Chapter one

Introduction

1.1 Introduction

Assuring good quality of services is an ethical obligation of health care service providers, including radiographers[1]. As frontline service providers, radiographers play an important role in delivering quality of service[2]. As part of radiographic technique, patient care and quality assessment efforts form part of the organization's overall quality management system[2]. The Department of Health's strategic framework for 2000-2004 identified improvement in quality of service delivery as one of the four key challenges facing the health sector in South Africa[3]. The revised system may require health care services to be influenced by values of productivity, efficiency, effectiveness and rationalization of financial resources[4], and can result in service providers providing more patient care with limited human resources[5]. In this context, both the quality of service delivery and the acceptance of change by employees are issues that need to be investigated[6].

For a successful quality service rendering one needs an entire workforce that is motivated to participate actively in achieving quality improvement[7]. Individuals will not be persistent and effective in delivering quality of service if a revised organizational system is perceived as stressful[8]. In such a work environment and in deploying a mechanism of coping with the situation, radiographers are likely to experience some strain. Job strain can be conceived as an individual's emotional or psychological reaction to environmental demands[8].

Commitment is a manifestation of the individual's own self and reflects value standards that are basic to human existence[9]. Commitment in the workplace can take various forms (affective, normative or continuance) and have the potential to influence organizational effectiveness and the well-being of employees[10]. Work experience develops from a synthesis of employees' perceptions about the work they do, the organization they belong to and the interpersonal relations that bring these entities together[8,9]. Perceptions held by employees play an important role in their decisions to enter, stay with or leave the organization[8,9]. Therefore, an increase in job strain may lead to increased occupational stress, decreased organizational commitment, and eventually result in poor service delivery[9].

It becomes important to investigate the effect of occupational stress and organizational commitment on diagnostic imaging radiographers in rendering quality service during this period of change. The background for this study further supports the need for investigation.

1.2 Background

According to the Health Summit Report, the quality management system in public health as a whole is weak or absent[3]. Managers at all levels are often more concerned with balancing budgets than ensuring good quality of care, and frequently lack the skill to manage quality[3]. Clients (mainly patients) often experience a lack of respect and at times overt abuse by health care service providers. This can be attributed to the low morale and motivation reported by frontline health care service providers. Low morale and motivation are indicative of some level of negative work experience, which is confirmed by the following statement: "That bad practices were ignored and good practices were not

rewarded[3]." In addition to this, rigid management was included as a contributing factor to problems in the work environment of the health sector[3].

The private health sector has a number of financial disincentives to quality service delivery[3]. Paying service providers a fee for each service rendered through a third party such as a medical aid scheme, is internationally recognized as causing inefficiency by encouraging the provision of unnecessary procedures and drugs[3]. At the same time the non-medical aid population make use of private medical practitioners involving a cash payment mechanism. Often providers are unable to provide quality of service (for example radiography examinations and physiotherapy) due to insufficient funds. These patients are often referred back to the public health organization where they have to pay an additional fee. They are also required to undergo a clinical re-examination, and where applicable re-radiographing (from the researcher's observation and experience). This has a negative influence on organizational outcomes (such as financial resources and ineffective personnel utilization). The implication for the patient is additional financial cost, delay in treatment and additional radiation dose (where applicable).

Over the past two years radiography staff turnover at public and private health organizations has increased by 45% - 50%. Several radiographers have sought employment overseas. Also, 5% of the radiographers left the profession to pursue alternate careers in medicine, dentistry, and so forth. Upon interviewing some of these individuals reasons for leaving were given as no reward for hard work, no challenge, increased shift work due to staff shortage, poor salary, and lack of support by management. From the literature persued, increased occupational stress and burnout are some of the main reasons for leaving the organization[4,11,12,13]. This does not benefit the organization as individual skills and channels of communication may be lost[14]. The depletion of skilled and experienced staff hampers the quality of service delivery. For the

remaining staff it may result in additional stress, as they are responsible for the training and orientation of new recruits[14]. In the public sector recruits are mainly junior radiographers. Due to lack of experience, the junior radiographers may still have to perform examinations for which they have not developed the acquired competency. In addition, they are adapting to a new working environment resulting in some strain on them to perform.

It is not known to what extent workload and equipment breakdown contribute to the present turnover of radiography staff, because this has become such a common occurrence in the public organization. Also there is a fair amount of lack of communication between radiographers and clinicians upon requesting radiographic examination procedures. These factors can lead to additional strain and result in low commitment amongst radiographers to the organization in rendering a quality of service delivery. For the patient this implies poor service delivery (such as unnecessary radiation dose and increased waiting time).

From the above discussion it was clear that there is some degree of expectation from the radiographers to cope with the demands placed on them whilst having little control over the situation (rendering quality service)[15]. With reference to the introduction of this study (see Section 1.1) radiographers do experience some degree of work negativity and this can eventually affect the commitment (loyalty) of radiographers to the organization, which will eventually affect the overall organizational outcomes (such as quality service). The rationale further supports the importance of this study.

1.3 Rationale

The rationale for this study is based on the background setting, which is supported further by theory. The low morale and lack of motivation reported by frontline service providers[3], dissatisfied clients and the recent high turnover rate amongst radiographers is a concern as it impacts negatively on the organization's outcomes, namely performance and rendering quality service (see Chapter one, Figure 1.2, p6). Therefore, it is important to investigate factors that can contribute to the negative work environment, namely occupational stress, which in turn can influence the level of commitment from radiographers to the organization. This enables the organization to retain radiographers by determining the sources of and levels of occupational stress and investigating the level of organizational commitment. This will benefit management in devising coping strategy mechanisms. In addition it will encourage staff motivation, thus creating a positive working environment for radiographers. The improvement of the quality of working life for radiographers will have a direct impact on the level of quality service rendered.

From a theoretical perspective, work experience develops from a synthesis of employees' perceptions about the work they do, the organization they belong to and the interpersonal relations that bring these entities together[8,9]. Perceptions held by employees play an important role in their decisions to enter, stay with or leave the organization[8,9] This is supported by the causal model below:

