the OHN role as a nursing specialty (Sato, 1997).

In light of all this, it thus became important to investigate what the OHNPs think are the significant areas of their practice in order to develop the role, 'redefine and realign' their role (Sato, 1997) related to occupational health services, articulate the OHN scope of practice and drive changes that reflect the needs of the workplace and the profession (Mellor and St. John, 2007).

1.4 Problem statement

Currently little is known about the views of the South African OHNPs in relation to role expansion as well as the roles they are currently engaged in. Despite the occupational health nursing education curriculum changes and the education of the OHNP in expanded roles, the OHNP appears to be anchored in the traditional roles, whose predominant focus in South Africa is on treatment activities, due to a need for them to provide primary care because many workers are not receiving any form of medical assistance. Also the foregoing discussion has highlighted the relationship between role perception, actual role

content and job satisfaction and from the observation of the researcher who has interacted with some of the RSA OHNPs, a case in point has been their general dissatisfaction with what they are currently dedicating their time to in their practice. Having noted the above, as well as the fact that there is a lack of research that explores this topic in the RSA context, the researcher decided to embark on this research endeavour with the following question in mind:

"What are the perceptions of Central Gauteng OHNPs of their traditional and expanded roles?"

1.5 Implications for occupational health nursing practice

OHNPs are 'the largest group of healthcare providers serving the worksite' (AAOHN, 2008; WHO, 2002) with a variety of workplace roles that are in a constant state of change and expansion (Rogers, 2003). It becomes their motivation to continually update knowledge about their essential roles and functions that would indicate their value. Many struggle to provide optimum nursing and seek to reconcile the different expectations of employers and employees and environmental factors within which they perform (Yoo et al, 1993). Thus acknowledgement of a potential gap between expectations and actual role of OHNPs provides the basis for developing strategies to reduce resulting occupational stress, role conflict and role ambiguity and increase job satisfaction ultimately resulting in the retention of the OHNPs which is crucial to resolving workforce shortages (Lillibridge, Axford and Rowley, 2000). Knowledge of perception of importance of various tasks is a good needs assessment technique as it indicates where training and continuing education should be targeted. Additionally the findings provide a basis for international comparison

of actual role content and the potential support needs of OHNPs from an African perspective.

1.6 Purpose of the research

The overall purpose of this research is to investigate the perceptions that OHNPs have of their traditional and expanded roles.

1.7 Research objectives

In order to achieve the above aim, the following objectives motivate this research:

- To describe the OHNPs' perceptions of their traditional and expanded roles in occupational health nursing practice
- To evaluate the time that the OHNPs believe they dedicate to their traditional and expanded roles in occupational health nursing practice
- To determine if there is an association between the OHNPs' perceptions and their demographic characteristics
- To determine if OHNPs devote a corresponding amount of time to those areas of practice perceived as significant.

1.8 Research questions

The research is initiated to answer the following research questions:

1. What are the OHNPs' perceptions of their traditional and expanded roles in occupational health nursing practice?

2. What are the differences in OHNPs' perceptions of their traditional and expanded roles with respect to the following:
    - job title
    - years of OHN experience
    - presence of other occupational health and safety (OH&S) personnel
    - type of industry
    - employee size
3. What are the OHNPs' perceptions of the time dedicated to traditional and expanded roles in occupational health nursing practice?
4. Do OHNPs devote a corresponding amount of time to those areas of practice perceived as significant?

1.9 Research Assumptions

According to Burns and Grove (2007), research assumptions relate to statements that are taken for granted or are considered true even though they have not been scientifically tested.

The research questions for this research are based on the following assumptions:

1. The perception of the OHNP of their traditional and expanded roles is the same in the OHNP's current practice
2. The OHNP's personal characteristics influence the perception of their traditional and expanded roles in their current practice
3. Organisational factors and workplace characteristics influence the perception of the OHNP of their traditional and expanded roles in their current practice

4. The amount of time an OHNP dedicates to both traditional and expanded roles is the same
5. The OHNP will devote a corresponding amount of time to traditional and expanded roles that are perceived as significant in their current practice

1.10 Demarcations of the research

The research is demarcated in terms of the following criteria: time, population, research setting and category of nurses as explained below:

Time dimension: The research was a cross-sectional survey study which was executed at a particular time, namely between September and December 2011.

Population: The target population consists of all members of the Central Gauteng branch of the South African Society of Occupational Health Nursing practitioners (SASOHN).

Research setting: The research was only limited to the OHNPs' workplaces in the Central Gauteng District.

OHNP category: The research was limited to professional nurses and does not include other categories of nurses.

1.11 Operational definitions of key research variables

Occupational health nursing: For the purpose of the study, occupational health nursing refers to a field of specialty which applies nursing principles to conserve the health of workers in any occupation focusing on promotion and restoration of health, prevention

of illness and injury, case management for cost-effective disability and workers' compensation programs, and protection from occupational and environmental hazards (WHO, 2002).

Occupational health nurse: A fully trained registered professional nurse who, in addition to their general nursing education and training, will have undertaken an additional period of formal study in occupational health leading to a recognised specialist qualification which equips with the knowledge and skills to protect the health of employees at the workplace by preventing and treating illness and injury and creating a safe and healthy work environment (Acutt and Campbell 1997).

For the purpose of this research, an occupational health nurse is a registered professional nurse with SANC under Section 31 (1) of the Nursing Act, 2005 (Act 33 of 2005 as amended), has a qualification in occupational health, is a member of SASOHN and is in occupational health practice within the Gauteng Central district.

Perception: The South African Pocket Oxford dictionary (2008) defines perception as "intuitive recognition of truth; a way of seeing and understanding things". In addition, Ungerer, (2001) states that perception is a 'representation of what individuals consider as reality, which is what makes perceptions differ from one person to another.

Within the context of this research the nursing perceptions relate to the nurses' opinions and viewpoints with regard to the importance they attest to their traditional and expanded roles in the OHN field.

Role: A socially expected behaviour pattern usually determined by an individual's status in a particular society (Merriam-Webster, 2010).

Within the context of this research, a role refers to a set of expectations applied to the occupational health nurse in her particular position by the nurse herself based on the concepts of traditional and expanded occupational health nursing practice.

Traditional role: For the purposes of this research, this role relates to those elements of OHN that encompass the provision of primary medical and emergency care as well as referrals for worker populations. Such services include health assessments, treatment of minor ailments, and management of chronic health problems (case management), rehabilitation and counselling of employees and providing follow-up of employees for workmen's compensation claims.

Expanded role: Skill and knowledge development within the concept of nursing as a separate therapeutic activity, and may be seen as a development that results from professional autonomy and self-determinism (Frost 1998). Daly and Carnwell (2003) add that role expansion occurs when additional skills and responsibilities are added to a specialist role giving greater autonomy and accountability while maintaining the core elements of nursing practice and that these additional skills and responsibilities may also have been traditionally regarded as part of the domain of another profession.

For the purposes of this research, role expansion relates to the multiple interacting domains broadly applying the public health philosophy (health protection measures such as workplace health promotion, risk assessment and environmental monitoring) and the increased professionalization of OHNPs (encompassing research, policy development and organisational leadership).

1.12 Outline of the research report

This research report is presented in the following chapters:

Chapter 2: Literature review

This chapter deals with the literature that was reviewed and the concept role perception is explained. Role theory is discussed as a valuable theoretical framework for the research. An overview of the RSA health system in which the OHNP functions within is presented and the scope of OHN practice is discussed. OHN education in the RSA and globally and the global context of OHNP traditional and expanded roles are discussed. Future challenges to the OHNP roles are also discussed.

Chapter 3: Research design and methodology

A description of the research design and the method that were employed to explore and describe the OHNPs' perceptions of their traditional and expanded roles are given in this chapter. The instrument used to measure constructs emanating from the conceptualisation phase (discussed in Chapter two) is described. The method of data collection, issues of validity and reliability and the sampling process are explained and motivated. In addition, ethical considerations and measures taken to protect the rights of the research participants are presented in this chapter.

Chapter 4: Presentation of research findings

This chapter gives an overview of the statistical procedures and methods that were used to analyse the data. The characteristics of the sample are provided and the reliability and validity of the research is discussed.

Data interpretation and findings are presented using descriptive approach and also graphically as per section of the questionnaire and in relation to the research objectives.

Chapter 5: Discussion of results and conclusions

This chapter provides a discussion of the research findings, answers to the research questions posed and also provides conclusions on the findings of the research.

Chapter 6: Limitations and recommendations

This section of the report describes the limitations of the research and provides recommendations, in respect of OHNP practice, research and education, based on the findings of the research.

1.13 Conclusion

This chapter presented an introductory orientation and background to the research and explored the rationale and significance of the problem. The aim and objectives of the research, the research questions and assumptions were also clarified in this chapter.

In the following chapter, a review of the literature is done.

2.0 CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The previous chapter provided an overview of the traditional and expanded role of the occupational health nurse practitioner (OHNP) and operationalised the concepts used in this research. To enable the researcher to do this research project, facilitate an understanding and acquire knowledge, an extensive literature review of research was undertaken on various aspects pertaining to the topic. The chapter begins with a discussion of the Role Theory as a valuable theoretical framework for the research and clarifies the concept "role perception". In addition this chapter also addresses occupational health nursing as a specialty with specific reference being given to the nature and practice of occupational health nursing (OHN) as well as the scope of OHN practice and the education and training of the OHNP in the RSA and highlights the differences that exist in the education of the OHNP across the globe. The traditional and expanded roles of the OHNP are also discussed. The chapter also provides a discussion of the effects of globalisation on OHN practice and future challenges of the OHNP role in the changing working world. Sources of literature used in the review included journals, textbooks, unpublished master's theses and doctoral dissertations, South African acts of parliament and policies as well as internet sources utilising the search engines Google as well as PubMed and EBSCO Host for the CINAHL and ProQuest electronic databases.

2.2 Theoretical foundation of the research

The research utilises the Role theory as postulated by Conway (1988) as a theoretical framework to facilitate an understanding of the OHNPs' role perspectives. Role theory is the science concerned with the study of behaviours characteristic of people within given contexts (Dreher and Uribe, 2011). A role theoretic approach postulates that people are often defined by the roles they play and within its predictive nature it determines how a person will behave in a given situation where one's perceived roles are acquired and internalised (Turner, 2001; Amankwa, 2005). If a person does not perceive a role to be important or significant, the possibility of committing to that role is very low.

Although an individual's perspective of a role can be described from a variety of viewpoints (Guirguis and Chewning, 2005), in this research, the OHNPs' perspective of role is described from two of these approaches: the structuralist and the interactionist perspectives. The structural perspective centres attention on social structures and how aspects of social structures such as social class, position, social roles and characteristics such as gender, age, specific skills, education, and ability to perform certain tasks, intelligence or temperament affect an individual's behaviour (Losh, 2010). Roles, within this perspective are actions in response to what the situational norms demand (Conway, 1988) and the roles performed by an individual are learned responses (Dreher and Uribe, 2011). Within the workplace context, the company structure (this includes its physical and network location), size and policy on health as well as its rules and procedure determines the expected roles for the delineated position of OHNP (Martin et al, 1993). This is underpinned by the job description that sets the objectives of each position and dictates the behaviours expected in each position to achieve these objectives. Placement within the organisation will determine the lines of communication and authority such as to whom the

OHNP is accountable and for whom the OHNP is accountable (Randolph, 2003). This has a potential to reduce role ambiguity.

The company communicates all this through a job description. The OHNP is hired for one primary role with the position title reflecting specific functions and responsibilities as well as the kind of educational preparation expected. (Randolph, 2003). The OHNP will modify her/his roles according to structural changes.

The interactionist perspective focuses on interactive and leadership processes in groups, non verbal and verbal communication and reciprocal feedback process and how individuals adopt and act out roles and cooperate to achieve a goal or outcome during interaction (Brookes et al, 2007; Lynch, 2007; Losh, 2010; Dreher and Uribe, 2011). This perspective largely accepts role performance as being adoptive in nature (Lynch, 2007) and as such roles are more flexible and not rigid as in the structural perspective. The people with whom OHNPs work, such as the medical practitioner, occupational hygienists, environmentalists, safety officers and other nurses, influence in part their role in the company. The interactive perspective bases on subjective perceptions and preferences and posits that individuals attempt to coordinate their behaviours with others and to jointly define what constitutes a given role. This is always done in an interactive way so that it is not meaningful to think of a role for one person alone, only for that person as an individual who is both cooperating and competing with others (Brookes, Davidson, Daly and Halcomb, 2007). One defines a situation as he/she sees it and acts upon this perception (Dreher and Uribe, 2011).

2.3 Role perception

Role perception entails giving meaning to one's experience as well as representing one's image of reality (Fawcett and Swoyer, 2008) and how this alters one's behaviour (Saha, 2008). The OHNP has certain views and opinions about the role he or she is supposed to play which suggest to the direction in which one would channel their efforts. The OHNP has to have his/her role definition first as this form the basic framework from which to project his/her contribution. As a member of a multi-disciplinary team, this would be important as it will facilitate his/her ability to work in synchrony with the rest of the team as well as reduce chances of role ambiguity (Saha, 2008). Occupational stress occurs when divergence exists between the role expectations that the nurse has and what is actually occurring within that role (Lu et al, 2007).

A critical perspective is advanced by Naumanen (2007) who reported that OHNPs strongly agreed that preventative action and 'a holistic perspective' and coping with changing situations were important features of expertise in occupational health nursing.

In Chang's study (1994) the nurses' perception and beliefs were found to play a significant role in whether an OHNP regarded OHN activities and functions important. In this study it was demonstrated that one's position influenced the nurse' perception of their role with the senior/executive positions emphasising the importance of legislation, management, administration and research as compared to those with a more hands-on approach who placed higher value on health promotion, health screening and assessment and personal development. Similar findings were reported in Naumanen's (2007) study which also found that OHNPs in supervisory positions spent significantly more time in administrative

and office work which included work with the unit's budget, project management, the development of activities and writing documents.

2.3.1 Factors influencing role perception

The article by Saha (2008) gives an impeccable account of the factors that affect role perception. These can either be internal or external. The internal factors are the personality, attitude, values and beliefs, competency or skill level, past experiences and also the needs and motives of an individual. Values are basic beliefs that a certain way of doing things is preferable to another therefore what is important to an individual in turn influences his/her attitude, level of motivation, perception and behaviour (Smit et al, 2007).

Flourishing experiences increase and boost the perceptive ability and an individual's perception varies depending on his/her needs and motives (Saha, 2008). According to Smit et al (2007) competency is described as being the sum of four aspects: knowledge, skills, value orientation and an application in context. They argue that one cannot be deemed competent if all aspects are not present. Three levels of competency are identified in Benner's (1984) nursing competency framework- competent, experienced and expert levels. The American Association of Occupational Health Nurses [AAOHN] (1999) has delineated nine categories of competency in OHN practice. At the competent level, the OHNP works under protocols and procedures at operational level and will require support of more experienced practitioners for non-routine decisions and defer to an experienced or expert nurse, occupational health physician, line manager or human resources for support in more complex occupational health issues. At this level, the nurse's role perception is one of mastery and an ability to cope with specific situations. At the experienced level the nurse's role perception bases on past experience and the nurse's ability to utilise relevant

aspects of this experience in perceiving the client's whole situation whilst at the expert level the nurse's perception of the role is described as 'salient' with the nurse's extensive experience and broad knowledge directing the nurse's appraisal of the situation and consequent course of action (AAOHN, 2007). According to Benner (1984), expertise occurs in a context, thus one who performs excellently in most situations may be considered an expert.

The external factors that affect role perception are the dimensions, frequency, intensity and contrast of the stimuli. The contemporary workplace is characterised by changes in terms of demography, location and organisation (McDonald and Sanati, 2010) and this exerts different levels of stimuli on perceptual ability. The bigger the size of this stimulus and the more increased its frequency and intensity, the more likely to augment perceptual selection (Saha, 2008).

2.4 Occupational health nursing

Occupational health nursing (OHN) is the specialty practice providing for and delivering health and safety programmes and services to employees, employee populations and community groups. OHN is part of the whole picture of occupational health services (OHS) and of the activities of the company. As such, the changes that have an impact on OHS also influence the work of an OHNP (Rossi et al, 2000).

OHN practice, within workplace based health services, is modelled on either a staff-based model or a directly-contracted model. Employers may choose to provide a clinical service by hosting in-house clinics employing permanent OHNP staff. Employers may also choose to contract with independent private practitioners who do sessional work at the workplace (directly contracted model). Alternatively employers may also choose to outsource the

provision of OHN services to specialised companies who provide the systems and human resources to manage the occupational health programme (Naumanen-Toumela, 2001a; Adams, Morar, Kolbe-Alexander and Jeebhay, 2006). This is increasingly becoming a favoured as a more efficient and effective method of OHS delivery but may not be accessible to small and medium enterprises due to budget constraints (Adams et al, 2006).

The OHN practice focuses on promotion and restoration of health, prevention of illness and injury, case management for cost effective disability and workers' compensation programmes and protection from occupational and environmental hazards (Randolph, 2003; AAOHN, 2007). This is enshrined in the basic philosophy of OHN practice, which is described by Rogers (2003) at its most basic level as having a population-focused (workforce) approach to healthcare delivery whose goals are to 'maintain a health orientation, protecting worker health, keeping workers healthy and providing a safe and healthful work environment'. Although this philosophy has not changed, contemporary OHN philosophy incorporates increased emphasis on health promotion, research-based practice, interdisciplinary collaboration, improved quality of life in general and work life in specific and program and policy development (Rogers, 2003), absence management and regulatory compliance (Wallace, 2009) with attention to environmental health (Rogers, 2003; Carroll, 2004) as it is also integral to the specialty practice, particularly how it impacts on the workforce's health.

The many factors that have influenced the evolution of OHN practice include the changing population and workforce, the introduction of new chemicals and work processes into the work environment, a concomitant increase in hazards in the workplace, technological advances and regulatory mandates, and increased interest in health promotion and

illness/injury prevention and an increase in healthcare costs and workers' compensation (Rogers, 1994).

The focus of OHN practice has been shifting from curative care to preventive and health promoting measures. However, particularly in developing countries, curative care and work to improve national health generally are expected to continue to be an important part of holistic OHS and the work of an OHNP (Rossi et al, 2000).

Within the models in which OHS are provided, occupational health nursing care is available at three levels: legal compliance, basic occupational healthcare and comprehensive occupational health nursing services (Hattingh and Acutt, 2003).Thus the services that an OHN service offers may include all or part of the following services from primary healthcare services as well as consultative, rehabilitation and administrative services to promotion and maintenance of employee health, maintenance of workforce efficiency obligations to the workforce and enhancement of company performance through professional health management (Department of Health, 2003; Adams et al, 2006).

2.5 Occupational health nursing in South Africa

OHN in the RSA is a relatively new specialty with a history spanning less than 80 years during which time it has become organised under the auspices of the South African Society of Occupational Health Nursing Practitioners (SASOHN) (Grainger and Mitchell, 2003). In South Africa, the OHNP is recognised as a front-line community health nurse whose sphere of activity extends beyond the care of the worker but also includes working with the family of the worker within a given community (Hattingh and Acutt, 2003).

2.5.1 Brief history of occupational health nursing in South Africa

According to Baker and Coetzee (1983), industrial (occupational health) nursing in the RSA can be traced back to 1923 to a Matron Herron-Brown who was an employee at the United Tobacco Company (UTC) in Cape Town. However, not much is known about this pioneer nurse in the OHN field. In 1965 another industrial nurse employed at UTC but in Johannesburg arranged a meeting for the industrial nurses in Southern Transvaal. In April of the following year the first Industrial Nurses Discussion Group (Southern Transvaal) was formed on the 20th April 1966. In that year same groups were also formed in Natal and Cape Town.

In 1970 when it became apparent that practice settings had diversified with members no longer confined to industry but having spread to departmental stores and transportation, the discussion group's name was changed to Occupational Health Nurses' Discussion group (Southern Transvaal).

In the year 1976 more regional groups formed all over the Republic. Following recommendations to the Erasmus Commission in 1975, the South African Nursing Association (SANA) decided to develop a curriculum for a certificate in OHN. Twenty two nurses thus enrolled for the first time in a course that was based solely on occupational health. Having been given the go ahead by SANA to organise courses in their regions, the Southern Transvaal discussion group took the initiative and organised a course in Pretoria. The year was 1979. Thereafter the other regions followed suit (Grainger and Mitchell, 2003).

In 1981, the certificate was awarded the statutory recognition when the South African Nursing Council (SANC) recognised it as a formal postgraduate qualification. According

to SANA, the number of post graduate registration qualifications in OHN that were registered with SANC for the period between 1979 and 1983 came to a total of 442 with a steady increase from the year 1981 (Bouwer, Dreyer, Herselman, Lock and Zeelie (2001). As time passed other regions also formed discussion groups until a need for a national umbrella body was recognised and this led to the birth of the SASOHN in 1980.

The aims of SASOHN are to promote occupational health in industry and to address the needs of the OHNP in the RSA. There are currently twelve regional groups under the national control of SASOHN (Grainger and Mitchell, 2003).

2.5.2 Legislation affecting occupational health nursing practice in South Africa

One of the basic dimensions of OHN practice is an understanding of the complex network of laws and regulations governing practice. The OHNP must first identify the laws and regulations that affect nurses regardless of the setting in which they practice (Thompson, 2006). The OHNP then must consider their practice locations and roles as key factors in determining which laws and regulations are applicable. Thompson (2006) identifies the following as elements of the practice setting to consider: location, type of industry, actual and potential workplace hazards, employee demographics and the occupational health services provided.