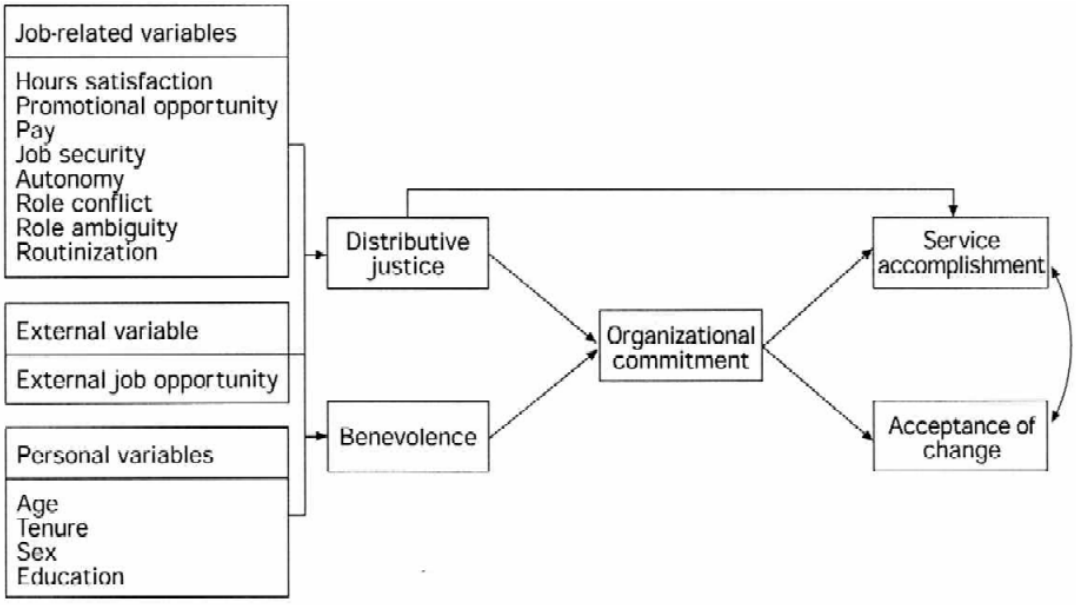

Figure 1.1 Causal model of service accomplishment and acceptance of change[6]

This model examines job variables at two levels of organizational outcomes, service accomplishment and acceptance of change[6]. Disruptive justice is a measure of the fairness of the treatment of employees and benevolence is the form of managerial support distributed within the organization[6].

For most services rendered in health care, service delivery occurs through human interaction[12]. It implies that the client enters the service encounter with predetermined expectations of how the service provider is likely to behave[8,16].

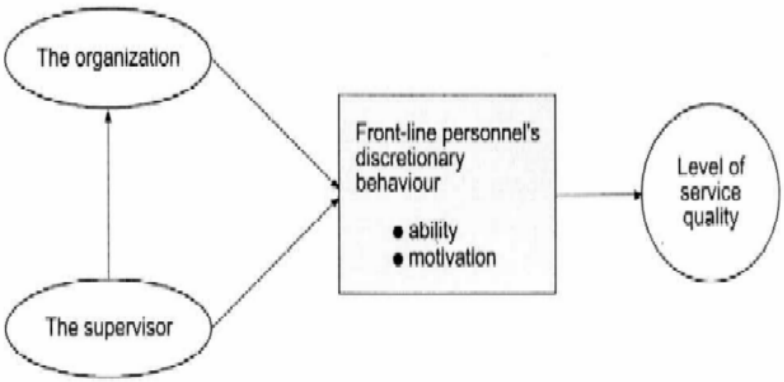

Figure 1.2 An illustration of organization and supervisor influence on employee discretionary behaviour[16]

The service provider will only behave in the expected manner (expected by management and clients) if he/she wants to (see Figure 1.2 p6)[16]. Discretionary behaviour will be determined by, among others, the existing relationship with the supervisor, and the extent to which employees identify with the organization and its environment[8]. The work environment created by the employee's supervisor, in turn, influences organizational attachment[8]. The quality of management will thus strongly influence the level of service quality provided by employees[7,8].

With reference to the above discussion, it appears that the degree to which an employee identifies with the organization will have an important bearing on his/her behaviour during a service encounter[7]. Therefore, committed employees are more likely to be better quality service providers due to their willingness to employ discretionary effort beyond the normal call of duty[8]. An employee who is committed to the organization is likely therefore to render better service. In order to further support the rationale for this study a brief literature review was conducted.

1.4 Preliminary literature review

A literature search on the effect of occupational stress (OS) and organizational commitment (OC) on rendering quality service amongst practising diagnostic imaging radiographers revealed the following. Limited studies were found on occupational stress[4,14,17], burnout[4, 11,13] and hardiness[4] amongst diagnostic imaging radiographers.

Literature reviewed revealed OS amongst radiographers is a common occurrence. Workload is a common source of stress, as is patient interaction[17], being on call and shift work[12, 14], inadequate pay[4], unnecessary examinations requested[4,17] and staffing shortages[4,14]. Limitations of the study on OS amongst radiographers in Australia were that

the results of this study could not be compared with other studies because OS was not defined[18]. Also, radiographers who suffered from work-related depression did not miss work due to their illness and their levels of performance were not measured. It is important to monitor the performance of these individuals in view of the fact that this may lead to impaired performance in productivity and quality of service rendered[15]. Recommendations mainly addressed organizational intervention in minimizing stress; management fostering a social supportive environment; and fostering commitment by sharing organizational goals[4].

In summary, the above findings will assist the researcher in compiling and comparing findings of this study on the sources of stress and level of stress experienced by radiographers.

However, a further search to support the purpose of this study was conducted. This search revealed that stress is an integral part of everyday life and simply cannot be avoided[19]. Individuals encounter stressful stimuli many times a day in their personal and social domain, as well as at work, as it is an essential aspect of human existence[19]. If work is unfulfilling in that it prevents employees from fully realizing their own potential and developing their human capacities, the nature of work becomes a primary stressor[19]. Therefore it is important to examine the quality of work life of individuals in health care professions to determine whether the workplace supports or promotes a positive environment[20]. Factors that produce negative work experience (such as stress) are likely to produce negative outcomes, or lower levels of satisfaction and commitment to the organization[21].

Moore[22] found a significant relationship between several of the constructs of OS, (such as insufficiency, conflicting role demands, vocational strain, interpersonal strain) and OC. Also, the relationship between an individual's rational/cognitive coping and OC shows that

individuals who are better able to use cognitive skills cope better with OS. A study on OS and OC of staff nurses revealed that OS in terms of work overload and time pressure, poor relationships with staff, pressure from patients, organizational and management problems and career issues had a negative correlation with OC ($p < .01$)[23]. Meyer[10] et al., believes that there is a positive relationship between OC and performance. Wiener, Vardi[24], and Steers[25] reported positive but weak correlations between OC and organizational outcomes such as, the level of service rendered.

With reference to the above findings the relationship between OS and OC is inconclusive for the purpose of this study, and therefore necessitates further research.

1.4.1 Research question

Based on the clinical experience as discussed in the background (see Section 1.2, p2) as well as previous research findings in the preliminary literature review of this study (see Section 1.4, p7), and the rationale for this study the following research question is put forward:

What is the effect of OS and OC on rendering quality service by diagnostic imaging radiographers? Taking the research question into consideration, it is important to clarify and define the key concepts of this study.

1.5 Definition of terms and clarification of concepts

The following constitutes the definitions and clarification of the key concepts of this study.

1.5.1 Rendering quality service

The term quality according to the Oxford Dictionary is defined as degree of excellence or accomplishment[26]. In health care quality service delivery is governed by the following principles:

- **Quality design**

Quality design entails setting of objectives, allocating resources, establishing guidelines to ensure effectiveness and safety, and maximizing access[1].

- **Quality control**

Quality control monitors programme activities and employee performance to ensure that they meet quality objectives[1].

- **Quality improvement**

Quality improvement seeks to keep raising the level of care no matter what the current level -- often achieved by problem-solving mechanisms[1].

In accordance with the Health Summit Report, rendering quality service is concerned with the interface between the health services and the community[3]. At its most basic quality service rendering is defined as doing the "right thing[1]" that is providing effective care right (efficiently), in the right way (meeting the expectations of the client)[3]. In health care this means offering a range of services that is safe and satisfies the needs and wants of the client.