Nursing practice in RSA is regulated by SANC which is the nursing governing body in RSA. The law governing nursing practice in RSA is the Nursing Act No. 33 of 2005. It defines nursing practice and makes provision for the registration and enrolment of all categories of nurses in the RSA as well as determines the scope of practice of nurses and the conditions under which nurses may practice their profession. It protects and defines the types of nursing licences recognised in the country and sets both the requirements to secure

licences, requirements for any nurse to remain competent and the process for disciplinary action for acts or omissions (SANC, 2005). In addition, the Nursing Charter provides the guiding principles for the practice of nursing by making it possible for the nurses to perform any acts for which they have been trained (SANC, 2004). Furthermore, the Nursing Bill (Bill 26 of 2005) defines the scope of practice of nurses in all health service organisations whilst the Medicines and Related Substances Act, 1965 (Act No. 101 of 1965 as amended) provides for nurses to be authorised to dispense scheduled medicines through workplace health services. This is an important function as workplace based health services are primarily nurse staffed and both primary healthcare and OHS are delivered to the workforce. The RSA Medicines and Devices Regulatory Act, 1998 (Act No. 132 of 1998 as amended) thus require the OHNP to complete an approved course in pharmacology in order to be licensed to practice. Numerous nursing initiatives post democracy are available and provide for regulation and best practice in nursing, for example, the 2006 Human Resources Strategic Framework and specific intervention such as the Occupational Specific Dispensation and the 2008 Nursing Strategy for RSA which focuses on the six areas of nursing practice namely education and training, leadership, regulation, social positioning and resources for nursing (RSA, 2008).

RSA has no single health and safety statutory requirement for the provision of OHS but various laws require medical surveillance and evaluation of the work environment. The legislation has generally followed two parallel tracks, one covering the mining industry and the other dealing with non-mining industry, commerce and services. Although these acts place a statutory obligation upon industry to ensure the implementation of healthy safe procedures and practices in the workplace some organisations reacts more enthusiastically than others to the legislation. Some organisations implement highly intelligent occupational health and safety strategies whilst others carry out the minimum requirements

permitted by law, stipulated by insurance companies or exacted under pressure from labour movements (Ramroop, McCarthy and Naidoo, 2004). Therefore the roles the OHNPs engage in will vary depending on the degree of commitment of the employer.

The law relating to mining health and safety is the Mine Health and Safety Act No. 29 of 1996 as amended (South Africa, 1996). Outside of the mining industry, the Occupational Health and Safety Act No.85 of 1993 as amended apply (South Africa, 1993). This parallel trend is also seen in the compensation laws with compensation for occupational injuries and diseases occurring outside the mining industry being governed by the Compensation of Occupational Injuries and Diseases Act (COIDA) No. 130 of 1993 as amended, and enforced by the department of Labour (South Africa, 1993b) whereas occupational diseases occurring in the mines are covered by the Occupational Diseases in Mines and Works Act(ODMWA) No. 78 of 1973 as amended and enforced by the department of health (South Africa, 1973).

The fragmented approach to occupational health and safety has resulted in the drafting of the National Occupational Health and Safety (NOHS) Bill of 2005 (South Africa, 2005) that provides for the establishment of a National Health and Safety Authority whose primary aim will be to reduce work-related accidents and diseases through effective integration between prevention and compensation function. If promulgated, the Bill should have a positive impact on occupational health and safety service provision through improved enforcement capacity, uniform standard setting, improved information systems and research capacity, an enhanced unified compensation system and promotion of a culture of health and safety in the workplace (Adams et al, 2006). It thus can be concluded that the standards of OHN practice are expected to become uniform in the country.

2.6 Scope of occupational health nursing

A profession's scope of practice encompasses the activities its practitioners are educated and authorised to perform (Canadian Nurses Association, 1993). The scope of practice for OHN practice is defined professionally through standards of practice (Rogers, 2003). The implementation of these standards is, in most part, governed by the organisation in which the OHNP is employed through job descriptions, the organisational charts, policies and procedures and its mission and vision statements. In addition, the AAOHN (2004) delineates the code of ethics, core competencies and core curriculum as providing the basis for scope of practice. There are eleven professional practice standards that describe a competent level of performance with regard to the nursing process and professional roles of the OHNP as has been identified by the AAOHN (AAOHN, 2004). These standards follow the nursing process and are assessment, diagnosis, and outcome identification, planning, implementation, evaluation, resource management, professional development, collaboration, research and ethics.

The foundation for OHN practice is research based and the practice derives its theoretical, conceptual and factual framework from a multi-disciplinary knowledge base including nursing science, medical science, public health sciences including epidemiology, toxicology, industrial hygiene and ergonomics, social and behavioural sciences, business principles and management and administration principles (AAOHN, 2007). This foundation and knowledge serve to inform the framework for practice in OHN practice. According to Rogers (2003), the scope of OHN practice can be divided into the following categories: workplace/worker assessment, occupational healthcare and primary healthcare, case management, health promotion, health protection and prevention, counselling,

management and administration, community-orientation, research and trend analysis, legal and ethical management.

2.7 Occupational health nursing practice settings

The settings in which the OHNP practices are varied, but most can be classified into five major categories (National Academy of Sciences, 2000):

- Industry and industry-like settings
- Consulting firms including the insurance industry and some specialised government units
- Government regulatory agencies
- Educational and research institutions
- Hospitals and outpatient clinics.

The traditional setting for much of OHN practice, however, is in medium-sized or large industries where the OHNP and other safety and health professionals address occupational health issues for a well-defined set of workers.

2.8 Occupational health and safety professionals

The traditional or core occupational health and safety (OH&S) professionals are generally recognised as occupational safety, industrial hygiene, occupational medicine and OHN. Although each of these professions emphasises different aspects of occupational health and safety they share a common goal of identifying hazardous conditions, materials and practices in the workplace and assisting employers and workers in eliminating or reducing risks (National Academy of Sciences, 2000).

Occupational safety professionals have traditionally been associated with prevention of traumatic injuries and workplace fatalities whereas the industrial hygienists have been a source of valuable expertise on the identification and control of hazards associated with acute or chronic exposure to chemical, biological and physical agents. The occupational medicine and nursing professionals have complemented these roles by providing clinical care and programs aimed at health promotion and protection and disease prevention.

2.9 Education and training for occupational health nursing

To fulfil the wide range of roles that an OHNP performs the OHNP need first to be qualified nurses and then they need to receive specialist education (Esin, 2008). It is widely acknowledged that current specialist OHN programmes are inadequate for equipping staff with the skills they need to meet the demands of contemporary practice (Kirk, 2009). OHN education is normally a postgraduate programme based on life-long learning principle (WHO, 2001).

Findings from an international study by the Scientific Committee on Occupational Health Nursing (SCOHN) in 2005 reported that OHNPs have a variety of training venues with regard to health and safety issues including on-the-job training, continuing education, formal university training, distance learning and diploma or vocational school training (SCOHN, 2004). Educational preparation includes studying at an advanced level, formal recognition of programs in which the advanced practice nurses study and a formal system of licensure, registration, certification and credentialing (International Council of Nurses [ICN], 2003). However there is a variation in the standards of nurse education between countries and differences in the preparation of OHNPs within countries.

2.9.1 Education and training for OHN practice in South Africa

Nursing education and training in the RSA currently resides under nursing colleges and universities under the jurisdiction of SANC the nursing governing body in the RSA. The basic education and training program is either a 3-year diploma or a 4-year degree (Geyer et al, 2002). All nursing programs are outcomes based (SANC, 1993). All nursing programs have a clinical component that the students have to complete in order to obtain registration of an additional qualification with SANC. Nursing education and training in the RSA is in line with the National Qualifications framework which advocates for outcomes-based education (SANC, 1993; Nkomo, 2000) and is based on a comprehensive model providing for simultaneous qualifications in general, psychiatry, community and midwifery. At the basic level OHN is taught as part of community health nursing.

Graduates of comprehensive nursing programs can undertake a postgraduate qualification in order to specialise. With the promulgation of the Regulation 212 of 1993 as amended, OHN in the RSA has developed into a formally recognised postgraduate specialisation. Currently OHNP may choose to further their education in the discipline of OHN through studies at the postgraduate diploma, bachelor's degree, and masters' degree and at doctoral level. Furthermore, there is a component of occupational health in the undergraduate nursing programmes and the post basic community health nursing diploma (Grainger and Mitchell, 2003).

The OHNP in the RSA is a front-line community health nurse; this characteristic is thus reflected in the training of the OHNP in RSA. The curriculum for OHN in SA follows recommendations of SANC's Regulation 212 of 1993 as amended which requires course duration of at least one academic year of 44 weeks and a minimum of 360 hours in field

work for additional qualification and specialisation. The core and elective exit levels for OHN in RSA are stipulated in the Government Notice No. 921 (SAQA, 2007) which is in accordance with Regulation 24 (c) of the National Standards Bodies Regulations of 1998 as amended, and the Standards Generating Body for Nursing.

OHNPs also undertake a variety of short courses such as first aid, HIV/AIDS counselling, occupational health and safety, spirometry, vision screening and audiometry (Grainger and Mitchell, 2003). Whilst there is no separate scope of practice for the OHNP, the SANC provides upon registration a licence to practice as an OHNP. A professional body called SASOHN exists to give leadership in defining a scope of OHN practice. Most of the OHNPs in SA belong to SASOHN, a society which was founded in 1980 and that has enhanced the networking and communication between OHNPs by means of regular meetings at regional and national levels, an annual conference and publications including a multi-disciplinary journal entitled *Occupational Health Southern Africa* (Grainger and Mitchell, 2003).

2.9.2 Education and training for OHN practice: globally

The WHO and ILO recommend that all OHN educational programs should have similar characteristics throughout the world in order to standardise practice but due to variations that exist between countries in terms of resources and legislative provisions and regulatory mechanisms for health and safety issues, differences are evident. For example, to be an OHNP in the USA and Canada, where the OHNP role is well established, requires that the individual first be a qualified nurse and then in addition, to have received one to four years of additional education (Alleyne and Bonner, 2009, Marziale et al, 2010). In these countries postgraduate education is necessary to be able to work as an OHNP and the

nurses are required to update their education at specific intervals. In the USA and Canada, OHNPs have a certifying body for OHN qualifications which confer credentials. The credentialing systems are the same in the USA and Canada, differing in the eligibility criteria in terms number of hours in OHN experience and continuing occupational health nurse education with the required hours in the USA being higher than those required in Canada. Certification is, however, voluntary and requires renewal after five years (Marziale et al, 2010).

In Brazil, Marziale and Hong (2005), some nursing schools offer content in occupational health as part of the undergraduate curriculum and the content focuses on the prevention of occupational health and safety risks for nursing professionals and factors associated with work related diseases. Generally, however, most programs do not have specific occupational health content in their curricula. The content on the actions of an OHNP are offered at post-graduate level and require a minimum of 600 hours for specialisation.

In most developing countries such as Thailand, Lebanon and the Gambia , there is no current programme for OHN although it is being developed (Culp, Bobb and Marquez, 2003; Kalampakorn, 2003; Noureddine and Arevian, 2004) with OHN education and training being limited to on the job training, workshops, continuing education short course training programs that range from one week to three months in addition to the few hours devoted to occupational health topics in the basic nursing curricula particularly in community or public health nursing courses at the senior level of the bachelor of science in nursing programs. The nursing topics usually cover safety in the healthcare environment and protection of healthcare practitioners. In the Gambia, for instance, due to the little demand for OHN practice there are no formal educational programs for the practice (Culp et al, 2003) whereas the lack of specialisation in Lebanon is attributed to non-existent

academic programs at graduate level and the limited number and scope of practice of nurses employed in industries who aid practice experiences.

In other countries such as Korea, Japan, Turkey and Taiwan OHN education has been developed at the most basic level (June, Hong and Cho, 2003; Ishihara et al, 2004; Harrison et al, 2005; Esin, 2008, Lin et al, 2008). In Korea, for example, the number of nursing schools providing graduate education in occupational health has increased and presently only one school offers the education in OHN (June et al, 2003). Three nursing schools in Taiwan have been providing an elective course in OHN at undergraduate level otherwise formal OHN education is restricted to two to four lecture hours and a few field studies (Lin et al, 2008). However labour laws in Taiwan require OHNPs to participate in training courses related to occupational health, occupational medicine, labour, safety and hygiene as part of continuing education and training. Esin (2008) reports that although there are no specific master's and doctoral such as Doctor of Philosophy (PhD) programs in OHN in Turkey, OHN education features at masters and PhD degrees in public health nursing.

2.10 The roles of the occupational health nursing practitioner

According to Naumanen-Toumela (2001a) the OHNP assumes roles to fulfil OHN interventions at three levels: individual, work community and systems levels. Individual focused interventions create changes in health status, knowledge or skills in individuals. Persons receive these services because they are members of a designated population. Community-focused interventions create changes in community norms, awareness, attitudes, practices and behaviours in the community. The interventions are directed toward

groups of persons in the community. Systems-focused interventions create changes in organisations and structures.

2.10.1 Factors influencing the development of roles in OHN practice

Several factors influence the development, implementation and evaluation of the roles that an OHNP will develop in the workplace. These factors include the commitment of the company, skill level of the OHNP, role perception of the nurse, industry size and type which will influence the healthcare requirements in the workplace and budget and other health resources available at the worksite and in the community particularly contributions of available caregivers (Sato, 1997; Hattingh andAcutt, 2003; Rogers, 2003). In Chang's (1994) model the nurse is surrounded by internal and external factors that influence practice and thus the expectations and understandings of the OHN role among different OHNPs (McBain, 2006). These factors ranked according to the greatest to least influence of practice are shown in Table 2.1 below:

Table 2.1 Factors affecting the development of OHN roles

Internal factors	**External factors**
1. Working environment 2. Nurse's perception and beliefs 3. Nurse's professional background 4. Health and safety team	1. Nursing education system 2. Economic evaluation 3. Policy and legislation 4. Changing industrial system 5. Health and environmental issues 6. Socio-economic change 7. Healthcare delivery system 8. Healthcare delivery system 9. Inter-disciplinary competition

2.11 Internal factors

2.11.1 Work environment

This is the most influential internal factor and includes the local conditions that are inherent in the workplace and these are organisational structures, organisational culture and commitment of the employer, expectations of the employees and the contributions of the local healthcare system.

Organisational structures include contracts, policies and procedures that define and support role autonomy, scope of practice, role responsibilities and accountability, outline work schedules and workload, provide for re-imbursement, document provisions of resources and support and facilitate collaboration, referral and consultation with other healthcare providers (Bryant- Lukosius et al, 2004). The organisational context also includes, according to Smit, de J Cronje, Brevis and Vrba (2007) authority structures, performance management system and the physical work setting.

The organisational authority structures determine the OHNP's placement in the hierarchy structures and policies, procedures and regulations will play a role in influencing the OHNP's creativity, innovation and role development. The OHNP requires adequate resources such as suitably skilled people, finance, equipment and information to perform her roles successfully. The performance evaluation and reward allocation in the organisation can either encourage or discourage performance because of the behaviour reinforced by the system. Organisational culture defines acceptable values and behaviour for individuals and thus will have a significant impact upon the working practice of the people in it (Ewens, 2002; Smit et al, 2007).

The utilisation of an OHNP in an occupational health setting is in part a function of employee and employer expectations of what the nurse ought to be doing. The development, acceptability and demand for OHNP roles will also be driven by societal values, healthcare requirements in the workplace and needs for nursing and healthcare services (Bryant-Lukosius et al, 2004).

The degree of a company's commitment is ascertained through the philosophy of management toward health (Randolph, 1994; Hattingh and Acutt, 2003). The company's view of the OHNP will also be influenced by their previous experience with another OHNP which may lead to misinterpretation and under use of roles and inconsistencies .Mellor and St. John (2009) investigated manager's perceptions of the future role of occupational health nurses and revealed the growing concerns importance of occupational health nurses to provide injury prevention, health promotion and managerial and research activities. This result presents the same findings from earlier studies. For example, Yoo et al (1993) identified that employers expected occupational health nurses to conduct workplace visits and assessments. Consistent with this are findings from Martin et al (1993) study and Nelson (2001) who found out that managers wanted OHNPs to engage in cost containment strategies, trend analysis and research. Lusk et al (1988) survey offered data that clearly indicated the same and further highlighted that a number of influential employers are prepared to offer some educational support to nurses pursuing advanced preparation in the specialty- a critical factor if OHNPs have to assume an expanded role.

Hart, Olson, Fredrickson and McGovern (2006) investigated the OHN competencies that are most valued by the employers and revealed that 'research activities' were the least valued whilst 'communicating with stakeholders' and dealing with occupational exposures and consequent health outcomes' were the most valued.

Employees, on the other hand, expect that they will be cared for by the OHNP in times of illness and injury at the workplace. These expectations are often reinforced because no other occupational health and safety personnel may be able to fulfil this clinical role. This observation is however disputed by findings from Yoo et al (1993) and more recently Naumanen-Toumela (2001b) whose findings highlighted that although employees appreciated more direct care and treatment services, they actually expect more preventive health services, expecting the nurse to pay more attention to knowledge concerning health safety, health promotion, mental health and ergonomics.

The size and type of industry is an important factor influencing the number and type of safety related activities. Historically the industries that are high in accident and fatality rates are the mining, construction, manufacturing and agricultural industries. Company size was demonstrated to have some relationship to OHNP roles in Sato (1997), Martin et al (1993) and Lusk et al (1988) studies. Martin et al (1993) showed that the OHNP in a company with less than 500 employees was more likely to follow up on worker's compensation claims whereas serving on safety committees was one of the roles of the OHNPs in companies with more than 2000 employees. According to findings from Sato (1997) study, interdisciplinary practice was favoured in companies with more than 3000 employees whereas the OHNP was likely to plan and develop educational programs and conduct research in companies with 500 to 999 employees.

2.11.2 Contribution of available caregivers

Traditionally, in most practice settings, the OHS is staffed by an occupational health physician only or a physician and a nurse who perhaps with the addition of an industrial hygienist maybe designated as the core staff. The most recent provisions, however, require

that whenever possible the occupational health staff should be inter-disciplinary in composition (Lattuca, 2001; Garett, 2005). In many countries this basic team will continue to be the norm for a long time while other necessary expert services will be outsourced if available at all. In the wake of the increasing popularity of multi-disciplinary teams, the OHNP will remain as members of those teams, their roles will become clearer and consequently their status as equal team members will grow stronger (Rossi et al, 2000). Inter-disciplinary is defined in the Cambridge Dictionary for Advanced Learners (2008) as "involving two or more different subjects or areas of knowledge".

The OHNP is the most frequently employed type of healthcare provider in the workplace (Lusk et al, 1993; WHO, 2001; Hattingh and Acutt, 2003) and OHN practice is currently an autonomous specialty requiring foundational nursing science and expertise in occupational health and environmental sciences, knowledge of business and management principles and a mastery of regulatory processes, community processes, family life and cultural diversity (Rogers, 2003; Salazar Kemerer, Ammann and Fabrey, 2002; Garett, 2005). Inter-disciplinary collaboration will thus affect the number and type of activities the OHNP is involved in. The OHNP working in a one-nurse unit has different roles and functions than one who works in a multi-nurse unit. Solo practice OHNPs thus take on many roles: manager, clinician, educator, consultant or advocate whereas the OHNP in a multi-nurse unit may have more distinct role responsibilities (Randolph, 2003), for example the OHNP may be hired as clinician to treat workers' injuries, a health promotion coordinator to plan, implement and evaluate disease prevention programs or as a case manager to coordinate healthcare services.

The availability of doctors to support the OHN services is very variable, ranging from full-time career doctors qualified in occupational health to general practitioners retained to

provide clinical support on a sessional basis. In general and for the average factory in South Africa, it has been found that for every 50 workers one hour per day of OHNP's time and one hour per week of the doctor's time will usually be adequate. Accordingly a full time nurse will only become necessary when there are about 300-400 employees and for this employee size a doctor would be required for two sessions of about four hours per week. A full time doctor would ideally be appointed when the complement approaches about 2000 employees (Coetzee, 2000). Coetzee (2000), however, indicates that these norms cannot be applied absolutely rigidly. In South African industry, many OHNPs work alone and thus they have to assume responsibilities covering a wide area of activities. Often too, the ratio of the OHNPs to the workers of 1:1000 is inadequate for coverage of service delivery (Grainger and Mitchell, 2003). If there should be a full-time or part-time doctor, then obviously some of these responsibilities will be taken over by the medical officer. The same will be true if there is an occupational hygienist or safety officer and environmental officer or other categories of nurses.

2.12 External factors

Chief among the influences of role perception include the nursing education system, economic evaluation, healthcare delivery systems and policy and legislation.

The nursing education system brings about change in practice as it shapes and conditions behaviour. In fact education is a tool for the development of expertise in OHN practice as Naumanen-Toumela (2007) found. OHNPs in her study identified a need for OHNPs to receive information about quality improvement, marketing, occupational economics, entrepreneurship, business life, work ability maintenance, mental healthcare, pricing of occupational healthcare services and producing individual service combinations. Barker

(2000) agrees that education may indeed facilitate capability but it does not ensure application. The challenge therefore is how to facilitate this application. The author thus suggests clinical supervision as one of the means to facilitate application. Cuts in healthcare budgets have caused a decline in the human resources. In response to this, the educational and training preparation of the OHNP has been and is for interdisciplinary work.