Taking all aspects of rendering quality service into consideration for the purpose of this study, it is defined as rendering services that are safe and satisfy the needs and wants of the client. That is the positive perception/s of the value created by the service provider.

For the purpose of this study delivering quality service is assessed against the following criteria:

- The organizational context and characteristics within which radiographers perform their tasks.
- The physical environment of the x-ray department such as waiting room and change room.
- Resource availability, for example, enough examination rooms, equipment and accessories, support staff to conduct radiographic examinations. Therefore resulting in radiographic examination with minimal discomfort to the patient in obtaining an optimal quality radiograph.
- Patient contact time such as providing emotional support to the patient, demonstrating respect at all times, effective communication whilst conducting a radiographic examination to avoid repeat radiographs.
- Minimization of patient waiting time.

1.5.2 Occupational stress

Cox[27], defines stress as a "perceptual phenomenon arising from a comparison between the demand on the person and his ability to cope." The interaction model of stress discussed by Cox[27], implies that varying demands (stressors) are made upon an individual in any situation, and these may be physical, emotional or environmental in nature. However, the degree of stress experienced by different individuals in any single situation will vary due to personal factors[19]. An individual's reaction to stress can also be physiological (state of arousal). This can be described as, for example, when an individual who experiences a conflict situation in the workplace suddenly experiences a dry mouth and/or heart palpitations. Thus the incompatibility is not only psychological but also physiological[19].

Taking all of the above into consideration OS, for the purpose of this study, is defined as the harmful emotional (that is anxiety and depression), physical (that is insomnia, headaches, and infections), and behavioural responses (that is job dissatisfaction, lower productivity and poor work quality)[27] that occur when work requirements do not match the capabilities, resources and needs of the worker[18].

Based on this definition, the sources of stress will be divided into organizational and extra-organizational stressors.

1.5.2.1 Organizational stressors

Organizational stressors are intrinsic job factors (such as poor working conditions, workload), role in organizations (such as role conflict and role ambiguity), career development (such as lack of promotion policies, and job security, poor relationships at work), and organization culture (such as lack of participating in decision latitude)[28].

1.5.2.2 Extra-organizational stressors

Various stimuli outside the work situation may also contribute to work stress. These are family problems, personal problems, and social problems[28].

1.5.3 Organizational commitment

The term organization for purposes of this study refers to the institution (in the public sector it is the hospital) or a company (in the private sector it is a subsection within the hospital and radiologists are the managers) within which radiographers are employed. The term organizational commitment is used instead of employee commitment because this study investigates service delivery from an organizational outcomes perspective, taking the

entire organizational context (organizational culture) within which the radiographer is expected to perform into consideration.

With reference to the introduction of this (see p2) affective commitment refers to identification with and involvement in an emotional attachment to the organization[10]. Normative commitment refers to commitment based on sense of obligation to the organization[10]. Continuance commitment refers to commitment based on employees' recognition of the costs associated with leaving the organization[10].

For the purpose of this study OC is defined as a psychological state[10] in characterizing an individual's relationship with the organization, in accepting the goals of the organization and the willingness to exert considerable effort to achieve its goal in rendering an above-acceptable level of service rendered[20].

1.6 Research programme outline

In order to conduct the above study it was important for the researcher to outline the research programme.

1.6.1 Chapter one - Introduction

The aim of this chapter was to introduce the reader to the importance of conducting this research by outlining the background, rationale, and a preliminary literature review to formulate the research question and clarify key concepts of the terminology that will be used throughout this study.

1.6.2 Chapter two – Literature review

The aim of this chapter is to further support the theoretical and research findings outlined in chapter one. Secondly, the theoretical underpinnings will assist the researcher in identifying the methodology to conduct this study and form the basis for the interpretation of the findings of this study.

1.6.3 Chapter three – Methodology

The aim of this chapter is to answer the hypotheses of this study by identifying the specific objectives by gathering data for interpretation for the findings of this study and by enabling the researcher to answer the problem statement.

1.6.4 Chapter four – Results

The aim of this chapter is to make a detailed analysis of the results obtained by a graphical presentation of the results.

1.6.5 Chapter five – Discussion

The aim of this chapter is to validate the findings of this research with the background and rationale for this study outlined in chapter one and supported by theoretical background knowledge as outlined in chapter two.

1.6.6 Chapter six – Conclusions and recommendations

The aim of this chapter is to outline the implications of the findings in relation to the research question. It also reviews the benefits of conducting this research, conducts an objective critical evaluation of the research project, and makes recommendations for future research studies.

1.7 Conclusion

It is hoped that this study will result in a better understanding of occupational stress among radiographers as frontline service providers and as a possible contributing factor to the low morale and motivation as reported in the Health Summit Report[3]. Included in this study is the issue of organizational commitment due to the high turnover rate. A high turnover can also be as a result of increased stress and burnout (see Section 1.2, p2-4). This can have a negative impact on the overall organizational outcome, namely the rendering of a quality service.

With reference to the introduction and background of this chapter implication drawn from this research can yield potential practical contributions such as:

1.7.1 Enhancing radiographers' understanding of the adverse influence of occupational stress, and identifying effective ways of coping with it.

1.7.2 Encouraging the development of training programmes and organizational development efforts towards improving quality of work life for radiographers.

1.7.3 Assisting management in enhancing the commitment of radiographers to the organization and thereby preventing the high turnover rate.

1.7.4 Assisting human resources in creating a better work environment that will benefit managers, radiographers and ultimately the patients.

1.7.5 Providing the basis for further research projects, as this is the first study on occupational stress and organizational commitment amongst diagnostic imaging radiographers.

1.8 Summary

In summary, the purpose of this study is to investigate the effect of OS and OC on diagnostic imaging practising radiographers in rendering a quality service. The following objectives were identified for this study taking into consideration the possible practical contributions (see Section 1.7, p15).

(a) To identify a range of stressors and the effects of stress on radiographers.

(b) To analyze other factors such as perceived organizational support by investigating the organizational climate and demographic factors that could contribute to stress and commitment amongst radiographers to the organization.

(c) To determine the level of commitment amongst radiographers by investigating the three aspects of commitment.

(d) To analyze interrelationships between occupational stress and organizational commitment.

(e) To examine how occupational stress and organizational commitment in turn affect radiographers in rendering quality service.

To further support the objectives identified a literature review was conducted (see Chapter two).

Chapter two

Literature review

2.1 Introduction and justification

A conceptual framework on the integration of occupational stress and organizational commitment in delivering quality of service for underpinning the research undertaken is presented. A literature overview based on theoretical concepts and on research findings is provided in order to glean a better understanding of the quality of working life of radiographers and how this could influence an organizational outcome, namely delivering a quality of service and retaining radiographers.

Globally hospital quality management systems have experienced considerable change. Measurements of the outcomes of care have changed from assessing the structural elements of care to measuring patient-centered outcomes and the health of communities[29]. The assessment of clinical practice has grown from ensuring the adequacy of care to developing scientific methods of rapidly improving the process of care through a series of short-cycle studies[29].

The link between the organization of health services or institutions and patient outcomes is rarely tested empirically[30]. Studies on organizational structure of health care and patient outcomes have been conducted independently[30]. Many studies have been done on patient satisfaction, but little research has linked it to organizational dimensions of the health care delivery system[30].

2.2 Service rendering

Service rendering within any industry, including national health organizations, requires clear and defined knowledge of client-based market strategy and operations[31]. To ensure long-term service quality, organizations need to have quality focused internal structures and processes in place to support those on the frontline who make or break the organization's reputation with clients[31]. Service rendering is a product of a transformational process. From an operational perspective, the service provision needs to be flexible enough to deliver its various outputs[31]. An average patient may not need the full range of outputs, whilst others may require a pre- and post-treatment consultation. Patients generally spend a very short time in the diagnostic imaging department, therefore it is important for radiographers to make the service rendering a meaningful one. If the latter is a prescriptive aspect of the service rendered then clients will expect it and therefore the need for it to be provided. Service rendered is varied enough and includes often-confused areas where clients will not conform to a given model of behaviour nor should it be expected of them[8]. The result is that frontline service providers find a conflict between their "duties" to cater for client needs and the expectations and rules set by management[8]. Laschinger et al[32] also supports the conflict, whereby radiographers are often faced with the need to provide much greater volume and intensity of care than they are able to render, yet they remain responsible and accountable as professionals for practicing within the standards of the profession[32].

In the executive summary of Varca[8], it is suggested, that in a service delivery environment organizations rely heavily on innovative and motivated employees to serve clients in the absence of a traditional organizational control[8]. The implication is that skilled workers will make the effort to serve clients well if their view of the work environment is positively based. Stress at work undermines people's performance and some causes of stress lie in

the working environment itself[8]. One can never entirely get rid of stress but by managing stressful situations one can reduce the potential harm[8]. A supportive non-confrontational work environment should be the aim, since this would mean that stress is spotted more easily and could be handled much easier[8].

2.2.1 Radiographers' role in rendering quality service

The services include patient care, responsiveness, radiation protection, equipment operation and competency of the staff operating the equipment[33]. Because radiographers perform complex diagnostic procedures using state-of-the-art imaging equipment, they must be adequately trained to ensure that equipment is used safely and effectively[34]. To ensure a quality service delivery optimum quality images must be presented to radiologists for proper radiological diagnosis with minimal exposure to ionizing radiation. This level of service rendered is only possible if current knowledge of existing and new technology of procedures is maintained[34]. Factors contributing to the rendering of a total service include radiographic technique, use of technology, clinical responsibility, and within the organization itself, quality assurance, training and education. These quality efforts are integrated into and form part of an overall quality management system (QMS) of an organization[6]. This is to ensure that appropriate quality in the area of diagnostic imaging science is maintained.

Quality Assurance (QA) processes were introduced into the diagnostic imaging sections in South Africa in September 2000 by the Department of Health[35]. Theory states that QA is a systematic process of reducing variables in providing radiologic services to clients[33]. The central theme is to reduce exposure to the patient and operator while providing high quality radiographs to help diagnose and evaluate diseases and disorders[33]. QA encompasses all aspects of patient care from the time the patient enters the section until the time the patient

leaves the section[33]. It also includes communication and interaction with clients and other health care professionals[33]. The personal aspect of QA includes measuring the culture and morale of the diagnostic imaging section[33]. Radiographers must feel important and know that their opinions count. Everyone must be committed to efficiency in providing services to their patients. Papp[36] emphasizes that the purpose of a QA process is based on human factors, which can lead to variations in delivering quality service. A good QA process must include assessment of radiographer's morale (see Figure 2.1, p23). Unhappy radiographers will not be able to deliver high-quality services all the time. Organizationally QA has been criticized for encouraging facilities only to meet rather than to exceed the standards and for being "done to" facilities rather than being implemented "with them"[3].

Part of a QA process in the diagnostic imaging section entails a reject film analysis. A reject film analysis, which includes repeat film rate is a systematic procedure designed to catalogue and determine the causes of repeat radiographs[37]. The information gained and the solutions derived from repeat rates provide a reduction of unnecessary x-ray exposure to the patient by decreasing the number of repeats. This leads to financial savings and an improvement in the efficiency of the section, which in turn benefits the value of the service provided. According to Tortorici[37], the repeat rate is based on established departmental standards in terms of which a 6% repeat rate is acceptable. Therefore, a repeat rate of higher than 6% requires investigation. One of the possible reasons for increased repeat rates may be due to work overload[38]. Workload is also a major source of OS, which can be attributed to staff turnover. Staff turnover is an indication of low OC[10]. All these factors become important aspects in current health care settings, as employees may be struggling to maintain high quality patient care with fewer resources[31]. Based on this and for the purposes of this study, the level of service rendered by radiographers is not only measured from a Continuous Quality Improvement (CQI) perspective, but also from the commitment

aspect. That is to determine the extent to which a radiographer can go on producing optimal quality radiographs with minimal repeat rates.

2.2.2 Quality service rendering from an organization's perspective

Organizationally CQI approach is seen as quality improvement and an integral part of management function and suggests that quality changes only come about gradually and over a period of time[3]. Management styles need to shift from top-down, autocratic approaches to more democratic practices, for example, sharing decision-making, encouraging teamwork within the facility, a supportive approach to supervision and promoting fairness and respect towards others[3,32]. Schneider and Gibson[3] took this view as the challenge to improve quality and also emphasized that it lies more at a human than at a technical level. Unlike traditional QA approaches, the strategies used in bringing about such change are continuous and participatory, involving local staff in the collection and analysis of data and also in the determining of priorities and standards[3].

To promote a widespread commitment to a CQI of health services, all employees including radiographers must understand the changes that are being proposed, and why they are being undertaken. This is because all employees contribute towards service excellence through the quality chain and everyone in the organization needs to be motivated towards a common goal[3,7,36]. The necessary links must be built on people and organizations need to realize that a good way to move towards quality excellence is through not only a good quality of service delivery but also through the working life of their employees[3].

2.3 Job satisfaction and occupational stress

For a quality management program to be effective it is important to investigate the Quality of Working Life (QWL) of radiographers in order to render quality service[9]. In healthcare organizations, QWL has been described with reference to the strengths and weaknesses of the total work environment[8]. Characteristics that describe the overall organization are viewed as part of the behaviour and reward system of the employees working in that setting. Organizational features such as policies and procedures, leadership style, operations and general contextual factors all have a profound effect on how employees view their QWL[8].

A review of job satisfaction indicates that working conditions, which help in attaining interesting work, reasonable workload, pay and promotions, and minimizing role conflict and ambiguity, will lead to job satisfaction[7]. To date there is one unpublished study on job satisfaction amongst radiographers in the Tshwane region as a fulfillment for an academic requirement for an academic qualification[39]. This study investigated the level of job satisfaction in three public organizations[39]. Only one organization revealed a high level of job satisfaction, which is presently experiencing a high turnover rate[39].