The expanded role requires consideration of the availability and types of existing graduate programmes and the extent to which curricula include required specialty knowledge and skills (International Council for Nurses [ICN], 2003). Some of the OHNPs are not specially educated in OHN and acquire speciality expertise through in-house education programmes or on-the-job training. Bryant-Lukosius, DiCenso, Browne and Pinelli (2004) identified drawbacks to these kinds of education to advanced practice as variable quality and consistency, lack of standards, incomparability to other roles for evaluation, lack of academic credit, limited impact on career advancement and non-transferability of skills to other settings.

Global socio-economic and political trends and issues are mirrored in changes in health delivery and health professional's roles (ICN, 2001).Towards the end of 2010, the RSA was recently invited to join BRIC- an acronym for the economies of Brazil, Russia, India and China (Rowland, 2011). These economies are considered the top emerging market nations and are envisaged to collectively rival most of the current major economic powers for world economic leadership by the year 2050 (van der Merwe, 2009). Within such a global market arena, emphasis on health delivery, for instance, is on cost effectiveness and an ability to work across disciplinary boundaries (ICN, 2001) thus focus is on multi-skilling, a factor that may foster the expanded role of the OHNP.

2.13 The traditional role of the OHNP

The Cambridge Advanced Learner's Dictionary (2008) defines traditional as 'following or belonging to the customs or ways of behaving that have continued in a group of people or society for a long time without changing'. Traditionally, occupational health has been concerned with dealing with the ill-effects of working conditions upon the health of employees and maintaining safety (WHO, 1988) thus nursing was mainly medically-oriented and concentrated on curing individuals of their diseases within the workplace context. The traditional roles of the OHNP base on the traditional values of forgiveness and help as opposed to the non-traditional values of power and independence (Yagil, Spitzer and Ben-Zur, 2001) from which the expanded role is anchored. Provision of clinical and primary care for health- related conditions and crisis care including assessment, diagnosis, management and documentation of occupational and non-occupational illness and injury have always been the boundaries of OHN practice and this has been shown to be a key task of OHN practice even in the dawn of expanded practice that focuses on wellness (Rossi et al, 2000; Naumanen-Toumela, 2001a; American Association of Occupational Health Nurses [AAOHN], 2004; Mellor and St. John, 2007; Mellor and St. John 2009). The other functions of the OHNP encompassed in the traditional role include counselling, health education and training programs using adult learning approaches, compliance with laws, regulations and standards governing health and safety for employees and the environment and in particular tracking with workmen's compensation, conducting health screening and surveillance as pertinent to the potential worksite exposures and rehabilitation(Lusk et al, 1988; Martin et al, 1993; Naumanen-Toumela, 2001a; AAOHN, 2004; Mellor and St. John, 2007).

2.13.1 The expanded role of the OHNP

The nature of expanded nursing practice integrates research, education, practice and management and is marked by a high degree of professional autonomy and independent practice (ICN, 2001), properties that fit OHN practice. Expanded practice is distinguished from basic nursing practice by the following features: specialisation or care for a specific population, expansion or acquisition of new knowledge and skills and role autonomy extending beyond traditional scopes of nursing practice (Bryant-Lukosius, DiCenso, Browne and Pinelli, 2004) The OHNPs are taking their place in the forefront of the rapidly changing healthcare system, developing a myriad of roles in organisations that aim to provide cost effective quality care (Bryant-Lukosius, et al, 2004). Emphasis has been on a paradigm shift from individual worker to worker populations thus requiring fulfilment of the OHN role within the workplace using a public health (wellness) model which lays considerable emphasis on health promotion and health protection and whose primary aim is to reduce inequalities in health, reduce the cost of sickness absence and foster well-being in the workplace (Wilkinson, 2008).

According to Rogers (2003), it is on the wellness models from which to expand the OHNP role. The roles of the OHNP utilising the wellness model include but are not limited to case management for occupational and non-occupational illnesses and injuries, health hazard assessment and surveillance of employee populations, workplaces and community groups, investigation, monitoring and analysis if illness and injury episodes and trends as well as methods to promote and protect employee safety and health as well as health promotion and disease prevention strategies using primary, secondary and tertiary principles (AAOHN, 2004). The expanded role of the OHNP, based on the wellness model, also includes environmental health which also broadly involves workplace assessment and

surveillance and injury prevention, health promotion and education (McPhaul and Lipscomb, 2005) although some would argue as environmental health is and has always have been deeply rooted in nursing's heritage.

The expansion of the OHNP role does not mean a dissolving of the professional role identity but a re-conceptualisation of the role. This means the expanded role needs to be integrated into nursing in such a manner that it articulates with the philosophy and practice of nursing (Lakeman, 2000). A dissolving of professional identity is more likely to result in role confusion and demoralisation (Howkins, 2002).The philosophy of caring has not been lost; indeed it has been demonstrated that the primacy of the caring role in nursing even at expanded role is the core of nursing practice (Searle, 2000) and therefore it is a strength that OHNPs have this professional nursing background.

In the many settings that the OHNP is the only healthcare professional available for the majority of the time, the OHNP must have a thorough knowledge of topics related to disciplines in occupational safety, industrial hygiene, toxicology, epidemiology (Lusk, et al, 1988), environmental health, human resources and cost containment issues and sickness absence management. This fact and economic pressures to reduce staff in industry have offered opportunities for OHNPs to expand their role (Roy, 2006).

Mellor and St. John (2007) call attention to the increased professionalisation of OHN and point out that it is also where some of the activities of the expanded role of the OHNP are centred. The term professionalisation implies the virtues of competence, efficiency, altruism and integrity (Baker, 2000) and the roles of the OHNP of manager and researcher have been correlated with increased professionalisation in Mellor and St. John (2007; 2009) studies . Similar findings are demonstrated by results from studies by Lusk et al,

(1988), Martin et al, (1993) and Sato, (1997) who not only found that OHNPs engage in activities related to the management and administration of OHS but also found a general trend towards cost containment strategies with a view to generate improved profitability, trend analysis and health policy development in the OHNP's functions. OHNPs have also paid more attention to economics, effectiveness and evaluation of action. Their work now includes more negotiation, interaction, marketing projects and computer use (Naumanen-Toumela, 2007). Although attempts are being made to develop research capacity, Grainger and Mitchell (2003) point out that OHN research is still in its infancy.

2.13.2 Factors determining decision to undertake an expanded practice role

Factors determining decisions to undertake an expanded practice role include enhanced patient care, personal professional enhancement including job satisfaction, enhancement of skills/knowledge and career prospects, availability of appropriate preparation for the role as well as external pressures and expectations (Rushforth and McDonald, 2004) such as company downsizes.

2.13.2 Barriers to expanded practice roles

There are many challenges that hinder the successful implementation of expanded roles and these occur at individual, organisational and system levels. At the system level, one of the major barriers is the need for legislative change. Lack of experience, lack of training, lack of competence and a lack of supervision were identified as barriers to decisions to undertake expanded practice in Rushford and McDonald (2004) study. Lack of role clarity, inconsistent role expectations and insufficient administrative support for role development were demonstrated by Bryant-Lukosius, et al (2004) whilst Sidani, Irvine and Di Censo (2000) focused on the competing time demands between direct and indirect care activities

and the effects of resistance to change and bureaucratic health systems as limitations to the utilisation of the full potential of expanded roles. In addition Elsom, Happell and Manias (2008) identified fear of litigation, increases towards professional indemnity and government policies as barriers to expanded practice. Marziale and Hong (2005) found that the obstacles to initiating preventive measures amongst the OHNPs were because of the employer's philosophy which focuses mainly on curative measures. In a SWOT analysis conducted by Affara (2006) in Sandton, RSA, weaknesses to advanced practice were listed as role clarification, proliferation of titles, lack of recognition and lack of political support for the role. At the 2009 HASA Conference held in Durban, RSA, Bhengu (2009) delineated the following problems that exist for advancement beyond basic training: role ambiguity, disparities between preparation and expected competences, overlapping of the scopes of practice among disciplines resulting in role conflict or nurse resorting to traditional practice, the lack of political support, poor definition of career paths and the loss of the nurses with expanded role skills to migration. These studies contribute to the understanding that for someone to successfully take up and effectively utilise an expanded role, there needs to be congruence in the nurse's perception of the role and the expectations of the stakeholders in addition to resources and structures that will support this role.

2.14 Global context of the roles of the OHNP

Occupational health, whether in the developing world or in the industrialised world still remains occupational health and hence there are some commonalities in the specific function role of the OHNP (Clark, 2008). The crucial difference lies in the emphasis and priorities in the two countries (Jeyaratnam, 1992) as dictated by work conditions, social and economic status, regulations and laws in occupational health and safety and training and education programs for occupational health and safety professionals including OHNPs.

The role of the OHNP is broad and includes healthcare provider, manager/coordinator, educator/advisor, case manager and consultant, travel agent (Allen et al,) and the country in which one practices will influence this role. Naumanen- Toumela (2001b) groups these OHNPs' roles as employee-centred functions, workplace and work community-centred functions, collaborative functions, administrative functions and other functions.

2.14.1 South Africa and other African countries

Grainger and Mitchell (2003) report that the major service provided by the OHNP in the RSA is primary medical care and that generally less time is spent on occupational healthcare than primary medical care. A similar finding was reported in an earlier study by Jeebhay and Jacobs (1999) who found out that 44 % of the nurse's time was spent in occupational healthcare related activities. This service includes health assessments, treatment of minor ailments and management of chronic health problems within the nurse's scope of practice. They express a growing need for the OHNP to include case management and rehabilitation as part of their services. The OHNPs in the RSA usually work by themselves and therefore they perform a wide range of activities and this research considers the OHNPs' views and opinions about the significance of these duties.

There is limited literature on the role and function of the OHNP in the rest of Africa and the available literature, if it exists, is old. An analysis of occupational health and safety practice in the Gambia revealed that demand for OHN practice in the country is limited and when present it is limited to affluent workplaces that are owned by employers of international origin. The services offered are limited to treatment only and there is little focus on prevention (Culp, Bobb and Marquez, 2003).

2.14.2 Brazil

Marziale et al (2010) conducted an exploratory study to outline the roles and functions of OHNPs in Brazil and found that the primary job responsibility of the nurses was clinical activities followed by manager/administrator, educator, occupational health specialist, OHS coordinator then health promotion specialist but the OHNPs seemed to spend more time in managerial roles followed by consultant and educator responsibilities. Less time was spent in the provision of direct care. Earlier observations made by Marziale and Hong (2005) were that the actual activities performed by many OHNPs in Brazil are not compatible with the health promotion model or the prevention of accidents and disease with a focus on the individual, family and community, because the employers' philosophy focuses mainly on curative measures.

2.14.3 Canada and the United States of America

In a study amongst OHNPs in Ontario, Canada, Alleyne and Bonner (2009) found that the primary role of the OHNPs was that of case manager followed by health promotion then health service coordinator/manager and policy development. More than half of the OHNPs (64.7%) studied reported spending more than 33 hours per week working in occupational health nursing and related activities in occupational health. Some of the roles that the nurses identified such as ergonomics, disaster preparedness and industrial hygiene roles have only been reported to date in the USA (Alleyne and Bonner, 2009). In the USA, a national survey analysis by Salazar et al (2002) basing on the descriptions of the American Board for Occupational Health Nurses Incorporated (ABOHN) for Certified Occupational Health Nurses (COHN) and Certified Occupational Health Nurses-Specialists (COHN-S)

revealed the primary job responsibilities for both groups was clinician followed manager/administrator and then OHS coordinator.

Regarding the time spent on tasks, both groups spent less than 50% of their time in indirect care () of which significantly more time was spent in education/advisory roles. Similarities were also found in the 2004 survey for OHNPs conducted later by Thompson (2010) which revealed that not much had changed in terms of the percentage of time spent in an activity and the dominant function. The OHNPs still spent more time in direct patient care (38%), followed by administration (23%), consultation (14%), supervision or management (9%), research (3%) and other unspecified activities (9%). Reflecting the diversity of OHNP'S roles, less than 30% of OHNPs were estimated to have direct patient care as their dominant function whereas 10% of the OHNPs reported administration as their dominant function (Thompson, 2010).

2.14.4 Australia

In their surveys, Mellor and St. John (2007) and Mellor, St. John and McVeigh (2008) found that although Australian OHNPs engage in both traditional and expanded roles of OHN practice, the traditional roles continue to dominate their work. The nurses ranked the traditional roles of treatment services, health assessments and rehabilitation services highly and spent a substantial amount of time in them whereas the expanded roles were ranked lowly although the nurses were of the opinion that this role will be applicable to OHN practice in the future.

2.14.5 Finland and the United Kingdom

Naumanen (2001a) points out the change that has occurred in the work of Finland OHN practice over the last 20 years that involved a move from an individual and medicine orientation toward a focus on the work community and on nursing. This though is not reflected in the OHNP's primary responsibility although they are inching closer. As demonstrated in Naumanen (2007) survey, the OHNPs primary responsibility in Finland is employee-oriented activities consisting of health examinations, counselling, maintenance of work ability and general nursing (Naumanen, 2007). OHNPs indicated that they spent 48% of their working hours performing these duties and the study also showed that the regular and substitute OHNPs spent more time in these duties as compared to those in supervisory positions. Workplace promotion was second responsibility accounting for 18% of the OHNPs' working hours and this was followed by administrative and office work which included work with the unit's budget, project management, activity development and documentation (Naumanen, 2007).

2.14.6 Japan, Korea, Thailand and China

Using the ABOHN job analysis survey in Japan, Ishihara et al (2004) found that the most common job responsibility reported by the OHNPs was that of clinician, health promotion specialist was second followed by consultant responsibilities and management roles. The largest portion of their time was spent performing direct care tasks and the least in management functions. The study by Kalampakorn (2003) in Thailand drew similar findings. Services in Thailand are primarily directed at curative measures rather than prevention because of a lack of role perception and inadequate preparation. Since 1991, the OHNPs in Korea have been working as health managers (June, Hong and Cho, 2003) and

this role includes performing responsibilities similar to physicians or industrial hygienists in addition to providing basic direct care and treatment.

Due to their roles and functions not being specified in the applicable labour laws, the duties of the OHNPs in Taiwan (formerly the Republic of China) vary widely (Lin, Hong and Yeh, 2008). In a survey conducted by Shiao (2005) the responsibilities most cited by the OHNPs included planning health examinations, conducting periodic health examinations, providing workplace health promotion programs, providing emergency care, selecting hospitals for health examinations and managing occupational injuries and diseases. The exception to these duties included hazard planning and post-hazard safety assessment.

2.15 Future challenges of the OHN role in a changing working world

The globalisation of economies, introduction of new technologies, new enterprise structures , new forms of work such as atypical employment and tele-working, new work organisations such as entrepreneurial activity, demographic changes of the workforce, particularly aging and increased feminisation of the workforce, growing mobility of working people, new schedules for working hours and high productivity and quality demands have been observed to set high challenges not only to OHN practice but to OHS and management as a whole (Rossi et al, 2000; Rantanen, 2010) and thus call for modification of the OHNP role to cater for these challenges in particular moving away from a one-size-fits-all system to a tailor-made system suited to the evolving contemporary workplace environment (Higashi and Inui, 2006).

2.15.1 The effects of globalisation on the roles of the OHNP

According to the International Labour Organisation [ILO] (2004), globalisation is the progressive integration of economies and societies driven by new technologies, new economic relationships and the national and international policies of a wide range of actors including governments, international organisations, business, labour and civil society. This is characterised by liberalisation of the movements of investments, capital, goods and services across national borders (Rantanen, 2010).This increased interrelatedness of the world means that health problems have become globalised (Bradbury-Jones, 2009) which essentially entails that what happens in one country matters for the rest of the world. OHN practice is therefore challenged with responding to the changing health needs of the global population. These changes can either be positive or negative. On one hand, globalisation can increase access to a variety of foods, medicines, cheaper access to information technology and easier access to information and other goods that contribute to good health. For example, harmonisation of standards and sharing of industrial best practices is beneficial (Myers, 2004) in that the OHNP role not only expands but is made easier and quality of care improves. On the other hand it can also facilitate the spread of unhealthy consumer products such as tobacco, illegal drugs and alcohol as well as bad dietary habits and physical inactivity which has changed the disease pattern of the workers. Non communicable diseases such as diabetes, obesity, cancer and stress-related diseases previously confined to rich, western countries have spread rapidly in poorer nations which mean that nurses, whether in developed or developing countries are increasingly likely to spend a significant amount of their time caring for patients with a non-communicable disease. The movement of people across borders is also inevitably associated with transfers of health risks in particular sexually transmitted diseases including HIV/AIDS. Much of

the OHNP's role will thus encompass workplace health promotion and health education. Maintaining work motivation, continuous and life-long learning and maintaining work ability will thus constitute major challenges for the OHNPs (Rantanen, 2010).

2.15.2 Aging workers

Older workers in many ways are the most skilled and productive of employees, providing advantages to the employer and the employee by remaining in the workforce. However, the decremental theory of aging proposes that, as persons advance in age, some work capacities, both physical (e.g., cardiovascular function, muscle strength, endurance) and cognitive (e.g. sensori-motor performance, decision time, memory), decline lessening the person's ability to cope with multiple job demands (Choi, 2009). Therefore the older workers exhibit substantial variation in health-related problems including increased prevalence of disease (e.g. circulatory diseases, arthritis, diabetes) and increased musculoskeletal injuries (e.g. chronic back problems) (Musich, McDonald and Chapman, 2009). Consequently, supporting people with long term health conditions at work will become more important in the OHNP role. This also means that the OHNP will need to have advanced training in aging and health adjusted working life matters (Illmarinen, 2006; Bradbury-Jones, 2009).

2.15.3 Increased feminisation of the workforce

While new production patterns have increased female participation in the labour force, this gendered distribution of work requires a stronger focus on the health issues of women and the differential impact of high risk work on women (Kolbe et al, 2006). Women workers face double hazards from both their work and household responsibilities thus increasing their vulnerability to occupational illnesses (Lu, 2011) and as such present the OHNPs with

the challenge of identifying the issues and problems in occupational health of women in order to create policies and programs that safeguard the health and safety of women workers. The OHNPs now must deal with issues such as work-family conflicts, child-care, dual career couples and sexual harassment (Smit et al, 2007).

2.15.4 Other Challenges

One organisational change which has occurred has been a decline of company-based occupational health services and growth in private companies with which these companies contracts. The services which are then offered are those specified by the employers and usually have a major focus on sickness absence management (McDonald and Sanati, 2010). What may be specified by the employer in contracts may not necessarily be what the employees need and this becomes a challenge to OHN practice.

The introduction of new technologies such as biotechnology (Rantanen, 2010) and use of chemicals such as pesticides in agriculture may have extended life, food production and improved quality of life but they have also introduced new work-related hazards and diseases (Tu, Hong and Diep, 2004; Rantanen, 2010). In the era of globalisation, the transport and construction sectors have blossomed. These industries have however brought increased concerns towards environmental health from pollution as well as an increase in traffic accidents and injuries. It also means that the hazards are no longer confined to the workplace but also spread into the non-employed populations through air and water pollution. Although this morbidity is work-related it is not usually classified as such (Loewenson, 2001).

Migrant workers are a rapidly growing segment in the workforce and are often characterised by transient employment and absence in workers' compensation systems. This group of workers creates the likelihood that OHNPs will be working with an ethnically pluralistic workforce (Kalampakorn, 2003).Due to this group's vulnerability and diversity, they present distinct challenges to OHN practice such as a need for culturally competent OHN care providers, improved healthcare access and methods of surveillance and research and the need for an increased advocacy and changes in immigration and health policy (Loewenson, 2001; McCauley, 2005).

The current labour market has many forms of employment relations that differ from full-time employment. "Atypical," "non-standard," or even "marginal" are terms used to describe these new workers and include, amongst others, part-time work, contract work, self-employment, temporary, fixed-term, seasonal casual, piece-rate work, employees supplied by employment agencies, home workers and those employed in the informal economy (Fourie, 2008). Compounded by the existing labour laws which provide for protection for workers in organised labour in the RSA (Fourie, 2008), the OHNP is not only challenged with providing care and follow-up but is faced with the difficulties in continuing care provision.

2.16 Conclusion

The literature reviewed in this chapter identifies a need to explore the expectations of roles from the OHNP's perspective. The chapter gave meaning to and interpretation of the concepts of role, role perception and the traditional and expanded OHN roles. The Role Theory was discussed as a valuable framework underpinning the study.

The global context of the roles of the OHNP and the education and training of the OHNP was reviewed and it delineated the variations which exist amongst countries. Finally, the effects of globalisation and other challenges of the changing working world on the OHNP role were explored.

In the following chapter, the research design and methodology are described.

3.0 CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

According to Creswell (2003) a research methodology references the procedural rules for the evaluation of research claims and the validation of the knowledge gathered. In this chapter an outline of the empirical approach adopted in this research is explained including the data collection method used, techniques applied in the sampling method and questionnaire design. The constructs emanating from the conceptualisation phase (discussed in Chapter Two) were measured in the operational phase by means of a survey method utilising a self administered questionnaire. The research methodology facilitated the attainment of the research objectives which were the following:

- To describe the OHNPs' perceptions of their traditional and expanded roles in occupational health nursing practice
- To evaluate the time that the OHNPs believe they dedicate to their traditional and expanded roles in occupational health nursing practice
- To determine if there is an association between the OHNPs' perceptions and their demographic characteristics
- To determine if OHNPs devote a corresponding amount of time to those areas of practice perceived as significant.