Factors that produce negative work experience (namely stress) will be likely to produce negative outcomes or lower levels of job satisfaction and lower levels of OC[8]. A 1993 meta-analysis of 48 studies that looked at job satisfaction for over 15 000 nurses revealed that job satisfaction was strongly associated with reduced work stress and OC[20]. Thus an individual stressor that elicits dissatisfaction with the job will eventually loosen the individual's tie to the organization[9].

Therefore, dissatisfied employees will have a negative affective orientation towards the organization[19]. Results of a study by Darwish[40], on job satisfaction as a mediator between OC and role stressors, indicated that role ambiguity and role conflict as sources of stress, directly and negatively influence job satisfaction[40]. Job satisfaction directly and positively influences both affective and normative commitment and negatively influences continuance commitment[40].

2.4 The organizational health approach

The organizational health approach proposed occupational well-being comprising of three components (see Figure 2.1). Job satisfaction that refers to the overall judgments employees make, based on weighing up their positive and negative work experiences[41]. Thus, job satisfaction is essentially a cognitive evaluation that individuals make in relation to their work experiences[41]. Low job satisfaction is a major cause of turnover amongst health care providers and may lead to decrease OC and hamper the rendering of quality service[20].

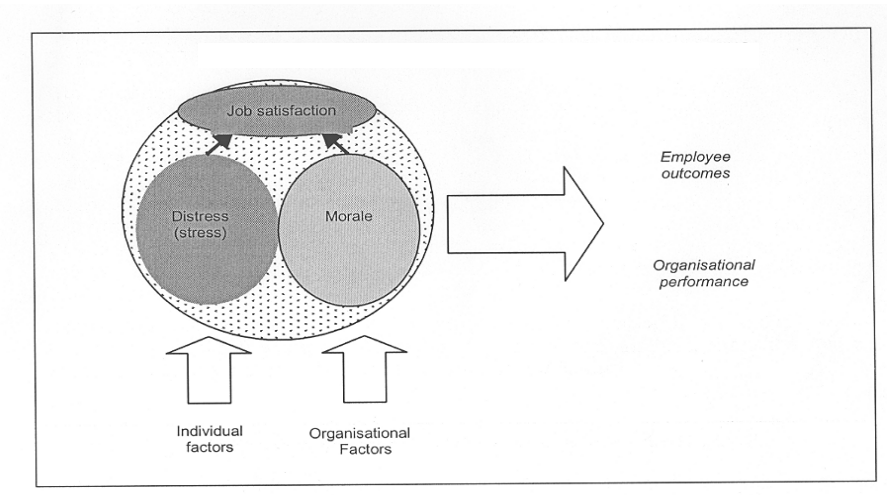

Figure 2.1 Three factor model of occupational well-being[41]

Underpinning these judgments are two variables – morale and distress (see Figure 2.1, p23). Morale refers to the positive feelings and distress refers to the negative feelings individuals experience[41]. These underlying levels of morale and distress (such as anxiousness, depression, frustration and worry) exert a major impact on employees and organizational outcomes. The quality of leadership and other organizational climate factors exert a direct and strong influence on morale, and in turn, on discretionary behaviour[16,41]. Discretionary behaviour has a direct impact on the client's experience and overall organizational performance (see Chapter one, Section 1.3, p6).

2.5 Occupational stress

OS is the harmful emotional and physical reactions resulting from interactions between employee and the work environment where the demands of work exceed an employee's capabilities and resources[42]. A certain amount of stress is required to live and enjoy life. However, when one is under unremitting stress or if one does not deal with it adequately, it can lead to physical or psychological harm[42]. Management and reduction of OS are recognized as key factors in promoting employee well-being[15]. Work plays a major role in peoples' lives and wields an important influence on their sense of well-being and identification in society. This can be influenced by societal, cultural and individual factors. Given the importance of work and considering the total number of hours spent at work, it is a significant site and potential source of stress[43].

Both the type of work and the person bring vulnerabilities and characteristics that contribute to the stress process[43]. The way in which an individual interprets a situation is central in determining whether or not the situation is regarded as stressful[19]. One can envisage a wide range of sources of stress, including those that are intrinsic to the work itself, within the health care workplace[19]. For example, radiographing patients who were

involved in an accident and empathizing with an anxious family member accompanying the patient.

A fairly consistent finding is that some individuals exhibit a general tendency towards negative responses irrespective of the type of stimuli experienced in their environment[19]. According to Kendall et al[19], individuals with higher negativity are capable of experiencing more stress and discomfort, and their perception of stress is likely to persist even if negative working conditions are altered dramatically[19]. In contrast to negative affectivity, "hardiness" is a term given to a particular cluster of personality characteristics that have been identified among people who appear to cope with stress[19]. A study done by Sciacchitano[4] et al., found a significant inverse relationship between personality hardiness and burnout amongst radiographers.

Family and work are inter-related and interdependent to the extent that experiences in one area affect the quality of life of the other[19]. Radiographers also have to cope with stress in their family situations, which may affect their capability to work effectively from time to time[44]. Similarly, the effects of studying may also result in spillover into the work environment.

2.5.1 Organizational culture and climate

Culture is defined as the "values, beliefs, and norms of an organization that shape its behaviour[45]". Culture exits on three levels of awareness: artifacts or visible organizational structures and processes; values which are the "strategies, goals and philosophies expressed by managers and other members of the organizations", and basic underlying assumptions, which are the " taken for granted beliefs, perceptions, thoughts and feelings[45]". There are three major aspects of culture and organizational culture relates to

groups, not individuals[45]. Culture is based on shared experiences and a change in circumstances forces cultures to change[45]. The circumstances for this study can be referred to as the organizations changing from a traditional autocratic approach to a more client-centered approach[45].

From a radiographer's perspective one needs a working environment that supports quality professional practice in order to practice effectively[46]. The work environment has a critical influence on the ability of a competent radiographer to provide quality service[46]. Organizational factors play a vital contextual role in both the effectiveness and the degree of stress experienced by employees[47]. Organizational standards usually are present in the form of policies and procedures that guide the practice of members of the organization[46]. Perceived organizational support (POS) is also valued as assurance that aid will be available from the organization when it is needed to carry out one's job effectively and to deal with stressful situations[48]. Rhoades and Eisenberger[49], in their findings concerning treatment by the organization reveal that fairness has the strongest positive relationship with positive organizational support, followed by supervisor support and rewards/job conditions. Fairness may be considered by employees to be readily controlled by upper management and therefore highly discretionary[48]. Evidently having an opportunity to have one's opinions heard and being treated with dignity and respect in the administration of policy creates a strong impression that the organization values the contributions of employees and cares about their well-being[48].

Fairness in decisions concerning resource distribution has a strong influence on POS by indicating a concern for employees' welfare[48]. The structural aspect of procedural justice involves formal rules and policies concerning decisions that affect employees, including adequate notice before decisions are implemented, receipt of accurate information, and employee input in the decision-making process[48]. For example, if structural changes are

to be implemented radiographers are asked for their input. Assistance may take the form of staff meetings, feedback and goal setting for the department. Sharing organizational goals can foster commitment. It is apparent that a participative management style will be a particularly useful approach to encourage service excellence[15].