A result of $p \leq 0.05$ was considered to be statistically significant.

3.2 Research design

According to Burns and Grove (2005), a research design is a blue print for conducting the study that maximises control over factors that could interfere with the validity of the findings. Polit and Beck (2004) add that a design works as a systematic plan outlining the research, the researcher's methods of compilation, details on how the research will arrive at its conclusions and the limitations of the research.

3.2.1 Selected research design

The research design used for this research can be described by the following terms: quantitative, descriptive, exploratory, cross-sectional, replicative and non-experimental design.

3.2.2 Quantitative research

Quantitative research is research that is empirical, using numeric and quantifiable data. Factual (quantitative) information was desired to identify perceptions of and actual roles that OHNPs engage in and to test relationships between them as this, according to Brink et al (2006) facilitates logistic deductive reasoning.

3.2.3 Descriptive research

The primary purpose for descriptive research is to describe some phenomenon or to document its characteristics. Such a study is needed in order to document the status quo or to do a needs assessment in a given area of interest (Hopkins, 2000). This research wanted to find out the extent to which OHNPs perceive the significance of their traditional and expanded roles in their current practice.

3.2.4 Explorative research

This research is aimed at investigating the full nature of the phenomena, its manifestation and other factors with which it is related (Huiskamp, 2001).

3.2.5 Non-experimental

According to Belli (2008) non-experimental research is one that lacks manipulation of the independent variable by the researcher. This means the researcher does not introduce any intervention (Burns and Grove, 2003). This research studied what OHNPs viewed their traditional and expanded roles in their current practice and the researcher studied how variables in the work environment and the OHNP's viewpoints are related.

3.2.6 Cross-sectional

This research was cross-sectional which meant that the research was used to examine data at one point in time, namely the period between September and December 2011. This particular execution at a particular time was made in order to make comparisons across different types of respondents (Belli, 2008), with no follow up data collection being done (Brink et al, 2006). The data that was gathered was on the incidence and distribution of OHNPs' role perceptions and relationships that exist between these perceptions and time spent in role activities.

3.2.7 Replication

The research is a replication and extension study of the research conducted by Mellor and St. John (2007) with Australian OHNPs. Replication involves reproducing or repeating a

study to determine whether similar findings will be obtained (Burns and Grove, 2003). This research replicated the Australian study within a South African context.

3.3 Research method

The survey research method was used with this research. Survey research is a non-experimental research approach used to gather information about the incidence and distribution of and the relationships that exist between variables in a pre-determined population (Coughlan, Cronin and Ryan (2009) via direct questioning of a sample of participants (Polit and Beck, 2004). In this research the survey research method utilised mailed self-administered questionnaires.

3.3.1 Motivation for the use of the survey method

Surveys are useful when one wants to collect data on phenomenon that cannot be directly observed such as attitudes, behaviours and perception and because surveys need less infrastructure and time they are an economical way of collecting information. A survey offers a snapshot of the phenomenon being studied and is uncomplicated as it usually only involves single contact with the sample being studied. With surveys, a researcher is able to reach a number of participants which results in extensive information of a broader scope (Coughlan, Cronin and Ryan, 2009; Huiskamp, 2002). Consequently very large samples are feasible making the results statistically significant even when analysing multiple variables (Colorado Education guides, 2011).

3.3.2 Disadvantages of surveys

Survey research ranks low in the hierarchy of research methodologies because they use self-reported data and as such data gathered through them is prone to the influence of social desirability (Keough and Tanabe, 2011) where respondents may typically want to portray themselves in the best light and may thus enhance responses in order to please the researcher and make themselves appear good. Another disadvantage of using surveys is its low response rates.

3.4 Context and setting of the research

3.4.1 Context of the research

The research was conducted in the Gauteng Central district. This district was chosen for this research because it was accessible to the researcher; it has a diversity of occupational health settings and an identifiable population of professional OHNPs and for economical considerations. This district's demarcations according to SASOHN (2011) comprise Johannesburg which accounts for 92% of this district followed by Edenvale which covers 7.6%. Carletonville and Soweto contribute the least coverage each with 1.5%. There are at least 640 OHNPs who work in this region who are registered with SASOHN (SASOHN, 2011: personal communication) and an unknown number who are non-members. These nurses come from a much diversified industry sector. The research was therefore contextual in nature as the participants for the research were OHNPs in a specific geographical area in the Gauteng province who are members of a professional society. Using a professional speciality association, as observed by Gillespie, Chaboyer and Wallis (2010) represented an inexpensive, time efficient means of sampling for the purposes of

conducting a large survey and there was also the advantage of accessing a large pool of potential participants from a widespread geographic area.

3.4.2 Research setting

A setting is the more specific place where data collection will occur and it can be the participant's naturalistic places such as their places of work or people's homes (Huiskamp, 2002). The setting for this research was the participants' places of employment.

3.5 Population

Polit and Beck (2004) define a population as the entire aggregation of the cases in which the researcher is interested in. The target population is the aggregate of cases about which the researcher would like to make generalisations and the accessible population is the aggregate of cases that conform to the designated criteria and that are accessible as a pool of subjects for a study (Polit and Beck, 2004).

The aim of this research was to investigate Central Gauteng OHNPs perceptions of their traditional and expanded roles. The target population then consisted of all the OHNPs in the Central Gauteng district in the RSA. However, due to feasibility issues, cost and time limitations of the research, it was therefore not realistic to include all OHNPs in the district. The researcher had to identify a more accessible population namely nurses who are members of the Central Gauteng SASOHN.

During the study period, there was a total of 640 occupational health nurse practitioners who were members of this professional association.

3.5.1 Eligibility criteria

The researcher must, in so far as possible, consider the exact criteria by which it could be decided whether an individual would or would not be classified as a member of the population. The criteria that specify population characteristics are referred to as eligibility or inclusion criteria (Polit and Beck, 2004).

The criteria that had to be met for inclusion in the research were:

- Participants were restricted to professional nurses and not other categories of nurses
- Participants had to be registered as OHNPs with SANC
- Participants had to be employed in occupational health practice at the time on a full-time, part-time or casual basis or with an agency within the regions in the Gauteng Central district.
- The OHNPs had to be members of the Central Gauteng SASOHN society. The members represent a significant proportion of OHNPs in RSA and, as reiterated by Mellor and St. John (2007) belonging to a professional organisation demonstrates a commitment to the continuing development of OHN.

Any participant not exhibiting the inclusion criteria was excluded in the research and any completed questionnaires that indicated otherwise were excluded in the data analysis.

3.6 Sampling framework

A description of the sample, sampling method and sampling procedures of the research are provided in this section.

3.6.1 The sample

According to Polit and Beck (2004), a sample is a subset of the population elements. The sample for this research was derived from the accessible population as described above. Polit and Beck (2004) highlight that one of the major considerations of a sample in quantitative studies is its representativeness. A representative sample is one whose key characteristics closely approximate those of the population from which the sample comes from.

3.6.2 Sample size for this research

The sample size was estimated by using Epi Info 6 Version 3.5.3 software. In order to estimate the role perception of the respondents with 10% accuracy and a 95% confidence interval required a sample size of 114 given the total population size of 640 OHNNPs. With 10% accuracy and 90% confidence interval, a sample size of 85 respondents was required.

For this research a sample size of 150 was decided about as this figure fell within the 90% and 95% confidence intervals of determining the OHNPs' role perceptions with accuracy. The figure also was deemed appropriate as the research involved postal questionnaires and a bigger sample size would yield more accurate results. Furthermore the size was manageable considering the researcher's resources and time limitations of the study.

3.6.3 Sampling design and methods

The sampling design for this research was probability utilising a systematic random sampling method. In probability sampling everyone in a particular target population has a

known, equal chance of being selected in the survey sample, thus ensuring that every component of the population is adequately represented (Lohr, 1999; Fawcett and Garity, 2009)). Systematic random sampling, a form of one-stage cluster sampling (Fairfax County, 2003), involves selecting every n^{th} number on a numbered list of all units in the population until the desired number of population units is obtained (Fawcett and Garity, 2009).

3.6.4 Sampling procedure

The sampling procedure for this research involved three major tasks as identified by Burns and Grove (2003)

- The identification of the accessible sample population
- Confirming eligibility criteria and obtaining consent
- Persuading the eligible participants to participate in the study.

The accessible population was identified as follows:

- The researcher contacted the SASOHN and a list of names and contact details of their members who are currently in practice in the Gauteng Central district was obtained. This list served as a guideline for the distribution of the questionnaire.
- Using the list of names of 640 SASOHN members, 150 potential research participants were selected beginning with 10th name (drawn randomly using a table of random numbers) and at intervals of six after that.

To gain the cooperation of the eligible participants the researcher had to pre-notify them of the research and this was done through the following conventional survey modes:

- The researcher attended one regional monthly meeting of the SASOHN in Gauteng Central prior to the identified data collection dates and detailed the objectives of the research, the importance of the research, sampling procedures, the research

instrument that would be used and how it was going to be fielded, follow-up procedures, time commitments required of the participants, assured the participants who will see the data, what use will be made of the data and how confidentiality will be maintained and requested the member's participation in process.

- The researcher also made contact telephonically and electronically (via electronic mail) with prospective sampled participants that did not attend the meeting to determine interest in participating and to give the participants the necessary details of the research.

3.6.5 Problems encountered in the sampling process

The following problems were encountered in the sampling process: incorrect addresses and telephone numbers on the list from SASOHN as well as international and affiliate members on the list who were either not in practice or were not necessarily OHNPs. Other eligible OHNPs on the list were retired and others were not interested in the research.

3.7 Ethical considerations

Ethics is the branch of philosophy which deals with the dynamics of decision making concerning what is right and wrong. Research ethics involve requirements on daily work, the protection of dignity of subjects and the publication of the information in the research (Fouka and Mantzorou, 2011). The researcher utilised the following ethical standards to protect the rights of human subjects:

Approval to conduct the study: The research protocol was submitted to the University of the Witwatersrand Faculty of Health Sciences Postgraduate Committee for permission to conduct the research, the permission which was subsequently granted (See Appendix **A**). Application was also made to the University's Human Research Ethics Committee (HREC) (Medical) which ensured that all documentation met with appropriate ethical

governance standards of research conduct. Ethical clearance was given to continue with the research (Protocol number: M110919 See Appendix **B**).

Permission to use research instrument: Permission to use the instrument (See Appendix **E**) was sought and granted (See Appendix **F**) through personal communication with Mellor and St. John (Personal e-mail, 23 September 2010).

Access to SASOHN database: A request was forwarded to the SASOHN National Office for permission to access and use the list of names and addresses of its members in the Gauteng Central District (See Appendix **C**) as well as to attend one of its regional meetings to introduce the research and its purpose. A letter of agreement was drafted which stipulated the conditions under which the researcher may utilise this information (See Appendix **D**).

Informed consent: This means that a person knowingly, voluntarily and intelligently and in clear and manifest way gives his consent (Fouka and Mantzorou, 2011). Burns and Grove (2003) state that informed consent consists of four elements namely disclosure of essential information, comprehension, competence and voluntarism. The researcher achieved this through explaining to the eligible participants what the goal of the research was, about the selection of the research participants, nature and scope of the research, time commitments, steps to ensure anonymity and confidentiality, that they were not under any obligation to complete the questionnaire and their right and freedom to withdraw from the research at any time without suffering any negative consequences. A research information sheet was attached to each questionnaire (See Appendix **G**). Completion and return of the questionnaire was taken as expressed, informed consent to participate in the research.

Anonymity and confidentiality: In order to maintain anonymity and confidentiality, no signed consent form was included. To ensure that the participants' identities could not be linked with personal responses, no organisational names or any personal identifiers were required on the questionnaire. Code numbers were used during data collection and data were reported in aggregate form with identity not traceable to specific nurses in any manner. The submissions of the questionnaires were sent directly to a password protected e-mail address that was only accessible to the researcher. The questionnaires were immediately printed on return and the electronic copy deleted. Raw data was only accessible to the researcher and the statistician and all completed questionnaires were kept under lock and key. Upon acceptance of the research report, the completed survey tools were burnt and the data on the computers were deleted.

Right to fair treatment: Random sampling of research participants ensured that each participant had an equal opportunity of being chosen to participate in the research. Participants for this research were selected for reasons related to the problem being explored. No remuneration was paid for participating in the research.

Right to privacy: Privacy is the freedom an individual has to determine the time, extent and general circumstances under which private information will be shared with or withheld from others (Fouka and Mantzorou, 2011). The researcher respected the participants' privacy by not sharing the information gathered from them without their knowledge or consent. All the aims, instruments and methodology of the research were discussed with prospective participants prior to the investigation.

3.8 Data collection instrument

The research utilised a self-administered, structured questionnaire (See Appendix **H**) developed by Mellor and St. John (2007) to determine the perceptions of Australian OHNPs.

3.8.1 Self-administered questionnaire as a data collection method

A questionnaire is a type of survey method that utilises a standardised set or list of questions given to individuals or groups and when it is self- administered a respondent completes it on his or her own, either on paper or via a computer (Burns, Duffet, Kho, Meade, Adhikari, Sinuff and Coole, 2008: 249).

They allow large numbers of individuals from widespread geographical locations to be sampled cost effectively (Polit and Beck, 2004). Questionnaires also have standardised questions which not only make measurement more precise by enforcing uniform definitions upon the participants but also ensures that similar data can be collected from groups then interpreted comparatively (Colorado Education Guides, 2011).

The major limitation to this approach is the poor response rates which can restrict researchers in their quest to generalise findings to the population (Coughlan, Cronin and Ryan, 2009). The other limitation is the possibility that the respondent either did not complete the questionnaire themselves or sought help to do so which may interfere with the representativeness of the sample if this happened frequently within the study.

3.8.2 Structure of the self-administered questionnaire

The original instrument consisted of two major sections:

Section A: Demographic details of the participants

According to Burns and Grove (2005) biographical details, also referred to as demographic variables, entail the characteristics or attributes of subjects that are collected to describe the sample. This section of the questionnaire included 16 attribute and work-related items and consisted of the participants' gender, age, length of experience, job title, and number of hours the nurses worked and those worked under medical direction, size of the workforce, type of industry, occupational team as well as job satisfaction.

Section B: Perception statements on the OHN role activities

This section of Mellor and St. John (2007) instrument included 22 specific task items that reflect OHN practice role activities based on the competency standards as established by the Australian Royal College of Occupational Health Nurses (AROHN). The section addressed eight major areas of OHN practice that depict the nature of the activity of the OHNPs. These areas are depicted in Table 3.1 on page 75 below:

Participants are instructed to indicate the degree to which each activity component rated as important to the OHNP's current practice. The items were measured on a 5-point Likert scale (ranging from 1 "not important" to 5 "extremely important"). Participants indicated a "0" if the activity was "not performed". The participants were also asked to estimate, as a percentage, the amount of time in any given week that they believed they spent in these areas in their current practice.

Table 3.1 A summary of the subscales contained in Section B of the original data collection instrument by Mellor and St. John (2007)

Area/Subscale	Number of items in subscale
Managing an occupational health service	7
Assessing the work environment	2
Assessing, monitoring and evaluating workers' health	3
Providing information, education, training and advice	2
Enhancing the health of the workers	2
Managing and illness and injury treatment service	2
Managing the rehabilitation of ill and injured workers	2
Applying research methodology to the investigation of occupational health and safety issues	2

3.8.3 Changes made to the original instrument

Certain adjustments were made to the original instrument because it was determined they applied to RSA. Such additions to suit the RSA context also took into consideration the competency standards stipulated in the SANC Regulations (Regulation 212 of 1993 as amended) for courses in clinical nursing qualifications in the discipline of Occupational Health Nursing Science. The adjustments made included the following:

Section A: Demographic details of the participants

The question in Section A that asked about the salary scale was dropped. Two questions were added in Section A, one which asked about the type and number of registered nurses that the OHNP worked with at the workplace, the other about the number of hours per week that the OHNP worked with a medical practitioner. Other demographic adjustments were made to more accurately reflect the types of organisations where RSA OHNPs work as well as the types of certifications they hold.

Section B: Perception statements of OHN role activities

In Section B, five statements were added. One question under the subscale "Assessing the work environment" which asked the OHNPs to rate the activity "conducting a situational analysis of the organisation as a whole". Another addition came under the subscale "Enhancing the health of workers" and it asked the OHNP to rate "assessing the health needs of all employees". One activity was added under the "Managing an ill and injury treatment service" and asked them to rate "provision of direct care and treatment for non-work related illnesses and injuries" and one under the research methodology subscale that asked them to rate use of evidence-based practice to promote quality outcomes. Participants were asked to estimate, in hours (and not percentages), the amount of time they dedicated, in any given week, to each area or subscale of OHN activities.

Overall, the RSA version of the questionnaire consisted of 16 items in Section A and 27 items in Section B.

3.9 Data collection procedure

The data collection procedure for this research was divided into three phases: pre-notification, fielding or administration of the research instrument and non-response follow-up procedures.

3.9.1 Pre-notification

Eligible participants were pre-notified of the research before the data collection instrument was fielded. The researcher accomplished this through face to face contact during one of the Central Gauteng district regional meeting as well as through telephonic and electronic survey modes of communication for those sampled members who had not attended the regional meeting.

3.9.2 Administering the research instrument

The researcher handed out, in an unmarked envelope, the package containing the questionnaire and information sheet to the eligible participants who attended the regional meeting and who were on the sample list, which they took home to complete. For the participants recruited via telephone and email, the questionnaire packages were then either e-mailed, posted or delivered by hand to the eligible participants for completion. The researcher then arranged with the eligible participants for a drop off point of completed questionnaires for those participants who were not comfortable with returning completed questionnaires via e-email. The completed questionnaires were to be brought to the Edenvale community centre where the researcher left a drop box in the care of the caretaker of the centre.

3.9.3 Non-response follow-up procedures:

A reminder postcard (See Appendix **I**) was sent to all non- responding participants two weeks following the initial mail out to maximise response rates. To the reminder postcard was attached the information sheet and the questionnaire. The questionnaire sent with the reminder postcard was marked in such a way to prevent getting two questionnaires from the same participant.

The researcher was persistent in her follow-up procedures for the questionnaires that were mailed out. The mailings of the research instrument was planned to avoid holidays or times of the year when workloads are high for potential participants (Burns and Grove, 2003).

3.10 Pilot study

A pilot study is defined by Burns and Grove (2005: 549) as a smaller version of a proposed study conducted to develop and refine the methodology such as the treatments, instruments or data collection process to be used in the larger study.

It was necessary to pilot the following aspects of the research:

1. The data collection instrument (questionnaire) in order to check the validity of the questions, to determine ability to comprehend and answer questions, irrelevant or poorly worded question stems, length of time needed to complete the questionnaire and the effectiveness of the instructions (De Vos et al, 2005; Burns et al, 2008).

2. The methods of data analysis. A preliminary study investigates whether the variables defined by operational definitions are actually observable and measurable (Brink, Van der Walt and Van Rensburg, 2006).

The questionnaire was pre-tested on a pilot group of ten postgraduate students in the OHN course at a tertiary education institution. The pilot study participants as well as the results obtained from the pilot study were excluded from the main research. The questionnaire was found to have good internal consistency for the pilot study as demonstrated by a Cronbach's alpha co-efficient of 0.86. Feedback from the pilot stage suggested that the questionnaire generally had no spelling or grammar mistakes, that the questions were unambiguous and that the tool was easy enough to understand and complete. The term "recognised" in Question 1.5, however, had to be dropped as most participants in the pilot group could not understand recognition by whom.

3.11 Validity and Reliability of the research instrument

Before administering a data collection instrument, it is important to evaluate its internal validity and reliability (Ryan et al, 2009) which is particularly the case when the instrument is a newly developed questionnaire or where a previously tested questionnaire is to be used with a different cultural group or environment.

Polit et al (2004) define validity as "the degree to which an instrument measures what it is supposed to measure". According to Delport (2005), validity has two aspects: that the instrument actually measures the concept in question and that the concept is measured accurately. Ten nurse educators in the Nursing department at a tertiary institution agreed that the questionnaire items appeared to be measuring only aspects relevant to roles in OHN practice thus accepting its face validity. Literature sources were consulted and critique from the nurse educators and two OHN experts to ensure that every item was relevant to OHN roles were a basis or indication of content validity.

Polit, Beck and Hungler (2005) define reliability as "the consistency with which an instrument measures an attribute". Burns and Grove (2005) add that for an instrument to be reliable it must yield the same measure when used on more than one occasion. The reliability of the instrument was ensured by pre-testing it for layout, clarity, specificity and completeness on prospective participants as well as through assessment by two OHN experts. The internal consistency or "homogeneity" of the instrument, which according to Brink et al (2006) and Burns et al (2008) appraises whether different items tapping into the same construct are correlated, was demonstrated by calculating the Cronbach's alpha co-efficient on the instrument's items under the eight subscales contained in the instrument.

3.12 Data Analysis

According to Brink et al (2006), data analysis entails categorising, ordering, manipulating and summarising the data and describing them in meaningful terms. The researcher established a data code sheet on which to encode and categorise data from completed surveys for capture. A database was created using MS Excel SP and validated through double entry typing. Data were then entered into the Stata for Windows English Version 10.0 (StataCorp, 2008) computer program for the analysis. Analysis procedures included descriptive and inferential statistics.

Basic descriptive statistics e.g. frequencies, central tendency measurements (mean, mode, median) and variability measurements (standard deviation) were used to characterise the research sample and to describe role perception and the actual time dedicated to roles. Task item ratings were presented as frequency measures using proportions and percentages. The criteria for perception of role interpretation was as follows: a mean rating score for each activity of between 0.00 to 1.49 was considered to be the lowest perception of that activity,

between 1.50 and 2.49 was a low perception of role, between 2.50 and 3.49 was a moderate perception of role, between 3.50 and 4.49 was a high perception of the role and between 4.50 and 5.00 was the highest perception of that role activity. This interpretation was based on that used by Ishihara et al (2004).

Associations between demographic characteristics and perception of role task item proportions were assessed using the Chi-square test of significance. The Chi-square test is a measure of association and determines if the observed frequencies in each category were significantly different from what would be expected by chance (Burns and Grove, 2007).

In order to determine if there was a relationship between what the OHNP's perception was on their traditional and expanded roles and the amount of time dedicated to roles believed to be significant, a paired t- test was performed. A paired t-test, according to Shier (2004), is used to compare two population means where you have two samples in which observations in one sample can be paired with observations in the other sample. The subscales were totalled and means scores calculated for each subscale. For purposes of comparison, those means scores for subscales that were less than three (<3) were taken to signify 'not significant' role perceptions and those mean scores more than three (>3) signified 'significant' role perceptions.

The significance level was set at $p \leq 0.05$ to reduce the risk of Type 1 error. Expert statistical help from a statistician from the University of the Witwatersrand Postgraduate Support Services was sought in the coding, entry and analysis of captured data through the Stata program.

3.13 Conclusion

The objective of this chapter was to give an overview of the research design and method employed to answer the research questions. A description of the target and accessible population and the sampling process used is given. The planning of the empirical research, pilot study, design of the data collection instrument and the data collection procedure, methods to ensure reliability and validity of the instrument are discussed. The chapter also presented and discussed the ethical procedures followed to ensure protection of the human rights of the research participants.

The following chapter presents and analysis of the findings of the research which were received through the questionnaire method.

4.0 CHAPTER FOUR: RESEARCH FINDINGS

4.1 Introduction

The previous chapter discussed all aspects that were relevant to the research methodology, design and procedure. This chapter presents the findings of data collected from OHNPs in diverse occupational health settings in the Central Gauteng district. The responses to the questionnaire, internal consistency of the measuring instrument and the constraints faced during data collection are also described. Findings are presented in tabular, graphic and written form.

The results of the research are described in terms of the following:

- Demographic profile of the participants
- Description of the perception of the OHNPs of their traditional and expanded roles
- Description of the time that OHNPs devote to their traditional and expanded roles
- Comparison of personal and workplace characteristics of OHNPs with perception of roles
- Comparison between OHNPs perception of their roles and the time they believe they devote to these roles.

A result of p-value ≤ 0.05 was considered to be statistically significant.

4.2 Response rate

Table 4.1 below shows a summary of the respondents to the distributed questionnaire. After the primary and one follow-up survey, a total of 104 out of the 150 questionnaires that were distributed were returned. Of these 104 completed questionnaires, one questionnaire had all of section B not completed and the other questionnaire was incomplete and therefore deemed unusable. Both questionnaires were thus removed in the final analysis representing a true respondent percentage of 68%.

Table 4.1 Respondents to the distributed questionnaire

Total distributed questionnaires	150
Total returned questionnaires	127
Total completed questionnaires	104
Total usable questionnaires	102
Sampling error	16.7%
% of true respondents	**68%**

A total of twenty-three participants accounted for the sampling error (n = 23, 16.7%). This figure is accounted for by the following:

- Eight members of the sampled population were not interested in participating in the research
- Five members of the sampled population were retired
- Ten members sampled were no longer in OHN practice

4.3 Constraints encountered during data collection

Not all questionnaires were returned which represents a 15% non-return rate. Some addresses and telephone numbers on the list from SASOHN were either incorrect or the listed OHNP had since left his or her workplace in the case where a work address was listed. Also there were members of the sampled population who were not interested in participating in this research, others who had retired from OHN practice and other members sampled who were no longer in OHN practice. Those members who did not consent to participating did not give reasons for non-participation and therefore the results do not reflect if they were a particular biased group. The follow-up reminder was followed by telephone calls to respective OHNPs to remind about the research and even this only resulted in the return of only one completed questionnaire.

4.4 Reliability of the measuring instrument

At the completion of data analysis for the main research, the internal consistency of the questionnaire was demonstrated by the Cronbach's alpha co-efficient of 0.88 for the 27 non-demographic items of the instrument. The Cronbach's alpha co-efficient was also calculated for the specific subscales as follows: managing an occupational health service (0.83), assessing the work environment (0.86), assessing, monitoring and evaluating workers' health (0.89), providing information, education, training and advice (0.79), enhancing the health of workers (0.82), managing an illness and injury treatment service (0.79), managing the rehabilitation of ill or injured workers (0.76) and applying research methodology to the investigation of occupational health and safety issues (0.80).

4.5 Demographic profile of the participants

The following segment presents the demographic profile of the participants:

4.5.1 Age

The average age of the participants was 42.8 years (standard deviation [SD] 9.4) with the youngest participant being 28 years old and the oldest 59 years old. The median age group of 40 to 49 years had the majority of participants (n= 45, 45.5%). The age group 20 to 29 years had the least participants (n= 2, 2%) and the age group 50 to 59 years had 22.2% of the participants (n= 22, 22.2%). No participant was above the age of 60 years. Figure 4.1 below illustrates the age categories of the participants:

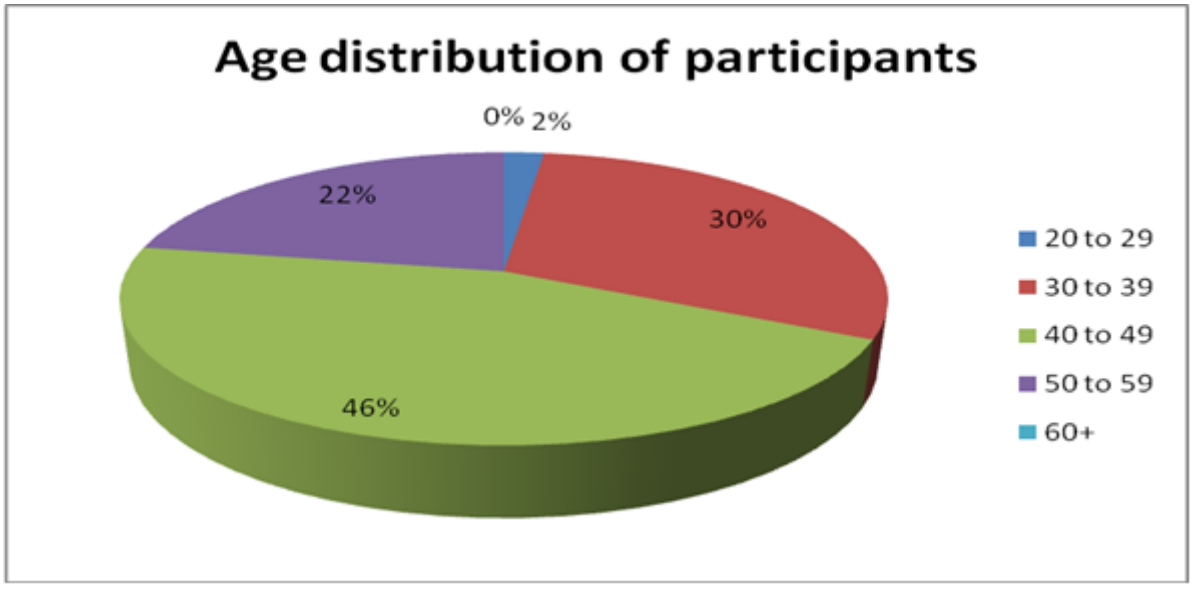


Figure 4.1 Age groups of the participants (n = 99*)

*3 participants did not respond to question

4.5.2 Gender

Of the 102 participants who answered the questionnaire on gender, 91.2 % (n = 93, 91.2%) were female and the rest, (n = 9, 8.8%), were males.

4.5.3 Highest nursing education qualification

Participants were asked to indicate their highest nursing qualification. The majority of the members (n= 67, 65.7%) held a basic nursing diploma, (n = 22, 21.6%) had been prepared at Bachelor's degree level, (n = 3, 2.9%) had an Honour's degree whereas only 2.9% (n = 3, 2.9%) reported attainment of a Master's degree as their highest level of preparation. No participants held a doctoral degree.

4.5.4 Highest occupational health nursing qualification

Table 4.2 below reflects the highest OHN qualification reported by the participants:

Table 4.2 Highest OHN qualification attained by the participants (n = 102)

OHN Qualification	**Frequency**	**Percentage (%)**
Certificate	22	21.6
Diploma	36	35.3
Higher/Advanced diploma	15	14.7
Bachelor's degree	17	16.7
Honour's degree	4	3.9
Master's degree	3	2.9
None	5	4.9
TOTAL	**102**	**100**

The majority of the group (n= 36, 35.3%) held a diploma in occupational health nursing as their highest post-basic qualification followed by (n = 22, 21.6%) who had a certificate in OHN. Fifteen participants (n = 15, 14.7%) held an advanced diploma, a total of (n =17, 16.7%) had a Bachelor's degree whilst five participants (n= 5, 4.9%) nurses reported that they did not have this qualification. The remaining participants (n= 7, 6.8%) reported attainment of an Honour's or Master's degree as their highest level of post-basic OHN qualification.

4.5.5 Occupational health and safety short courses

Data reveals that OHNPs had various additional courses in occupational health and safety (OH&S) with the majority (n= 78, 76.5%) having had at least six or more additional courses and a minority (n= 10, 9.8%) reporting having between two to three additional courses.

4.5.6 Length of occupational health nursing experience

The participants' years of experience in OHN varied between six months and 30 years. The mean for the years of professional experience in the field was 11.1 years with a standard deviation (SD) of 5.9. Figure 4.2 on page 89 shows the distribution of nurses by the number of years of experience they have in OHN:

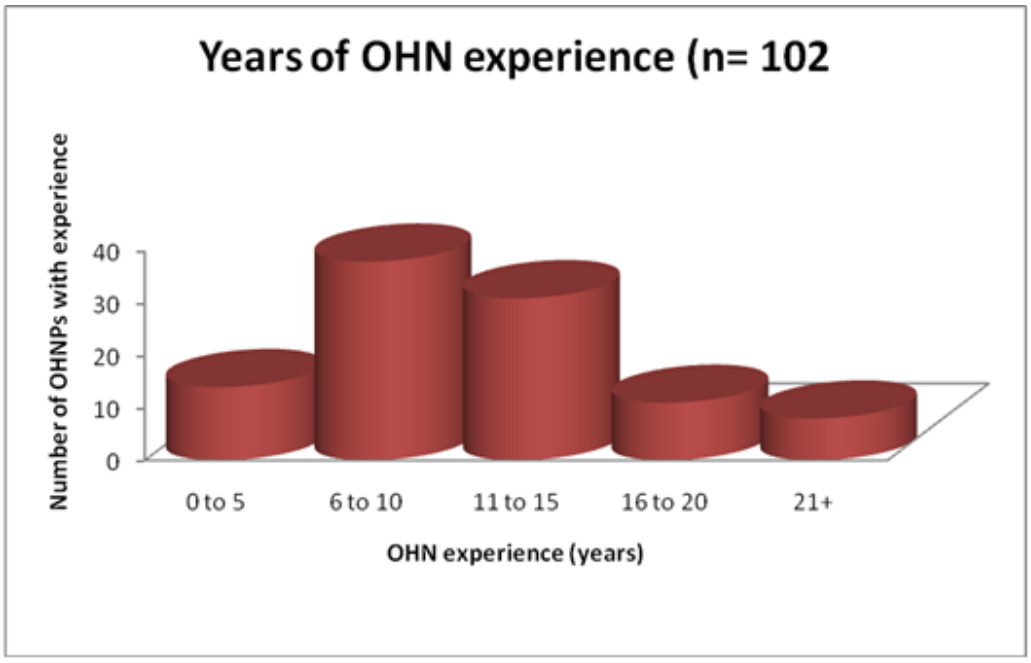


Figure 4.2 Distribution of OHNPs by years of experience on OHN (n= 102)

The majority (n= 38, 37.3%) of nurses reported between 6 to 10 and years followed by 31 participants (n = 31, 30.4%) of the nurses who reported between 11 to 15 years. A further eleven members (n = 11, 10.8%) had 16 to 20 years experience. Fourteen nurses (n =14, 13.7%) had between zero to five years whilst only (n = 8, 7.8%) reported more than 21 years of experience.

4.5.7 Job title

Table 4.3 on page 90 tabulates the job titles of those who responded to the survey:

Table 4.3 Job titles reported by OHNPs (n= 102)

Title	Frequency	Percentage (%)
Occupational health nurse	66	65.4
Manager/administrator	12	11.9
Coordinator	15	14.9
Educator	1	1
Consultant/advisor	4	4
Safety officer	1	1
Other	3	2.9
TOTAL	**102**	**100**

Of the participants who stated their job title, the majority had an occupational health nurse title (n= 66, 65.4%), followed by a health and safety coordinator title (n= 15, 14.9%), manager or administrator title (n= 12, 11.9%) and consultant or advisor title (n= 4, 4%). One participant (n = 1, 1%) indicated they used the safety officer titles and the remainder (n= 3, 2.9%) reported various titles such as employee health and wellness promotion and health promotion and HIV/AIDS coordinator.

4.5.8 Hours worked per week as an OHNP

Participants were asked how many hours per week they worked as OHNPs and the responses are depicted in Table 4.4 on page 91 below:

Table 4.4 Weekly hours worked in occupational health nursing (n= 102)

Hours worked/week (hours)	**Frequency**	**Percentage (%)**
Less than 8	3	2.9
8 to 24	13	12.8
25 to 32	13	12.8
33+	73	71.6
TOTAL	**102**	**100**

On average, OHNPs worked 35 hours per week (SD= 10.4, range 0 to 60 hours). The typical OHNP amongst the participants worked more than 33 hours per week (n= 73, 71.6%) with a relatively few nurses (n= 3, 2.9%) reporting working a less-than-8-hour week.

4.6 Employment status

In terms of their employment status, (n = 83, 82.3%), who comprised the majority, were employed by a company on a permanent basis, seventeen participants (n = 17, 16.8%) were employed on a contract basis and the remainder, (n = 1, 1%), reported being there on a casual basis.

4.7 Type of industry

As shown in Table 4.5 on page 92, approximately (n = 41, 40.2%) participants reported being employed by various types of manufacturing industries followed by the Food and Beverage industries with (n = 13, 12.8%). The health sector, which comprised hospitals and various workplace and employee health and wellness agencies, was reported by nine

participants (n = 9, 8.8%), eight (n = 8, 7.8%) of the respondents indicated employment in the mining industry and seven (n = 7, 7.7%) were employed in various chemical industries. The other types of industries reported by fourteen of the participants (n =14, 13.8%) included government organisations, finance and banking, engineering, retail, metal industry or as a private OHNP. No OHNP reported working in the education sector.

Table 4.5 Types of industries where the OHNPs are employed (n= 102)

Type of industry	**Frequency**	**Percentage (%)**
Construction	2	2
Manufacturing	41	40.2
Mining	8	7.8
Recreation/hospitality	3	2.9
Health	9	8.8
Transportation	3	2.9
Agriculture/forestry/fisheries	2	2
Food and beverage	13	12.8
Chemical	7	7.7
Other	14	13.8
TOTAL	**102**	**100**

4.8 Employee size

Figure 4.3 below shows the size of the employee population with which the participants worked. The figure shows that the majority of the OHNPs are employed by a relatively large company. A total of (n = 55, 53.8%) are employed by companies with between 400 and 999 employees with the majority of the participants (n = 27, 26.5%) being in companies with more than 1 000 employees. Only seven of the participants (n = 7, 9.6%) were employed by companies with less than 200 employees. Ten participants (n = 10, 9.8%) were employed in companies with between 800 and 999 employees whilst (n= 26, 25.4%) worked at companies with between 800 and 999 employees.

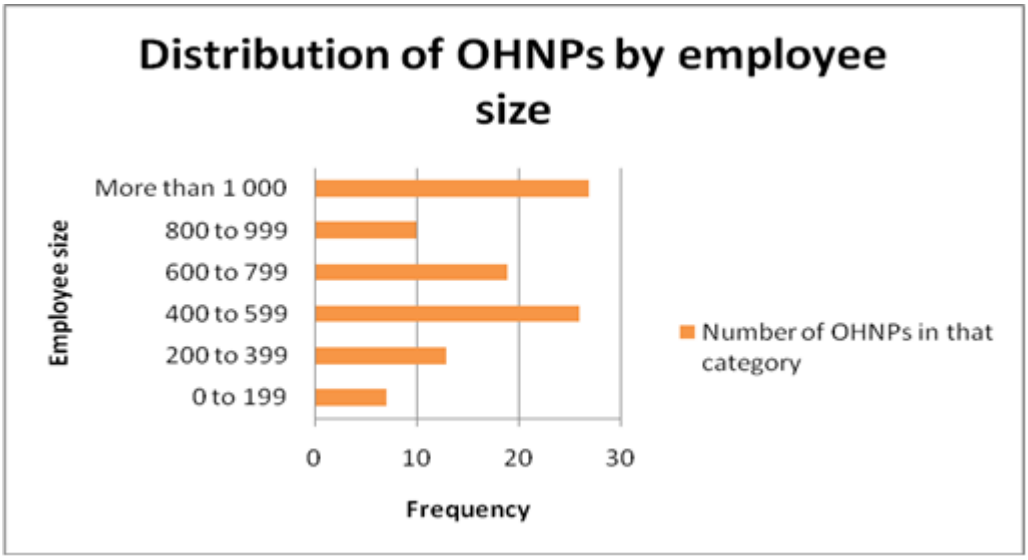


Figure 4.3 Distribution of OHNPs by employee population size

4.9 Occupational health and safety team

The participants were asked to indicate the type and number of occupational health and safety professionals they worked with and their responses are illustrated in Table 4.6 on page 95. The total number of OH&S personnel OHNPs work with ranges from 2 to 73 team members. The frequently reported team members were medical practitioners who

were reported in 94.4% of the cases. The next largest group of team members were safety officers, reported in 83.3%, followed by nurses reported in 48.1%. Safety managers were reported in 38.9% whilst occupational/industrial hygienists and social workers were both reported in 16.7% of the cases. Safety administrators were reported in a minority of cases (9.3%). The 'other' category included environmental health officers and administrators.

Figure 4.4 below further illustrates that, of the 102 participants, none worked as a sole practitioner. Eight (n = 8, 7.8%) worked with health personnel only, two participants (n = 2, 2%) worked with safety practitioners only and (n= 36, 35.3%) worked with personnel from diverse backgrounds only. The majority of the OHNPs (n= 49, 48%) worked with a combination of health and safety personnel whereas seven (n = 7, 6.9%) reported working with the traditional core occupational team that comprises of personnel from health, safety and hygiene.

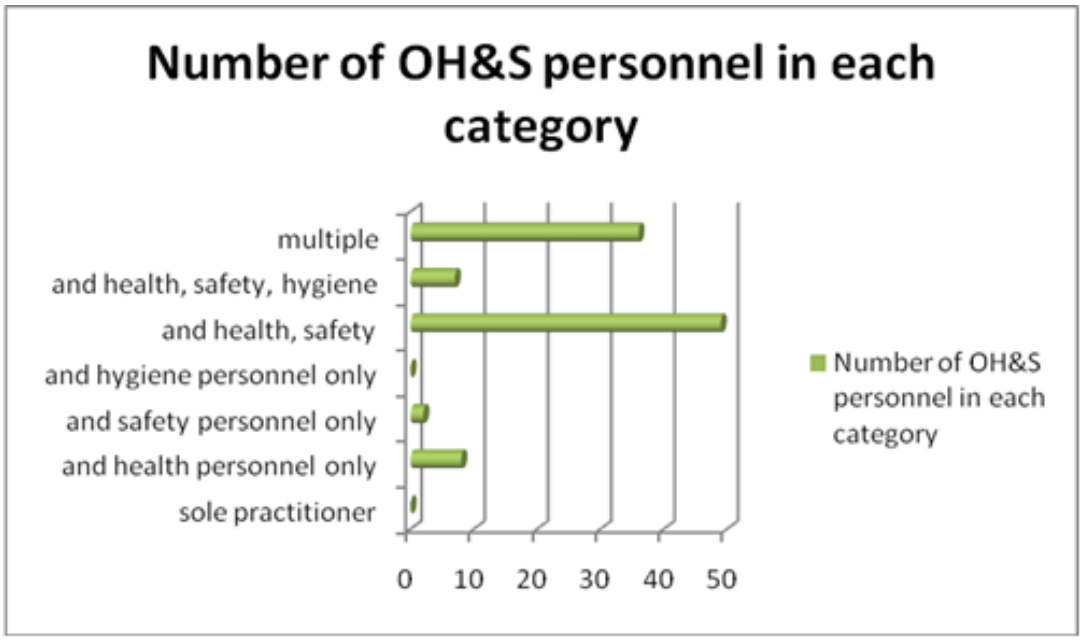


Figure 4.4 Distribution of the type and number of personnel OHNPs work with (n= 102)

4.9.1 Category and number of registered/enrolled nurses the OHNP works with

Respondents were also asked if their occupational health and safety team included registered or enrolled nurses and to indicate the number and type of nurses they worked with in their workplace and this is shown in Table 4.6 below.