Management support has shown to reduce the effect of stress and burnout[4,15]. Management is a key source of social support, for example improving psychological bonding or fostering a feeling of team spirit among all employees concerned[4,15]. Managers (supervisors) also act as agents of organizations, having responsibility for directing and evaluating the performance of subordinates. Employees view managements' favourable or unfavourable orientation towards them as indicative of organization support[13,48]. By indicating an organization's trust in radiographers by providing an opportunity to make an input on how they will carry out their tasks can have a positive effect on creating a healthy work environment.

The model of effort reward imbalance, which is applied to a wide range of occupational settings and is frequent among service occupations and professions, in particular the ones dealing with person-based interactions maintains that the work role defines a crucial link between self-regulatory needs of a person (such as self-esteem, self-efficacy) and the social opportunity structure[48,49,50]. In particular, conferment of occupational status is associated with recurrent options of contributing and performing, of being rewarded or esteemed, and of belonging to some significant group (work colleagues) [48,49,50]. Yet, these potentially beneficial effects are contingent on a basic pre-requisite of exchange in social life, that is, reciprocity[48,49,50]. Effort at work is spent as part of a socially organized exchange process to which society at large contributes in terms of rewards[48,49,50]. Rewards are distributed by three transmitter systems: money, esteem, and career opportunities including job security. The model of effort reward imbalance claims that lack

of reciprocity between costs and gains (namely high cost/low gain conditions) define a state of emotional distress, which can lead to the arousal of the autonomic nervous system and associated strain reactions[48,49,50]. For instance, having a demanding but unstable job, achieving at a high level without being offered any promotion prospects, are examples of high cost/low gain conditions at work[49,50]. The latter is of importance, as it will have a negative effect on employees' affective commitment to the organization[48].

2.5.2 General physical working environment

For the purpose of this study general working conditions are defined as the extent of resource availability from an organizational controllable perspective to support radiographers in providing quality service. Included is the general work setting namely physical facilities (examination rooms, washrooms), lighting, ventilation for staff and patients. Based on Lundstrom et al[30], findings on organizational and environmental factors that affect worker health and safety and patient outcomes, suggested that physical features in negative patient outcomes involve inadequate ventilation and/or maintenance associated with opportunistic infections in highly immuno-compromised populations[30]. Attention must be given to designing facilities that are efficient, and functional for staff that also cultivates a caring environment for patients. The "built" or physical environment affects patient outcomes[30]. However, participants identified physical conditions not only in terms of comfort, but in terms of illness as well[30]. Providing a safe environment is important, but not always a measurable impact on patient outcomes[30].

Other factors, such as availability and maintenance of equipment and accessories (Quality Control programme) and staff to assist can also negatively influence the general working environment of radiographers.

2.5.3 Career development and skill utilization

For the purpose of this study career development of a radiographer was viewed from a continuous professional and self-development (advance qualification) point of view, including receiving training on equipment operation in a workplace. Professional development, continuously striving to enhance the competence necessary to meet the needs of patients and society served is a legal and ethical obligation[1,2]. As already mentioned previously (see Chapter one, p1) emerging health care systems focusing on outcomes and cost efficiency combined with competency and performance are important in rendering quality service. Development of a career is also seen as a discretionary practice communicating an investment in an employee.

Career development conditions seen as stressful include over promotion, under promotion, status congruence, lack of job security, and thwarted ambition[51]. In short, stress reactions seem to be a consequence of chronic work frustrations and disparity between the individual's perceptions of where he or she should be in a work organization in contrast to the reality[51]. For example, radiographers who have an additional qualification are over-utilized but not promoted to the required post level.

Furthermore, under-utilization of skills has become a significant problem in recent years[19]. Under-utilization of employees' skill-base usually occurs when an employee is performing tasks that are often simple in nature and offer little challenge[19]. The primary cause of under-utilization is the fact that many employees are over-qualified for the positions that are available[19]. This relates positively to the researcher's present place of employment where some radiographers with higher qualifications are waiting for an opportunity for a vacant post before their skills can effectively be utilized[19]. Under-utilization can also occur from an employee being prevented from undertaking training to acquire new skills. Under-

utilization of employee skills and low skill variety are detrimental to the health and well-being of an employee[19].

2.5.4 Conflict

Conflict can arise from numerous sources within a team setting and generally falls into three categories: communication factors, structural factors and personal factors[52]. Barriers to communication are among the most important factors and can be a major source of misunderstanding[52]. Communication barriers include insufficient sharing of information and differences in interpretation and perception[52]. A structural disagreement includes turnover rate, levels of participation, reward systems, and levels of interdependence among employees[52]. Personal factors include things such as an individual's self-esteem, their personal goals, values and needs[52].

Conflict can therefore be defined as a serious, on-going occurrence of strife between employees or between employees and management[19]. It can manifest itself in a variety of ways including emotional turmoil, increased absenteeism, job turnover and violence. From a group conflict perspective, strikes and demonstrations can result[19]. A study of 400 respondents from a broad range of organizations identified conflict with supervisors as one of the most significant stressors associated with the majority of maladaptive behaviours at the workplace[19].

2.5.4.1 Conflict at work

Conflict in work teams is not necessarily destructive, however[53], conflict can lead to new ideas and approaches to organizational processes, and increased interest in dealing with problems[53]. Conflict, in this sense, can be considered positive, as it facilitates the surfacing of important issues and provides opportunities for people to develop their communication and interpersonal skills[53]. Conflict becomes negative when it is left to escalate to the point where people begin to feel defeated, and a combative climate of distrust and suspicion develops[53]. Conflict at the workplace has been identified as a significant source of stress for some employees[19].

2.5.4.2 Role conflict and role ambiguity

High levels of OS are likely to be evident in organizations where there are high levels of role conflict and role ambiguity[19]. Role conflict is when an individual experience incongruous job expectations, and can also occur when the individual is required to fulfill several different roles[19]. Role ambiguity exists when an individual lacks information about the requirements of his or her role, how those requirements are met, and the evaluation procedures available to ensure that the role is being performed successfully[19]. There is a consistent relationship between role conflict or role ambiguity and low levels of job satisfaction, a lack of interest in work, increased levels of anxiety and depression[19].

Boshoff[16], found that role conflict and role ambiguity are not necessarily independent constructs, but role conflict contributes to increased levels of role ambiguity. Moore[22], found that as role conflict increases organizational commitment decreases. Lopopolo[21], found role conflict and role ambiguity negatively related to job satisfaction and OC. Therefore, employees who perceive stress in the form of role ambiguity and role conflict

tend to have less psychological attachment to their employing organization. However, Boshoff[16], suggests that based on the results obtained, participation in decision-making and consideration reduces role ambiguity.

2.5.5 Workload

Workload is often described in quantitive terms namely when the volume of work exceeds the ability of a worker to meet the demands over a period of time. In qualitative terms, excessive workload would mean that the requirements of work exceed the skills, abilities and knowledge of a worker[19]. Maslach[54], in her reformulation of her burnout model suggested that work overload and hours spent at work may not be considered to be stressful if work is associated with sufficient rewards, such as meaningful outcomes and recognition of control. Workload was found to be a common source of stress amongst radiographers in Australia[17]. According to a survey released by the American Society of Radiographers; personnel shortage was the main reason for increased workload, longer shifts, leading to mental and physical stress[55]. Along with the marked increase in the number of hours worked per day, there has been unprecedented growth in the amount of overtime worked. Lopopolo[20] also found a negative relationship with workload and job satisfaction and OC. Therefore, employees who perceive their roles as having higher stress experience lower levels of job satisfaction and thus decreased OC.