Table 4.6 Type and number of registered/enrolled nurses OHNPs work with (n= 86)

Type/Category	Frequency	Percentage (%)
Professional	39	43.4
Enrolled	1	1.2
Assistant/Auxiliary	3	3.5
None	43	50
TOTAL	**86**	**100**

On average, an OHNP worked with a mean of 2.3 registered/enrolled nurses (SD= 4.4, range 0 to 35). The majority of the OHNPs, who responded to this question, half (n= 43, 50%) indicated that they did not work with any category of nurse and the remaining half who reported working with a nurse, (n = 39, 43.4%) worked with professional nurses, only one participant (n=1, 1.6%) indicated an enrolled nurse was part of the team whilst (n = 3, 3.5%) reported working with an assistant or auxiliary nurse. Sixteen of the OHNPs (n = 16, 15.7%) did not respond to this question.

4.9.2 Hours worked per week under medical direction

The number of hours that OHNPs reported working with a medical practitioner per week ranged from none to 56 hours with a mean of 8.1 hours. The majority of the nurses (n= 62, 62%) reported working with doctors for between zero to five hours, followed by those who

reported working with doctors for between six to ten hours (n= 21, 21%). The least number of participants (n= 2, 2%) reported working under medical direction from 11 to 15 hours. Only six (n= 6, 6%) reported working under medical direction for more than twenty-one hours per week.

4.9.3 Job satisfaction

Table 4.7 illustrates the current state of job satisfaction amongst the OHNPs.

Table 4.7 Job satisfaction (n= 102)

Question	Never n (%)	Rarely n (%)	Somewhat n (%)	Mostly n (%)	Always n (%)
Are you currently satisfied with your job?	7 (6.9)	8 (7.8)	30 (29.4)	42 (41.2)	15 (14.7)

Overall, OHNPs were mostly satisfied with their job with only seven (n = 7, 6.9%) expressing no satisfaction with their job.

4.10 Perceptions of the OHNPs of their traditional and expanded roles

Section B of the questionnaire contained 27 activity statements grouped under eight major traditional and expanded role practice areas in OHN. Participants were asked to rate the significance of each of the 27 activity statements on a 5-point Likert scale (ranging from 0-not performed (**NP**), 1-not significant (**NS**), 2-somewhat significant (**SS**), 3-moderately significant (**MS**), 4-very significant (**VS**) and 5-extremely significant (**ES**). This section addresses the research objective namely:

To describe the OHNPs' perceptions of their traditional and expanded roles in OHN practice?

The following presents the results from the eight subscales.

4.11 Area of practice: Traditional

4.11.1 Assessing, monitoring and evaluating worker's health

This section of the questionnaire contained three items designed to ascertain the OHNPs' perception of assessing, monitoring and evaluating workers' health role activities. The results of this subscale are presented in Table 4.8 on page 98. Approximately the same number of participants regarded performing periodic assessments (n = 57, 55.9%) and conducting pre-placements physicals (n = 53, 52%) as extremely significant in their current practice. A little over a third of the participants, who comprised the majority (n= 32, 31.4%) thought work absence evaluation was a moderately significant function in their practice. However, overall, work absence evaluation received the lowest perception rating in the group (mean = 2.90).

Table 4.8 Percentage responses for perception of assessing, monitoring and evaluating workers' health role activities (n= 102)

Role activity	n	NP n(%)	NS n(%)	SS n(%)	MS n(%)	VS n(%)	ES n(%)	Mean rating	Overall perception rating
Perform periodic health assessments	102	9 (8.8)	4 (3.9)	2 (2)	5 (4.9)	25 (24.5)	57 (55.9)	4.00	High
Conduct pre-placement physicals	102	9 (8.8)	4 (3.9)	2 (2)	9 (8.8)	25 (24.5)	53 (52)	3.92	High
Evaluate the ability of absentees to safely return to work	102	9 (8.8)	6 (5.9)	20 (19.6)	32 (31.4)	21 (20.6)	14 (13.7)	2.90	Moderate

4.11.2 Managing an illness and injury treatment service

As shown in Table 4.9 on page 99, the OHNPs had a higher perception of the role activity related to supervision of the provision of direct care for job related than that related to provision of direct care and treatment for non-work related illnesses and injuries (mean = 3.78 vs. mean = 3.14 respectively).

Table 4.9 Percentage responses for perception of managing an illness and injury treatment service (n= 102)

Role activity	n	NP n(%)	NS n(%)	SS n(%)	MS n(%)	VS n(%)	ES n(%)	Mean rating	Overall perception rating
Providing and supervising direct care of job-related emergency and minor illness episodes	102	5 (4.9)	8 (7.8)	2 (2)	14 (13.7)	33 (32.4)	40 (39.2)	3.78	High
Provision of direct care and treatment for non-work related illnesses and injuries	102	6 (5.9)	19 (18.6)	7 (6.9)	23 (22.6)	17 (16.7)	30 (29.4)	3.14	Moderate
Counsel employees regarding health risks	102	4 (3.9)	22 (21.6)	11 (10.8)	18 (17.7)	24 (23.5)	25 (24.6)	3.03	Moderate

Overall, they had a moderate perception of counselling employees regarding health risks with the majority (n = 25, 24.6%) rating the activity as extremely significant and only four (n = 4, 3.9%) indicating non-performance of the activity in their practice. Less than two fifths of the participants (n = 33, 32.4%) perceived the activity as either not or somewhat significant in their practice.

4.11.3 Managing the rehabilitation of ill or injured workers

Participants were asked to rate the significance of rehabilitation role activities. The results are presented in summary form in Table 4.10 below.

Table 4.10 Percentage responses for perception of managing the rehabilitation of ill or injured workers activities (n= 102)

Role activity	n	NP n(%)	NS n(%)	SS n(%)	MS n(%)	VS n(%)	ES n(%)	Mean rating	Overall perception rating
Assist in the rehabilitation and relocation of disabled workers	102	9 (8.8)	29 (28.4)	21 (20.6)	18 (17.7)	16 (15.7)	9 (8.8)	2.29	Low
Provide follow-up of employees with compensation claims	102	9 (8.8)	10 (9.8)	5 (4.9)	22 (21.6)	37 (36.3)	20 (19.6)	3.28	Moderate

Assisting in the rehabilitation and relocation of disabled workers was rated low on the perception level. Only 16 of the participants (n = 16, 15.7%) believed that assisting disabled employees with relocation and rehabilitation was very significant in their current practice. Most (n=29, 28.4%) felt it was not significant. A total of 22 participants (n = 22, 23.1%) rated the follow-up of compensation claims as moderately significant whilst the same number of participants, (n= 9, 8.8%), indicated that they did not perform both

activities. Overall, providing follow-up of compensation claims was perceived as a moderately performed function in their practice.

4.12 Area of practice: Expanded

4.12.1 Managing an occupational health service

As illustrated in Figure 4.5 on page 102, there was little difference placed on each of the activities. Developing analyses for management, developing OH&S policies and procedures which comply with legislation and making recommendations for cost effectiveness and cost efficient operation of the healthcare unit were rated the highest (with means of 3.62, 3.27 and 3.26 respectively). 44 participants (n = 44, 43.2%) and 48 of the participants (n = 48, 47.5%) respectively thought that serving as a member of the OH&S committee and meeting regularly with members of other disciplines to identify problems and propose solutions were either very or extremely significant. Developing budgets for the occupational area, although perceived as a moderate activity overall, was rated low in the group (mean score 2.71).

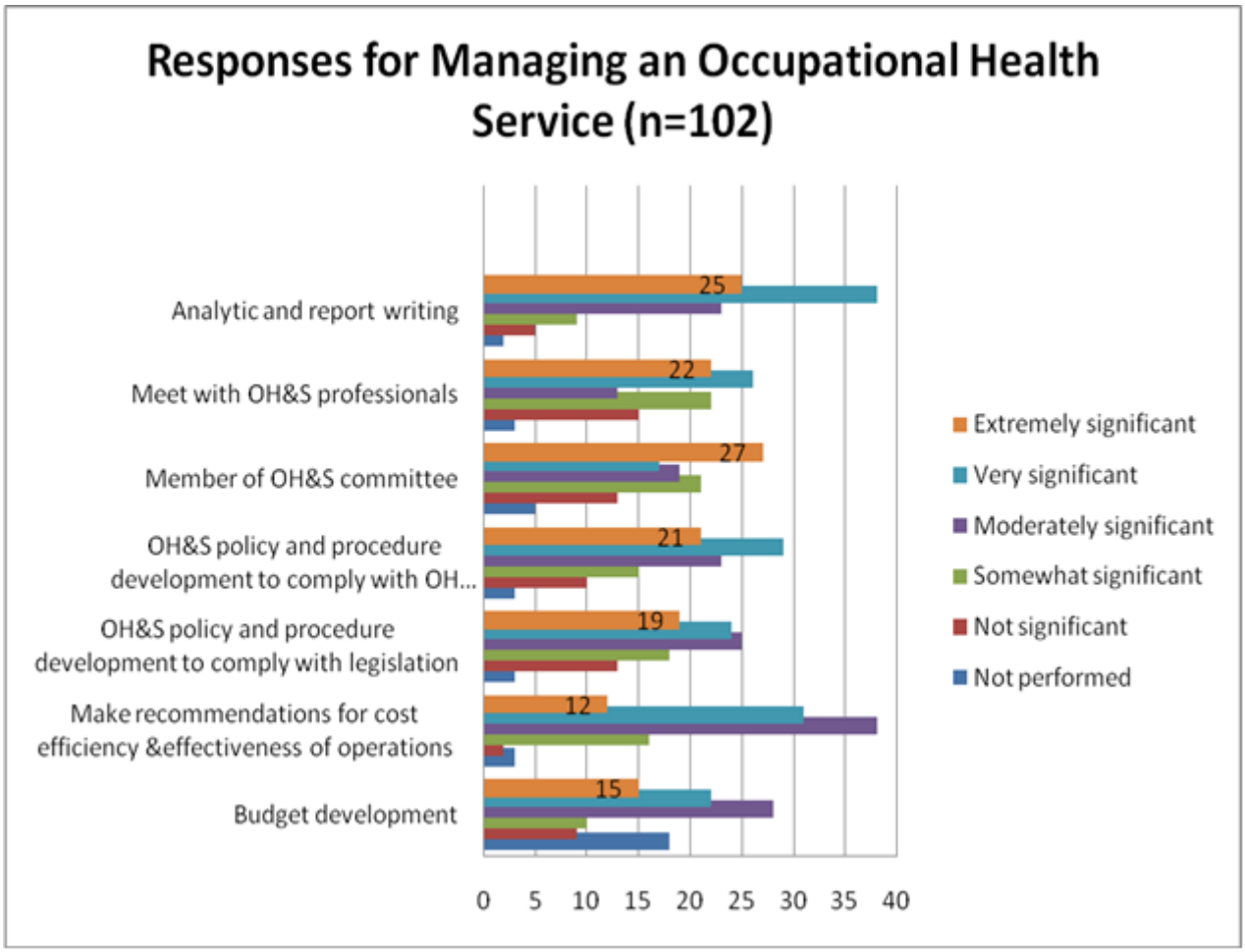


Figure 4.5 Responses for managing an occupational health service role activities (n=102)

4.12.2 Assessing the work environment

Table 4.11 on page 103 shows the responses regarding workplace risk assessment activities. Each of the activities under this group was rated as moderately significant by a majority of the participants. Yet overall, the OHNPs had a relatively low perception for participating in environmental monitoring (mean = 2.32) as well as conducting a situational analysis of the organisation as a whole (mean = 2.39). By contrast conducting regular plant rounds and advocating for the implementation of environmental health control measures were thought of as moderate features in the nurses' current practice.

Table 4.11 Percentage responses for perception of assessing the work environment activities (n= 102)

Role activity	n	NP n(%)	NS n(%)	SS n(%)	MS n(%)	VS n(%)	ES n(%)	Mean rating	Overall perception rating
Conduct a situational analysis of the organisation as a whole	98	13 (13.3)	15 (15.3)	24 (24.5)	20 (20.4)	19 (19.4)	7 (7.1)	2.39	Low
Participate in environmental monitoring	102	9 (8.8)	21 (20.6)	24 (23.5)	29 (28.4)	14 (13.7)	5 (4.9)	2.32	Low
Participate in environmental monitoring	102	9 (8.8)	21 (20.6)	24 (23.5)	29 (28.4)	14 (13.7)	5 (4.9)	2.32	Low
Conduct plant rounds regularly to identify hazards and potential violations	102	7 (6.9)	11 (10.8)	24 (23.5)	29 (28.4)	22 (21.6)	9 (8.8)	2.74	Moderate
Advocate for the implementation of environmental health control measures	102	8 (7.8)	10 (9.8)	14 (13.7)	29 (28.4)	36 (35.3)	5 (4.9)	2.88	Moderate

4.12.3 Providing information, education, training and advice

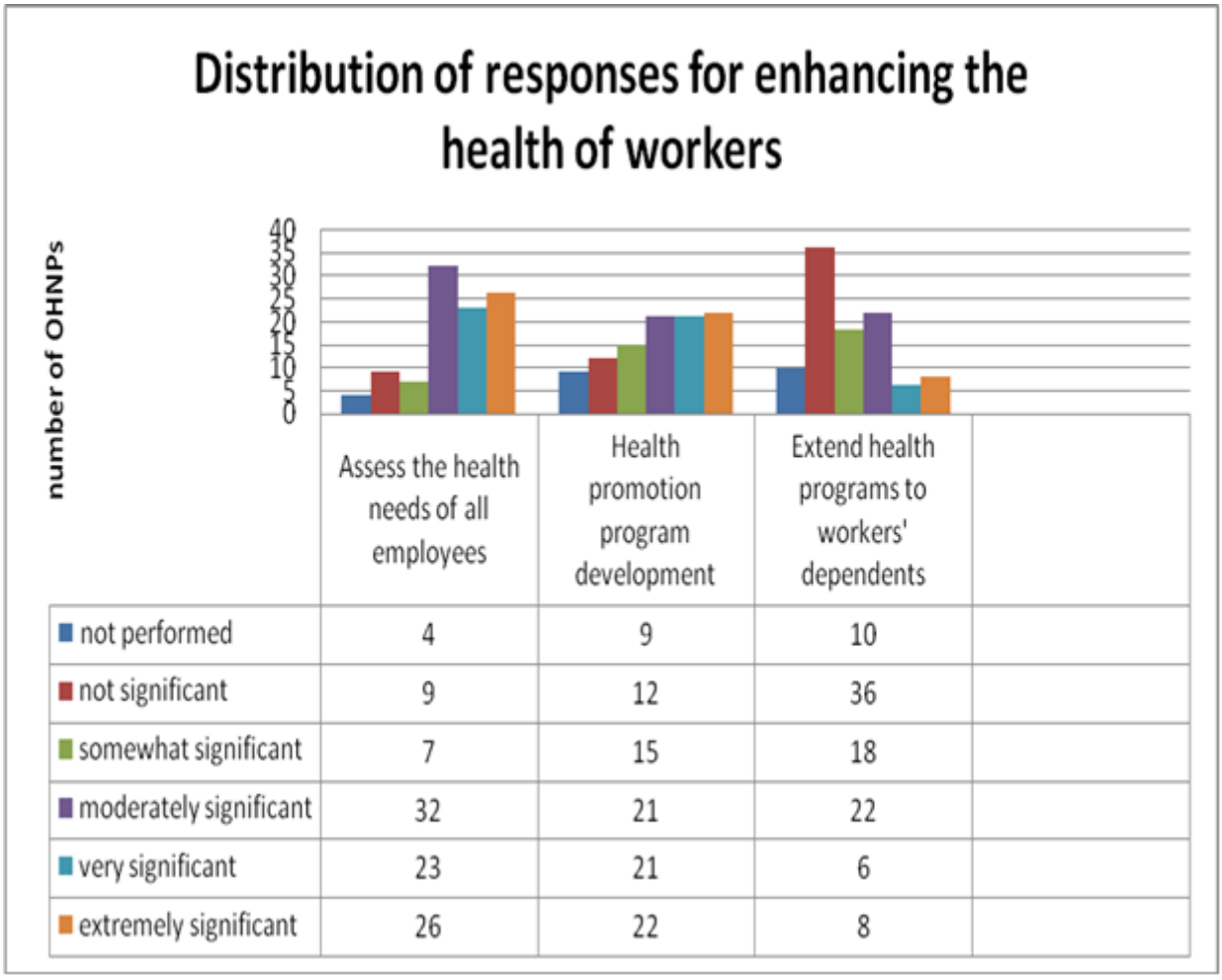
The participant's perception of education, information and training activities are shown in Table 4.12 on page 105. Less than two-fifths of the participants, (n = 40, 39.2%) of the participants felt participating in employee safety orientation and induction classes for high risk areas was either very or extremely significant. Only four (n = 4, 3.9%) indicated not performing this role activity. Planning, developing, implementing and evaluating educational programs related to worker safety and risk prevention was reported to be not significant by (n = 16, 15.7%) whereas the same number of OHNPs (n = 22, 21.6%) indicated that it was either moderately significant or very significant in their current practice. Overall, both activities were rated as moderately performed in current practice.

Table 4.12 Percentage responses for perception of provision of information, education, training and advice role activities (n= 102)

Role activity	n	NP n(%)	NS n(%)	SS n(%)	MS n(%)	VS n(%)	ES n(%)	Mean rating	Overall perception rating
Participate in employee safety orientation classes and programs for high risk areas	102	4 (3.9)	13 (12.8)	20 (19.6)	25 (24.5)	25 (24.5)	15 (14.7)	2.97	Moderate
Participate in employee safety orientation classes and programs for high risk areas	102	4 (3.9)	13 (12.8)	20 (19.6)	25 (24.5)	25 (24.5)	15 (14.7)	2.97	Moderate
Plan, develop, implement and evaluate educational programs related to worker safety, health promotion and risk prevention	102	4 (3.9)	16 (15.7)	21 (20.6)	22 (21.6)	22 (21.6)	17 (16.7)	2.91	Moderate

4.12.4 Enhancing the health of workers

Figure 4.6 below summaries the distribution of OHNPs' responses regarding significance of role activities under the enhancing the health of workers subscale. Of the participants, (n = 32, 31.7%) indicated that assessing the health needs of all employees was moderately significant, (n = 23, 22.8%) believed it was very significant and (n = 26, 25.7%) felt it was an extremely significant activity in their practice.



	Assess the health needs of all employees	Health promotion program development	Extend health programs to workers' dependents
not performed	4	9	10
not significant	9	12	36
somewhat significant	7	15	18
moderately significant	32	21	22
very significant	23	21	6
extremely significant	26	22	8

Figure 4.6 Percentage responses for perception of enhancing the health of workers (n=102)

Only nine (n = 9, 9%) reported not developing, implementing and evaluating educational programs to address particular needs of the corporation whereas twenty-two (n = 22, 22%)

thought it an extremely significant activity. A total of 42 participants (n = 42, 42%) thought it was either moderately or very significant. Most of the participants (n = 36, 36%) indicated that extending health programs to worker dependents was not a significant activity, ten (n = 10, 10%) did not extend the programs whereas two-fifths of the participants thought it was either somewhat or moderately significant in their current practice.

4.12.5 Applying research methodology to the investigation of occupational health and safety issues

As many of 34 of the participants (n = 34, 33.3%) regarded use of evidence based practice to promote quality outcomes as a very significant activity whereas (n = 18, 17.7%) thought it was not significant in their current practice. Of the participants, more than half (n = 67, 56%) felt generating analyses on trends in health promotion, risk reduction and healthcare was a moderate to very significant activity in their practice. 12 participants (n = 12, 11.8%), however did not perform this activity. The majority of the participants (n = 40, 39.2%) reported that they did not conduct independent research. Approximately one-third (n = 35, 34.3%) felt it was either not or somewhat significant in their practice. Only six (n = 6, 5.9%) indicated that it was an extremely significant activity in their current practice. Conducting independent research received the lowest ranking in this group (mean = 1.53).

Table 4.13 on page 108 summaries the findings alluded to above.

Table 4.13 Percentage responses for perception of research role activities (n= 102)

Role activity	n	NP n(%)	NS n(%)	SS n(%)	MS n(%)	VS n(%)	ES n(%)	Mean rating	Overall perception rating
Use evidence-based practice to promote quality outcomes	102	8 (7.8)	18 (17.7)	12 (11.8)	19 (18.6)	34 (33.3)	11 (10.8)	2.84	Moderate
Generate analyses on trends in health promotion, risk reduction and healthcare trends	102	12 (11.8)	10 (9.8)	13 (12.8)	27 (26.5)	30 (29.4)	10 (9.8)	2.81	Moderate
Conduct independent research to determine cost-effective alternatives for healthcare programs/services and disseminates results	102	40 (39.2)	15 (14.7)	20 (19.6)	13 (12.8)	8 (7.8)	6 (5.90	1.53	Low

4.12.6 Time devoted to traditional and expanded roles

The purpose of this segment of the questionnaire was to determine the actual amount of time, in any given week, that OHNPs believed they spent in each of the role areas. This section relates to the research objective:

To evaluate the time that the OHNPs believe they dedicate to their traditional and expanded roles in OHN practice?

Table 4.14 on page 110 highlights the findings.