Laschinger et al[32] found that despite the workload being a frequently reported stressor, it was not linked to burnout, suggesting that some stress may be necessary for functioning. This also supports Maslach[54], who posits that social interactions rather than organizational factors are the source of chronic emotional stress that may lead to burnout. Of course, workload may lead to other negative consequences.

Increased workload in the diagnostic imaging section can result in radiographers loosing concentration due to exhaustion, compromising patient communication, increasing patient

waiting time and eventually lead to poor quality radiographs implicating increased exposure to ionizing radiation by repeating the examination. From a radiographers' health perspective exhaustion can result in lowering their resistance to illness, an increase in incidence of injury on duty and additional radiation dose[32].

2.5.6 Shift work

Shift work can be defined broadly as a pattern of working hour arrangements whereby employees' work organizationally defined different blocks of time on a regular basis[56]. From the researcher's work experience the incidence of shift work has increased, and from the literature review on a thesis done on shift work from a work and family perspective it is predicted that the use of non-day scheduling will continue to grow in response to globalization, increased demand for productivity and around-the-clock service rendering[56]. Shift work has been linked to increased tension, stress, and psychological depression[56]. One of the fundamental consequences of shift work is the interference with basic biological rhythms, which results in social and domestic (family activities and responsibilities) consequences, sleep, digestion, and appetite disturbances[56].

Boshoff[16], in his literature review reported lower commitment among rotating shift workers as compared to workers on a fixed schedule. They also found higher levels of job stress, work role overload and role ambiguity among rotating shift workers than workers on fixed shifts. Johnson[56], found shift workers reported significantly lower control over the work/family interface than did day workers. They were significantly less satisfied with their work schedules than were day workers[56]. Respondents were unable to identify any social advantages from having to work shift[56]. Respondents also missed their children, spending dinner hour with family and social functions[56]. The only economic disadvantage to surface was the cost associated with take-away foods[56]. Although few respondents mentioned

fatigue or inadequate back-up and support, the overall majority experienced no particular disadvantages to shift work in terms of their work life[56].

2.5.7 Mechanisms of coping applied by radiographers

When stressors are present individuals operate on them by deploying whichever coping strategies are available to them[18]. These coping strategies are developed through training and experience and hence provide opportunities for improving the ability of individuals to cope with stressful environments[18]. The way in which individuals cope with stress is thought to have a significant impact on the outcome, presumably because it enables individuals to execute some control over the demands placed on them[19]. Generally health care workers protect themselves against the potential negative effects of stress by having a better feeling of control over their working lives and by the appropriate use of coping strategies[18]. Lazarus and Folkman[57], define coping as, "cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resource of the person." They identify two types of coping. The problem-focused type is coping by confronting an event, either by altering the situation (environment directed) or by acquiring the necessary skills or assistance (self-directed)[58]. In contrast an emotion-focused strategy involves avoiding negative emotions associated with a problem situation through strategies such as suppression, wishful thinking or distraction[58].

A further search on coping mechanisms revealed two additional types of coping: Perception-focused coping, which includes strategies such as positive re-appraisal, minimization or seeking meaning, and generally involving attempts to minimize the threat associated with a problem, redefining the problem or redirecting attention to a different aspect of the situation[15,19]. Lastly, maladaptive coping strategies include drinking,

smoking, avoidance and suppression[19]. Eslick and Raj[17], found an inverse relation between alcohol intake and high levels of OS amongst radiographers.

Contributing to the method of coping is the work environment, which provides access to information, resources, support and the opportunity to learn and develop. These are empowering and enable employees to accomplish their work[19]. When situations are structured such that employees feel empowered, the organization is likely to benefit both in terms of attitudes of employees (behaviour during a service encounter) and the organization's effectiveness. Employees in organizations such as these experience less OS and an increased feeling of autonomy and higher level of self-efficacy which are also components of psychological empowerment[15,19]. Psychological empowerment is the psychological state employees must experience for managerial interventions to be successful[15,19].

2.5.8 Level of occupational stress (emotional, mental and physical symptoms of occupational stress)

Although the exact symptoms of stress vary greatly among individuals and organizations, some frequent indicators of stress can be identified. Symptoms of stress within an individual often include physical symptoms, which are early warning signs[15]. It can affect the immune system, weakening it and make the individual more susceptible to colds, coughs and infections. It can also cause physical illness such as muscular tension, headaches and gastro-intestinal illnesses[17]. Eckloff[59], in the study of back problems amongst radiographers found that pulling trolleys unassisted, wearing lead rubber aprons for long periods of time aggravated back pain. Some physical symptoms of stress include mental disorders such as feeling anxious, depressed or irritable. This may implicate a

downward spiral on deteriorating performance and productivity, accompanied by increased emotional symptoms[60].

Prolonged anxiety may lead to clinical depression, which is associated with feelings of gloom and inadequacy[60]. Health workers in particular have been shown to be susceptible to depression and a state known as burnout, which is characterized by extreme tiredness, combined with feelings of failure and frustration[60]. Such individuals have a negative self-image and a lack of interest in themselves or their work[17].

2.6 Organizational commitment

Literature pursued on OC amongst radiographers revealed no results, therefore a detailed theoretical outline is important to understand the concept of OC. As already mentioned in chapter one commitment in the workplace can take various forms and has the potential to influence organizational effectiveness and employee well-being[61]. Meyer and Allen[62] developed their three-component model based on the observation that there are both similarities and differences in existing uni-dimensional conceptualizations of OC[10,61,62]. Common to all, they argued, was the belief that commitment binds an individual to an organization, thereby reducing the likelihood of turnover. The key differences were in the mindsets presumed to characterize the commitment (see Figure 2.2). To distinguish among commitments characterized by different mindsets, they labelled them affective commitment, continuance commitment, and normative commitment.