Table 4.14 Mean and standard deviation of time devoted by OHNPs roles in each area of practice (n=102)

Area of practice	Role Activity	n	Time devoted to role (hours) Mean	SD	Range (hours)
Traditional roles	Assessing, monitoring and evaluating workers' health	102	11.6	9.9	0 - 42
	Managing an illness and injury treatment service	102	9.5	9.8	0 - 60
	Managing the rehabilitation of ill and injured workers	102	4.8	6.7	0 - 60
Expanded roles	Managing an occupational health service	102	13.9	9.7	2 - 40
	Assessing the work environment	102	4.2	3.0	0 - 12
	Providing information, education, training and advice	102	4.9	5.2	0 – 34
	Enhancing the health of workers	102	5.6	7.5	0 – 60
	Applying research methodology to the investigation of occupational health and safety issues	102	3.4	6.4	0 – 60

The top five roles in which the OHNPs reported spending most of their times in any given week were: managing an occupational health service, assessing, monitoring and evaluating workers' health, managing an illness and injury service, enhancing the health of workers

and providing information, education, training and advice. Participants indicated spending the least of their time in research and work environment assessments.

Considering that on average an OHNP spend 35 hours per week on OHN activities, this means on average the participant were spending at least 39.7% of their time managing the occupational unit, approximately 33.1% of their time in activities related to assessing the health of workers, 27.1% in managing an illness and injury treatment service, approximately 16% in enhancing the health of workers, and 14% providing information and training and rehabilitation services, nearly 12% in activities related to assessing the work environment and 9.7% in research related activities (*this segment of the questionnaire required participants to estimate the time they spent in the various role activity and thus the total calculated percentage time is more than 100%).*

4.12.7 Association between perception of roles by presence of other OH&S personnel, employee size, job title, industry type and years of experience

This section addresses the research objective:

To determine if there is an association between the OHNPs' perceptions of their traditional and expanded roles and some of their demographic characteristics namely (presence of OH&S personnel, employee size, industry type, job title and years of OHN experience).

Table 4.15 on page 112 reflects the results of cross-tabulations that were done to explore statistically significant associations between the OHNPs perception associated with various demographic characteristics as demonstrated by the Chi- square.

Table 4.15 The differences in perception linked to their years of experience, availability of OH&S personnel, employee size, and industry type according to the chi-square ($\chi 2$)

		p-value ($p<0.05$)				
Area of practice	**Role**	**OH&S personnel** (n= 102)	**Employee size** (n= 102)	**Job title** (n= 102)	**Industry type** (n= 102)	**Years of OHN experience** (n= 102)
Traditional roles	Assessing, monitoring and evaluating workers' health	0.015*	ns	0.001*	ns	0.033*
	Managing an illness and injury treatment service	0.004*	ns	0.001*	ns	ns
	Managing the rehabilitation of ill and injured workers	0.042*	ns	ns	ns	ns
Expanded roles	Managing an occupational health service	ns	ns	ns	ns	ns
	Assessing the work environment	0.035*	0.018*	0.052*	ns	ns
	Providing information, education, training and advice	ns	ns	0.044*	ns	ns
	Enhancing the health of workers	ns	0.004*	ns	0.003*	ns
	Applying research methodology to the investigation of occupational health and safety issues	0.000*	ns	0.000*	ns	0.004*
ns, not significant * statistically significant at $p \leq 0.05$						

No statistically significant relationship was established between managing an occupational health service and any of the demographic variables as well as between provision of education, information, training and advice and almost all variables except job title (p=

0.044). Thus one's job title was likely to influence how they perceived the role activity of training and providing information.

For the remaining roles in both the traditional and expanded role domains, having an OH&S personnel team increased the likelihood that a role activity was rated positively by OHNP and thus explained the differences in ranking. The more diversified the OH&S team, the higher the perception of the role by the OHNPs.

The degree of engagement of the OHNP in activities involving assessing worker health, clinical practice, worker rehabilitation and assessing work environment were more likely to be influenced by the availability and diversity of the OH&S personnel they worked with. The more the number and the more diverse the team, the lesser the OHNP engaged in these activities. The OHNPs were more likely to be involved in research-related activities if they had vast experience in the OHN field as well as working within an OH&S team.

4.12.8 Comparison of the OHNPs' perceptions of their traditional and expanded roles by time devoted to those roles

This section presents the findings related to the research objective:

To determine if OHNPs devote a corresponding amount of time to the role areas that are perceived as significant

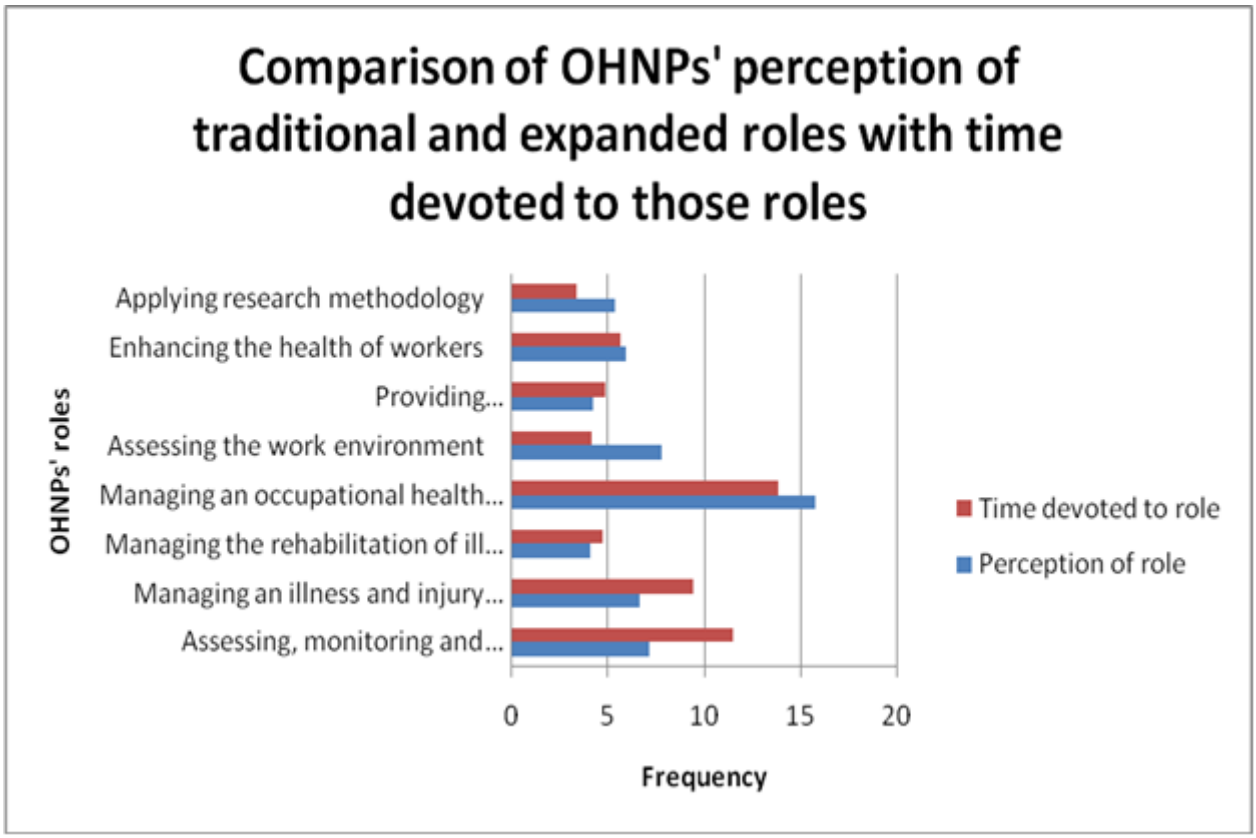


Figure 4.7 Comparing OHNPs' perceptions of roles with their time devoted to those roles (n= 102)

Figure 4.7 above depicts the differences between the OHNPs' perceptions of their roles and the time devoted in those roles. Accordingly, the OHNPs' had a positive perception of their expanded roles compared to the time they spent in those roles. On the contrary, they had relatively lower perceptions of their traditional roles yet seemed to spend relatively more time in the roles.

A paired t-test was performed to determine these differences and the Table 4.16 on page 115 below shows the findings.

Table 4.16 Comparing OHNPs' perception of their traditional and expanded roles with time devoted to those roles according to the paired t-test

Area of practice	Role Activity	Perception (mean/SD)	Time spent (mean/SD)	t	d.f.	p value
Traditional roles	Assessing, monitoring and evaluating workers' health	7.2/2.5	11.6/9.9	-4.821	101	0.0000 *
	Managing an illness and injury treatment service	6.7/2.3	9.5/9.8	2.9650	101	0.0038 *
	Managing the rehabilitation of ill and injured workers	4.1/1.6	4.8/6.7	-1.0531	101	ns
Expanded roles	Managing an occupational health service	15.8/3.8	13.9/9.7	-2.07	99	0.0410 *
	Assessing the work environment	7.8/3	4.2/3	-10.5	97	0.0000 *
	Providing information, education, training and advice	4.3/1.5	4.9/5.2	1.1281	101	ns
	Enhancing the health of workers	6.0/2.2	5.6/7.6	0.5156	99	ns
	Applying research methodology to the investigation of occupational health and safety issues	5.4/2.5	3.4/6.4	-3.0371	101	0.003*

ns, not significant d.f. degrees of freedom *statistically significant at $p \leq 0.05$

As can be inferred from Table 4.16 on page 115, results from the paired t-test showed that it was not necessarily that OHNPs devoted corresponding amounts of time to those areas perceived as significant. In the expanded role domain, although the OHNPs had positive perception in all of the areas and spending more or less corresponding time in these areas, a statistical significant relationship was established in the assessing of the work environment role (t= -10.5, d.f. =97, p = 0.000) with OHNPs reporting spending less time in this role compared to the level of perception they had of the role. Data also reveals that OHNPs were likely to rate highly the significance of research methodology and yet were not devoting corresponding amounts of time in the role (t= -3.0371, d.f. = 101, p= 0.003). The OHNPs had positive perception of managing the occupational health service activities and they were devoting corresponding amounts of time in this area of practice (t= -2.07, d.f. = 99, p= 0.0410).

In the traditional role domain, despite the lower levels of perception of the roles of assessing, monitoring and evaluation of workers' health and managing an illness and injury treatment service, the OHNPs seemed to be spending a lot of time in these roles, (p = 0.0000) and (p = 0.0038) respectively.

No statistical significance was established in the remainder of the roles which meant the OHNPs were spending more or less the same time in those roles they had a relatively low perception (less time) and relatively high perception (a lot more time).

4.13 Conclusion

This chapter presented the findings of the research through use of tables, figures and narration. The response rate to the administered data collection instrument as well as the instrument's reliability was explored. A demographic profile of the respondents was presented and described. The OHNPs' perceptions and times devoted to both the traditional and expanded role domains were reported. Associations between OHNPs' perceptions and different demographic variables were demonstrated by the Chi square test whereas differences between perceptions of roles and time devoted to those roles were established according to the paired t-test.

The following chapter discusses these findings.

5.0 CHAPTER FIVE: DISCUSSION

5.1 Introduction

The previous chapter presented and explored the findings of the research. This chapter's discussion is therefore based on the research results obtained and presented in the previous chapter. This chapter discusses the response rate, the demonstrated reliability of the questionnaire, and the demographic profile of the OHNPs who responded to the questionnaire. Task item ratings relating to the OHNPs' perception and time devoted to traditional and expanded roles and the established associations and differences noted are also discussed.

5.2 Response rate

A total response rate of 68% was achieved in this research which is a high response rate for mailed questionnaires. According to Keith (2002) that response rates for mailed questionnaires are usually small (25 – 30%) which results in the sample not being representative of the population but a response rate of between 50% and 60% is often considered acceptable return rate for survey research. Moreover, De Vos et al (2005) suggests that when working with a population of between 100 and 200, a percentage of between 32% and 45% should be sufficient for controlling sampling errors. Based on these author's observations, the results obtained by this research are representative of the participating population only and their generalisation and conclusions regarding perception of traditional and expanded roles can only be extremely tentative. Other studies that used mail questionnaires achieved the following response rates: 22% in Mellor and St John (2007), 67.55% in Yoo et al (1993), and 57% in Lusk et al (1988) study. The response

rates in this research are good considering these authors conducted their studies at national level.

5.3 Reliability of the questionnaire

According to George and Mallery (2003), the cut off value for a measuring instrument being acceptable is a Cronbach's alpha co-efficient of 0.7. The internal consistency of the questionnaire demonstrated by the Cronbach's alpha coefficient of 0.88 for the 27 non-demographic items of the instrument was good considering this cut off value. When alpha co-efficients were calculated for the specific subscales all values were well above 0.70 which according to the commonly accepted rule of thumb for describing internal consistency is acceptable (George and Mallery, 2003). These reliability scores for the instrument compared to those reported in Mellor and St John (2007), who reported Cronbach's alpha co-efficients of 0.70 and above for all subscales, is remarkable considering that the research was conducted in a different country where English is not the first language of many who responded.

5.4 Demographic profile of the participants

5.4.1 Age

Relatively few young adults are employed in the OHN field. The majority (45.5%) of the participants were in the age group 40 to 49 years followed by those in the age group 50 to 59 years (22.2%). This and the average age of participants of 42.8 years may be due to the fact that when nurses finish their basic nursing training, they work as general nurses before they move to specific areas of specialisation. No participants were found in the 60^{+} year's age group as this is usually the retirement age. The same age distribution was reported in

Australia (Mellor and St John, 2007) where the average age group of the OHNPs was 44.4 years, in Japan (Ishihara et al, 2003) an average age of 45.2 years and even in the nationwide survey conducted on behalf of SASOHN on its members which revealed that approximately 46.7% of the OHNPs who participated were in the age group 40 to 49 years.

5.4.2 Gender

It is evident from the data that relatively few males (8.8%) are employed as OHNPs. This notable gender split is largely due to the fact that nursing has traditionally been a female-dominated profession. This finding concurs with the gender ratios in South Africa (94% to 6%) (SANC, 2006) and those of OHNPs in RSA (92.6% to 7.4%) (Grainger and Mitchell, 2003) and in various other countries, for example, Brazil (89% to 11%) (Marziale et al, 2010) and USA (94.8% to 5.2%) (Marziale et al, 2010).

5.4.3 Highest nursing education qualification

The majority (65.7%) of the participants held a basic nursing diploma with only 21.6% reporting a Bachelor's degree as their highest nursing education and the rest (5.8%) indicated either a Master's or an Honour's degree. The entry qualification into the nursing profession has generally been a diploma which would explain the high number of OHNPs holding this qualification. This finding is contrasted by findings from the USA where the majority of the OHNPs had a degree as their highest nursing qualification (Marziale et al, 2010). As nurse education and training parallels the transforming healthcare system, it is to be expected that the number of people holding higher qualifications in nursing is also set to increase.

5.4.4 Highest OHN qualification

The same observation alluded to above is also demonstrated in this section. Most of the OHNPs hold diplomas in an OHN qualification followed by those with a Certificate in OHN. Up until the early 1990s, the Certificate in OHN had been the only formal postgraduate qualification, which would explain the number of OHNPs who had this qualification. When SANC promulgated the Regulations relating to the course leading to registration of an additional qualification in 1993, the Certificate was upgraded to a Diploma. Today OHNPs in the RSA can get OHN qualification at postgraduate degree levels. In this research only 4.9% indicated not having an OHN qualification compared to a total of 95.1% who held varying post basic qualifications in occupational health nursing. This showed that the population had a surprisingly high level of post-basic schooling. This is in contrast to the findings of Huiskamp (2002) in which it was demonstrated that they were a few nurses with post-basics.

The 4.9% who indicated no post-basic qualification in OHN may be explained by the fact that in RSA, as in Canada (Alleyne and Bonner, 2009), registered nurses are permitted to work in OHN before completing further education and training The finding in this research could also have been from the fact that the participants were members of an association with specific requirements for membership.

5.4.5 OH&S short courses

Data reveals that OHNPs also have numerous additional courses in occupational health and safety (OH&S) with the majority (76.5%) having had at least six or more additional courses and a minority (9.8%) reporting having between two to three additional courses. One of the requirements when employing an OHNP regardless of all other attributes is that

they have to have had some training in spirometry, audiometry and dispensing of medications and considering this scenario it was rare to find an OHNP without these short courses. Other short courses reported included HIV/AIDS counselling, travel health and safety, health assessment, biological monitoring, family planning and first aid and emergency care to mention a few.

5.4.6 Length of OHN experience

The participants' years of experience in OHN varied between six months and 30 years. The mean for the years of professional experience in the field was 11.1 years with a standard deviation (SD) of 5.9.This compared against the average age of the OHNPs of 42.8 years confirms not only that OHNPs have substantial amount of experience in the speciality but that they actually get into the OHN field later in their nursing career. Length of experience distribution in the USA was demonstrated to be between 9.9 and 11.2 years (Marziale et al, 2010) and between nine and 12.7 years in Brazil (Marziale et al, 2010) thus concurring with the evidence revealed by the data.

5.4.7 Job title

Of the participants who stated their job title, the majority had an occupational health nurse title (65.4%), followed by a health coordinator title (14.9%), manager or administrator title (11.9%) and consultant or advisor title (4%). This aspect is supported by literature from different contexts such as those found in the USA. Marziale et al (2010) observed that in the USA the common title was also occupational health nurse (30.7%) followed by manager or administrator (23.3%) and occupational health services coordinator (18%) and health promotion specialist (7.8%). By contrast, in Brazil, most common titles ranged

from manager (33.5%) followed by consultant (27.2%), educator (26.1%), occupational health nurse (24.3%) and others (33.16%) (Marziale et al, 2010).

5.4.8 Hours worked per week as an OHNP

Data reveals that on average, OHNPs worked 35 hours per week (SD= 10.4, range 0 to 60 hours). The typical OHNP worked more than 33 hours per week (n= 73, 71.6%) with a relatively few nurses (n= 3, 2.9%) reporting working a less-than-8-hour week. The 29.2% of the nurses who worked less than 33 may be as a result of increased flexibility of work as well as the options for working on a casual or part-time or fixed term contract or temporary basis in the wake of emerging economic, technological and organisational model changes and challenges.

5.4.9 Employment status

The majority (82.3%) of the OHNPs were employed in their individual workplaces on a permanent basis and 16.8% were on a contract basis. The majority were permanent employees as they may have been working under the in-house model of occupational health services and practice for either large or smaller enterprises where employers choose to provide clinical services by hosting in-house clinics employing permanent staff (Murphy, 2002; Adams et al, 2006). The contracted model in occupational health service provision involves the OHNPs working for an organisation that provides a contracted out service to enterprises (Murphy, 2002). This is argued to be an increasingly favoured method because of its cost effectiveness and efficiency (Adams et al, 2006). There is also a directly-contracted model in which independent practitioners do sessional work at the workplace, usually consultancy work which could explain the only OHNP who reported working on a casual basis.

5.4.10 Type of industry

The majority of nurses in this research were employed by various manufacturing industries (40.2%) followed by the food and beverage companies (12.8%), hospitals and medical centres employed 8.8%, mining (7.8%) and chemical industries (7.7%). Evidence in the literature indicates some variances between countries. In Australia although the manufacturing industry employed the most OHNPs, this was followed by the health sector and other industries (Mellor and St John, 2007), in Japan the manufacturing industry was the third largest employer (Ishihara, 2003) and in the USA and Brazil the largest employer was hospital/medical centres followed by manufacturing industries (in the USA) and education sector (in Brazil) (Marziale et al, 2010). This finding of this research suggests that most occupational health services are still concentrated in the private sector thus aligning itself to the results for a national salary survey of OHNPs in the RSA done for SASOHN in 2001, one of whose findings also established that most occupational health services were still concentrated in the private sector.

5.4.11 Employee size

Data revealed that the majority of OHNPs was employed by a relatively large company. Approximately 80.3% of the OHNPs were employed in companies with more than 400 employees. Supporting evidence is provided by a study conducted in Japan which found that 90% of the OHNPs were employed in companies with 300 or more employees (Ishihara et al, 2003). Furthermore, Jeebhay and Jacobs (1999) study on occupational health services in RSA found that it was more likely to find occupational health services in companies with more than 1 000 employees.

5.4.12 OH&S team

Data revealed that of the participants, none worked as a sole practitioner and the OHNPs worked with between two and 73 members of the OH&S team. The largest group of team members the OHNPs worked with were medical practitioners who were reported in 94.4% of the cases. The next largest group of team members were safety officers, who were reported in 83.3%, followed by nurses, reported in 48.1% whilst occupational or industrial hygienists and social workers were both reported in 16.7% of the cases. Mellor and St John (2007) findings support these data as most of the OHNPs (90%) worked with other OH&S personnel and only ten percent worked as sole practitioners. These findings are, however, in contrast with findings in Sato (1997) survey with OHNPs in North Carolina which revealed that the majority of the OHNPs (56.3%) worked alone and the remaining worked with at least one registered nurse and/ or other personnel. The team that has traditionally provided healthcare delivery in the workplace has been comprised of nurses and medical practitioners (Garrett, 2005) and sometimes an industrial hygienist was part of the core team. Evidence in literature supports interdisciplinary teams as it is argued it is an approach seen to be comprehensive towards provision of healthcare in the workplace.

5.4.13 Hours worked under medical direction

In this research, on average, medical practitioners worked with the OHNPs for 8.1 hours in any given week. But it must be stated that most of these medical practitioners (in 62% of the indicated cases) worked for between zero to five hours with only a few (6%) reported to be working more than 21 hours in a week. In other studies, the extent to which OHNPs worked with medical practitioners was not explored and the fact that this was explored in this research adds a unique dimension to this research.

5.4.14 Category of nurses OHNPs worked with

This research also explored the type and number of registered or enrolled nurses the OHNPs worked with, which was another unique dimension in this research. The average number of nurses the OHNP worked with was 2.3. (SD 4.4, range 0 to 35). Amongst those who indicated working with a nurse, the majority (50%) of the OHNPs did not work with any nurses and for those who worked with nurses most worked with those in the professional nurse category. Since approximately 15.7% of the participants did not respond to this question, inference of this finding to the particular association has to be done with extreme caution.

5.4.15 Job satisfaction

Overall, OHNPs were mostly satisfied with their job with only 7.7% expressing no satisfaction with their job. According to Lu et al (2007), job satisfaction is positively correlated to one's perception of their role and the actual role content reported. Role perceptions, reported times spent in these roles and their association with job satisfaction were, however, not explored in this research.

5.5 Perceptions of traditional and expanded roles

5.5.1 Area of practice: traditional

Overall, the perceptions for roles in the traditional domain were rated as moderately significant in the OHNPs' current practice. The mean rating for the eight items under this domain was 3.20. A mean rating of at least 2.0 in all the activities indicates that the activities were being performed in the OHNPs' current practice.

The OHNPs perceived three activities as being highly significant in their practice: performing periodic (mean= 4.00) and pre-placement (mean= 3.92) health assessments, and providing and supervising direct care for work related illnesses and injuries (mean= 3.78). Support from literature is provided by Sato (1997: 199), Naumanen-Tuomela (2001a) and Yun-Ping et al (2008) studies in which OHNPs rated the same role activities highly. This finding indicates that although these activities have been a feature even in early years of OHN practice, they are still an important component of today's holistic OHN practice and as Mellor and St John (2007) and Rossi et al (2000) observed, will continue to be even in the future work of the OHNP.

An interesting finding in this research was that the activity 'assisting in the rehabilitation and re-location of disabled workers' had the least rating (mean= 2.29) with a majority of the OHNPs reporting that the activity was not significant in their practice, yet providing follow-up with compensation claims was moderately significant in the OHNPs' practice. This finding is in contrast with findings from Sato (1997) who found out those OHNPs in her study performed the rehabilitation and re-location activity to a moderate extent. Furthermore, in Ishihara et al (2004) study, assessing employees with work restrictions and making appropriate job placement recommendations was one of the most frequently performed tasks amongst the Japanese OHNPs .It is thus fair to conclude that the OHNPs in this study have not been adequately trained to make such an assessment of employees' rehabilitative abilities. It could also suggest that certain restrictions exist that do not enable the OHNPs to perform this function, chief among them being the fact that they work with medical practitioners and this has traditionally been the medical practitioners' activity and the activity would normally be relegated to either physiotherapists or occupational therapists.

Another interesting finding was that evaluation of ability of absentees to safely return to work and counselling employees regarding health risks were rated as moderately significant functions of the OHNPs (mean= 2.90 and 3.03 respectively). An implication of this finding is that absenteeism monitoring should be incorporated into OHN practice. Absence monitoring has long been seen as a human resources (HR) issue for HR personnel where the emphasis has been on the number of hours or days lost in light of the financial implications of such absence or loss. Again absenteeism monitoring and management is another area to be tackled in its fullest in OHN education to equip the OHNPs with the necessary knowledge and skills to be able to utilise their capabilities in this activity.

5.5.2 Area of practice: expanded

Managing an occupational health service: With regard to the management of an occupational health service, the top five activities under this role included serving as a member of an OH&S committee as well as developing analyses for management (through record keeping) whereas developing budgets for the occupational health unit was amongst the least of activities, a finding consistent with the findings of Yoo et al (1993), Sato (1997) and Ishihara et al (2005).

An OH&S committee in companies is the most important organisation to decide issues on occupational health (Inoue, 2007). A study conducted by Inoue et al (2007) showed that OHNPs who worked with part-time medical practitioners participated more in OH&S committees than those who worked with a full-time medical practitioner. In Naumanen-Tuomela's (2001a) study on the expertise of OHNP in Finland from an OHNP perspective the OHNPs identified issues related to knowledge, skills and personality as areas that

needed development and changes in the OHNPs' work. Specific areas identified included quality improvement, marketing, occupational economics, business life and pricing of services.

Workplace assessments: Assessing the workplace was one of the roles the OHNPs spent relatively little time in (12%). Risk assessments and environmental monitoring has traditionally been the domain of industrial or occupational hygienists. Thus spending less time in this role could have been as a result of lack of time due to a heavy work burden or inadequate training in risk assessments and related skills to conduct this role. This is an indication of a need to reinforce the OHNPs' risk assessment skills through continuing education and to offer opportunities for them to put the knowledge into practice. Since not all workplaces have a resident industrial hygienist or the service is outsourced, it becomes necessary for the OHNPs to know working conditions to provide a fully fledged occupational health management program.

Enhancing the health of workers: OHNPs had a lower perception of the role activity related to extending health programs to workers dependents with a majority (36%) indicating that it was not a significant function and 10% reporting that they did not perform this activity. According to the WHO's Healthy Workplace Framework and Model (WHO, 2006), to bring about positive changes in the health of workers which will in overall support organisational success, the health of workers should include non-work related factors and this included embracing the workers' families as well (Chu et al, 2000, Burton, 2010). The Framework identifies four avenues of influence for a healthy workplace: the physical work environment, the psychosocial work environment, personal health resources in the workplace and enterprise community involvement (Burton, 2010). This means to enhance the health of workers requires a tackling of all four avenues. Evidence from

literature suggest that workplace wellness programs have not yet moved from the focusing on individual workers and their behaviour modifications (Burton, 2010). The workplace still needs to embrace the totality of the worker and that includes his social status as well.

Research: A majority of the OHNPs were not conducting independent research. Grainger and Mitchell (2003) identified this as a lacking area and recommend that it be a focal area in future practice, in particular encouraging OHNPs to not only conduct the research but to attend conferences and to disseminate findings of their research. It is in this manner that the speciality can be advanced.

5.5.3 Time devoted to traditional and expanded roles

Overall, OHNPs devoted more time to traditional roles than the expanded role but the expanded role "managing an occupational health service" took the most time (39.7%) of the average OHNP's weekly hours whereas research related activities (9.7%) took the least of time. An interesting finding in was that the total times that OHNPs spent in both domains in any given week exceeds 100%. This could either have been as a result of the question itself which required the OHNPs to give an estimate or indeed this was indeed the status of things in which case it points out to the overlapping of the OHN role activities. Support for this finding comes from Naumanen-Tuomela (2007) study of the expertise of OHNPs in Finland from the OHNPs perspective. In the Naumanen-Tuomela (2007) study, 16% of the OHNP's weekly hours were accounted for by administrative and office work and only 7% was for research and other activities (pp.100). Also one of the objectives of Naumanen-Tuomela (2007) study was to characterise the OHNPs' work and the key theme that emerged was that of overlapping task activities in the OHNPs' work.

5.5.4 Area of practice: traditional

Data revealed that on average on a weekly basis, OHNPs spent approximately 33.1% of their time assessing workers' health, 27.1% managing an illness and injury treatment service and 14% in rehabilitation services. These findings are similar to those of Lusk et al (1988), Martin et al (1993),Yoo et al (1993), Sato (1997), and Naumanen (2007) whose studies also found that the three roles alluded to were also top three roles reported by the majority of nurses in their studies.

5.5.5 Area of practice: expanded

The role that OHNPs believed took most of their time was managing an occupational health service where the OHNP devoted 39.7% of their time followed by health promotion activities (16%), education activities (14%), workplace assessments (12%) and research-related activities were regarded as taking the least of their time (9.7%). This result is consistent with the findings from Sato (1997) and Mellor and St John (2007).

5.6 Factors influencing perceptions of roles

The two major perspectives of the Role theory state that company structure (structural-functionalist perspective) and expectations from others one interacts with (symbolic-interactionist perspective) determine the behaviour (role) for certain positions (Martin et al, 1993). In this research, the perception of the traditional and expanded roles appeared to be mainly dependent on the availability of OH&S personnel as well as the OHNP's job title. However, managing the occupational health service was not statistically significant when associated with any of the demographic variables.

Employee size influenced the perception rankings for workplace assessments (p= 0.018) as well as health promotion activities (p= 0.004). This finding is congruent to findings from Jeebhay and Jacobs (1999) study on occupational health services (OHS) in RSA. In this study they concluded that provision of OHS, including risk assessments and health promotion activities, was likely in companies with a bigger workforce (>1 000). Martin et al (1993) demonstrated that OHNPs who worked with less than 500 employees were more likely to follow-up compensation claims and that the higher the employees size the more likely there was inter-disciplinary practice.

The research also established associations between health promoting activities and industry type (p= 0.003), and workers' health assessments and research related activities and the years of experience that OHNPs had (p= 0.033 and p= 0.004 respectively). These findings mirror the propositions of the Role Theory.

Thus, concludes Martin et al (1993), any structural change that occurs in a company, as a result of advancing technology for instance, as well as knowledge expansion will change perception of self and others. This is likely to result in re-modification and redefinition of OHNPs' roles (Martin et al, 1993).

5.6.1 Comparison of perception of roles with time devoted to those roles

Findings revealed that it was not necessarily that OHNPs devoted corresponding amounts of time to those areas regarded as significant. Statistically significant relationships between perception of a role and time spent in that role were established in the following roles: assessing workers' health (p= 0.0000), managing an illness and injury treatment service (p= 0.0038), managing an occupational health service (p= 0.0410), workplace assessments (p= 0.0000) and research methodology activities (p= 0.003). In the traditional role domain

perception was lower than the time devoted to the roles and vice versa in the expanded role domain.

Evidence of this gap has also been demonstrated in other studies (Ishihara et al, 2004; Mellor and St John, 2007).

5.7 Conclusion

This chapter discussed the results of the research reported in the previous chapter.

The chapter began by discussing the response rate and the reliability of the research instrument that was used. Research findings were then discussed in terms of the demographic characteristics of the participants, OHNPs' perception of their traditional and expanded roles and the times that they devote to these roles as well as whether they were devoting corresponding times to those areas perceived as significant.

The following chapter gives a summary of the research, concludes and discusses the limitations of the research and makes recommendations for future research. Concrete proposals are also made by the researcher.

6.0 CHAPTER SIX: SUMMARY, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

6.1 Introduction

The purpose of this research was to investigate the perceptions of occupational health nursing practitioners of their traditional and expanded roles.

The previous chapter discussed the research findings in relation to this purpose. This chapter concludes the research by exploring the significance of the findings and their implications to OHN practice. The chapter also discusses the limitations of the research and highlights recommendations for future research.

6.2 Summary and conclusions of the research

The research sought to investigate the perceptions of the OHNPs of their traditional and expanded roles and the time they believed they dedicated to these roles.

The following are key research findings and conclusions made based on the questions and assumptions of the research (described in section 1.7).

6.3 Summary of the research

6.3.1 What are the OHNPs' perceptions of their traditional and expanded roles in occupational health nursing practice?

The research findings found the following in relation to this question:

- Overall, the perceptions for roles in both the traditional and expanded role domain were rated as moderately significant in the OHNPs' current practice
- The OHNPs tended to rate the roles in the traditional domain higher than those in the expanded role domain
- The OHNPs perception of the top five traditional roles from highest to lowest perception is as follows:
    - Performing periodic health assessments
    - Conducting pre-placement physicals
    - Providing and supervising direct care for job-related emergency and minor illness episodes
    - Providing follow-up of employees with compensation claims
    - Provision of direct care and treatment for non-work related illness and injuries
- The OHNPs' perception of the top five expanded roles from highest to lowest perception is as follows:
    - Developing analyses for management noting statistics related to employee injury and exposure to hazardous substances and action taken to correct problem
    - Assess the health needs of all employees

- Develop and implement policies and procedures based on professional guidelines in occupational health
- Make recommendations for more efficient and cost-effective operation of the healthcare department
- Serving as a member of the OH&S committee

- The OHNPs had a low perception of the following role activities:
  - Traditional:
    - Assisting in the rehabilitation and relocation of disabled workers
  - Expanded:
    - Conducting a situational analysis of the organisation as a whole
    - Participating in environmental monitoring
    - Extending health programs to workers' dependents
    - Conduct independent research

The assumption made under this research question was:

ASSUMPTION 1:

The perception of OHNPs of their traditional and expanded role is the same in current OHN practice

As evidenced from the research data, this assumption was proven to be partly correct as overall OHNPs indicated a moderate significance of most role activities in both domains with a few exceptions that occurred frequently in the expanded role domain. Since role perception is likely to be seen in performance then accordingly OHNPs can be said to be performing the roles at least to some extent in their practice.

6.4 What are the differences in OHNPs' perceptions of their traditional and expanded roles with respect to the following:

6.4.1 Job title

Job title was demonstrated to be statistically significant, and thus explaining the differences between ratings, in the following roles:

- Assessing, monitoring and evaluating workers' health (p= 0.001)
- Managing an illness and injury treatment service (p= 0.001)
- Assessing the work environment (p= 0.052)
- Providing information, education, training and advice (p= 0.044)
- Applying research methodology (p= 0.000)

6.4.2 Years of OHN experience

There was an association between how the OHNPs perceived the roles of worker health assessments (p= 0.033) and applying research methodology (p= 0.004) and the number of years of OHN experience they had. The higher the length of experience the higher the OHNP rated the significance of worker health assessments and the more likely they were to engage in research activities

6.4.3 Presence of other OH&S personnel

This factor had the most effect on how OHNPs perceived their roles and was significant in all the traditional roles.

Statistical significance was also established between the number of hours the OHNP worked in a week with a medical practitioner and managing an illness and injury treatment service (p= 0.025), managing the rehabilitation of ill and injured workers (p= 0.042), assessing the work environment (p= 0.046), enhancing the health of workers (p= 0.027). The less time a medical practitioner worked with the OHNP, the more role activities in the curative domain the OHNP adopted. Those OHNPs who worked relatively longer hours with medical practitioners were less likely to devote a lot of time towards worker rehabilitation, health promotion and industrial hygiene-related activities.

The type and category of nurses OHNPs worked with was statistically significant for enhancing the health of workers (0.01), worker health assessments (0.043) and applying research methodology (p= 0.003). The OHNP who worked with more nurses of a higher category as prescribed by SANC, the more time they had to be involved in research-related and workplace health promotion activities and the less likely they devoted time to those activities that the other nurses could be delegated to do.

6.4.4 Type of industry

The type of industry influenced the OHNPs' perception of enhancing the health of workers (p= 0.003). An OHNP was more likely to engage in workplace health promotion activities in those companies whose hazards have the highest consequences such as the mining and construction industries.

6.4.5 Employee size

OHNPs' differences in perception of assessing the work environment (p= 0.018) and enhancing the health of workers (p= 0.004) could well be explained by the differences in

company employee sizes. The larger the employee sizes, the more highly regarded the activities of workplace health promotion and occupational hygiene.

The assumptions made under this research question were:

ASSUMPTION 2:

OHNPs' personal characteristics influence the perception they have of their traditional and expanded roles in current OHN practice

ASSUMPTION 3:

Organisational factors and workplace characteristics influence the perception of the OHNPs of their traditional and expanded roles in current OHN practice

These assumptions base on the Role Theory premise that structure and interaction influences the behaviour or actions that an individual will assume. Research data revealed that there are certain characteristics in the work environment such as employee size, one's job title and industry type, and the OHNP's personal characteristics (for example highest OHN qualification attained) as well as the people with whom the OHNPs work that are likely to influence, at least in part, the role that the OHNP will adopt. The assumptions were thus proven partly correct in most cases in both the traditional and expanded role domain.

6.4.6 What are the OHNPs' perceptions of the time dedicated to traditional and expanded roles in OHN practice?

OHNPs believed they spent most of their time in the following top five roles: managing an occupational health service, assessing workers' health, managing an illness and injury treatment service, enhancing the health of workers and providing information, education, training and advice.

OHNPs regarded workplace assessments and applying research methodology as taking up the least of their times in OHN practice.

The assumption made under this research question was:

ASSUMPTION 4:

The amount of time an OHNP dedicates to both traditional and expanded roles is the same in current OHN practice

This assumption was proven incorrect by the research data. The data suggests that the OHNP spends relatively more time in traditional role activities as compared to the expanded role activities.

6.4.7 Do OHNPs devote a corresponding amount of time to those areas of practice perceived as significant?

When perception of roles and the time devoted to those roles are compared against each other, OHNPs were not devoting a corresponding amount of time to most of the roles

except enhancing the health of workers, rehabilitation services and health education services.

The research assumption made under this research question was:

ASSUMPTION 5:

The OHNP will devote a corresponding amount of time to traditional and expanded role areas that are perceived as significant in current OHN practice

This assumption was proven partially correct. The OHNPs devoted corresponding amounts of time to two of the expanded roles (health promotion and health education roles) and one traditional role (rehabilitation services). For the rest of the roles the research data revealed a trend whereby a role was perceived as significant in current practice and yet less time was devoted to that role and vice versa.

6.5 Conclusions of the research

The following can be concluded about the research:

OHNPs' overall moderate perception of their traditional and expanded roles indicates that the roles are performed to some extent in their practice.

A disparity or gap exists between what OHNPs' expectations of their roles are and what actually happens in practice. This then is one way of conducting a needs assessment technique that points out where training and continuing education need to be targeted.

OHNPs do not necessarily devote corresponding amounts of time to areas that they perceive as significant which may point out to an awareness of their lack of knowledge, lack of skills, lack of money or low priority of company commitment

Role Theory provided an important framework to understand the perception of roles by the OHNPs as the extent to which structure (in terms of job titles, employee size, industry type and length of OHN experience) and interaction (in terms of the availability of other health and safety personnel) influence role perception was demonstrated through association tests.

6.6 Limitations of the research

According to Burns and Grove (2005), limitations denote those theoretical or methodological restrictions of a study which may decrease the credibility as well as the generalisability of its findings. The research does have its fair share of limitations but nevertheless it has revealed some comparative data, albeit small, on OHNPs' perceptions of their roles and thus represents an important step toward investigating role perceptions and role expectations of OHNPs in the RSA.

The following were the limitations of the research:

- The research was restricted to the Central Gauteng district and not only that; it also restricted the participating OHNPs to one branch of SASOHN. This meant that the perceptions of other OHNPs in other regions were excluded. Thus findings cannot neither be generalised to other SASOHN members nor to those of the RSA OHNPs. Generalisation of the research findings can only be done tentatively.

- Only 78 respondents participated in the research, further limiting the generalisability of the results.

- Essentially 35% of the sampled population did not participate in the research. These individuals could have had different characteristics from those who responded. The characteristics of the non-responders to see the extent to which they differed from the responders was not explored in this research.

- A threat to the internal validity of the research was posed by factors such as the use of self-report methods, a cross-sectional design and systematic sampling.

- Triangulation of research instruments, instead of just utilising the self-report method, might have added further useful insights to the research. For instance, in-depth interviews with the OHNPs through focus group discussions and observations of OHNPs in their natural settings would have yielded qualitative data that could have enriched the quantitative aspect used in this research.

6.7 Recommendations for future research

In light of the findings of this research, future research prospects should focus on a number of key areas:

- An identification of factors which contribute to successful transition into the public health role and hence expanded practice from traditional work practices

- The role perceptions and role expectations of the OHNPs role set, particularly the employers, employees, students of OHN practice and the four functional members of the OH&S team (safety officers, industrial hygienists and medical practitioners) need to be explored

- Evaluation of the education for OHNPs to see if it meets international and regional trends as well as strategies to implement educational support such as formal recognition at national level of education programs that prepare OHNPs for an expanded role, along with accreditation.

- It is also recommended that research be conducted in collaboration with SANC; stakeholder groups to not only define what constitutes an expanded role in OHN but to identify strategies to heighten awareness of that role

- Similar research needs to be conducted in other regions in Gauteng and parts of the RSA for a national comparison

6.8 Concrete proposals

The following proposals, stemming from the research, are thus made:

- Establishment of a South African Board for Occupational Health Nurses (SABOHN) to act as an independent occupational health nursing speciality certification board, which will promote professional competencies for OHNPs by providing training and technical support for continuing professional development through life-long learning and establishing certification

- Dissemination of research findings through workshops, and conferences to stakeholder groups

- Employers to be encouraged to foster an organisational climate that utilises the full potential of OHNPs since the role development for OHNPs is also confined by managerial requirement (structural and organisational perspectives of Role Theory)

- Evidence-based practice to be a core module in nursing curriculums

6.9 Conclusion

In view of the fact that there is relatively little research that has been done in an RSA context on the views of the OHNPs of the significance of their roles, the researcher embarked on this research endeavour to investigate the perceptions of the OHNPs of their traditional and expanded roles and the time they believed they devoted to those roles.

The overall outcome of the research demonstrated a gap or disparity that exists between the OHNPs' views of the roles (perceptions) and what they were actually doing in practice (time devoted to each role). This not only pointed out of the factors contributing to role conflict and occupational stress but is a good needs assessment technique that can indicate where training and continuing education should be targeted.

This research, although small, contributed to the body of knowledge of the roles and functions of an OHNP in an RSA context and the researcher believes the research findings will help create an awareness of these roles. Since employers to some extent influence the practice of OHNPs within a company, the research findings could be used by them as a means to set up support systems in the workplace to ensure maximum utilisation of the OHNP's capabilities.

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8.0 APPENDICES