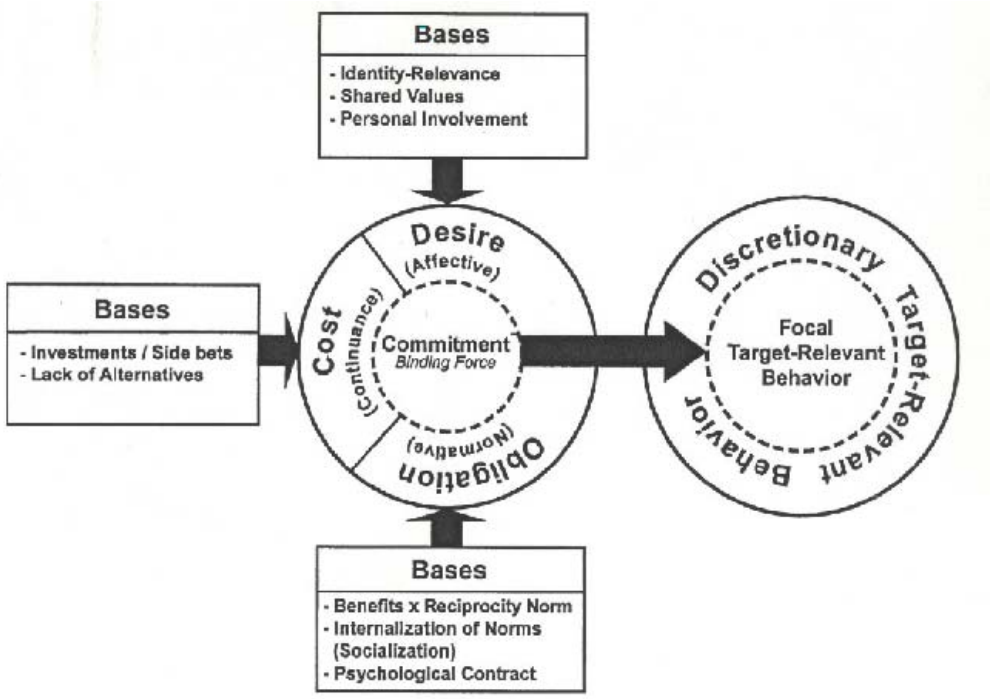

Figure 2.2 A general model of commitment in the workplace illustrating the resultant behaviour of an employee[61]

2.6.1 Affective commitment

The mindset of characterizing affective commitment is desire: Individuals with strong affective (value, moral) commitment want to pursue a course of action of relevance to a target[61]. The mechanisms presumably involved in creating this desire vary somewhat across the different conceptualizations but include involvement, shared values, and identification[61,62]. Thus, it was proposed that any personal or situational variable that contributes to the likelihood that an individual will (a) become involved (intrinsically motivated, absorbed) in a course of action, (b) recognize the value relevance of association with an entity, or from working toward an objective, will contribute to the development of affective commitment[61,62]. The antecedents of affective commitment fall generally into four categories: personal involvement, shared values and identity relevance (see Figure 2.2, p37).

Although demographic characteristics such as age, tenure and sex, and education have been linked to commitment, the relations are neither strong nor consistent[10,61,62]. Personal disposition such as need for achievement, affiliation, and autonomy, personal work ethic, and central life interest in work have been found to correlate, albeit modestly, with commitment. Relatively few studies have examined the relationship between organizational characteristics and commitment[10,61,62]. Nonetheless, there is some evidence that affective commitment is related to decentralization of decision-latitude, formulation of policy and procedure[10,61,62]. It may be that the influence of structural characteristics on commitment is indirect, but rather, is mediated by those work experiences such as employee/supervisor relations, role clarity, and feeling of personal importance that are associated with these structural characteristics[10,61,62].

In the literature review of Meyer and Allen[10], there has been a considerable amount of research examining the link between work experience variables and affective commitment. For the purpose of this study commitment develops as a result of experiences that satisfy employees' needs and/or are compatible with their values. Therefore, work experience variables can be divided into two categories: those that satisfy the employees' need to feel comfortable in the organization, both physically and psychologically, and those that contribute to employees' feelings of competence in their work role[10,61,62].

2.6.2 Continuance commitment

Continuance commitment is characterized by the perception that it would be costly to discontinue a course of action. It is generally agreed that continuance commitment develops when a person makes investments, or side bets, that would be lost if he/she were to discontinue the activity[10,61,62]. Because continuance commitment reflects the recognition of costs associated with leaving the organization, anything that increases

perceived costs could be considered as an antecedent including the availability of alternatives (see Figure 2.2, p37).

2.6.3 Normative commitment

Normative commitment is characterized by the mind-set that one has an obligation to pursue a course of action of relevance to a target (such as to remain with an organization, or work toward the attainment of a goal)[10,61,62]. Normative commitment develops when an individual (a) has internalized a set of norms concerning appropriate conduct, and/or (b) is the recipient of benefits and experiences a need to reciprocate[10,61,62]. More recently it was suggested that normative commitment might reflect an employee's recognition of his/her obligation within the "psychological contract" perceived to be in effect in relationships with other entities (such as managers)[10,61,62].

2.6.4.1.1 Relationship between organizational commitment and occupational stress

OC as an empirical construct is generally regarded as a psychological state characterizing an employee's relationship with the organization that has implications for the employee's decision to remain or leave the organization[19,21]. Furthermore, this form of commitment reflects the employee's acceptance of the goals of the organization and willingness to engage in behaviours that are specified in the job description, as well as those that are considered to be beyond the job expectations. OC serves as a dependent variable for antecedents such as age tenure and education and as a predictor of various outcomes such as turnover[22], intention to leave, and performance. As to the cause/effect relationship between OC and job satisfaction, it is likely that a reciprocal relationship exists[8]. Thus, an organizational stressor may first affect commitment, but as commitment continues to decrease, it is difficult to imagine a scenario where satisfaction will stay at the same level[9].

Similarly, an individual stressor that elicits dissatisfaction with the job will eventually loosen the employee's ties to the organization.

Only two studies were found on OS and OC. The study done by Moore and Chawla[22], on law enforcement and health professionals on OC and OS found a significant relationship between OS and OC. Individuals who did not have sufficient training and/or education to perform their job were less committed to their job. Individuals who were having problems with work quality, or have poor attitudes toward work, showed low OC[21]. Individuals who experience a high level of role conflict and ambiguity also decreased their level of OC[21]. Employees who experienced conflict were less committed to the organization. Individuals who participate in and enjoy extra-mural activities are more committed to the organization[21]. Employees who participate in decision authority reported relatively higher levels of organizational commitment[21]. The final relationship found was that individuals using rational/cognitive coping skills are more committed to the organization[21]. A study done on OS and OC of staff nurses in Community Hospitals Region 10, found workload, time pressure, poor relationship with staff, pressure from patients, organization management problems, and career issues had a negative correlation between source of OS and OC[23].

In the literature review of Laschinger et al[32], researchers found workplace autonomy to be positively related to staff nurses' OC. Also, individuals displaying higher levels of affective commitment were more resistant to job strain and burnout.

2.7 Relationship between organizational commitment and rendering quality service

In health care service exchanged is face-to-face, with simultaneous consumption and production, reflecting a psychological and physical closeness between service providers and clients[13]. Therefore it is important for an employee to understand the organizational goal/s in order to fulfil the organization's service "promise" to clients. This depends on the extent to which an employee identifies with the organization and its goal/s, which will have an important bearing on his/her behaviour during a service encounter (see Chapter 1, Section 1.3, p5 and Figure 2.1, p23).

2.8 Conclusion

Healthy organizations have an environment where levels of stress are low and organizational commitment is high. Any organizational strategy seeking to address stress reduction effectively will need to investigate the overall function of the organization including organizational climate and values, and provision of social support and rewards. The way in which an individual interprets a situation is central in determining whether or not the situation is regarded as stressful. The employee's response to stress can either be psychological, physical or both. The way in which an individual copes with stress has a significant impact on the outcome (behaviour during a service encounter) because it determines the individual's execution of control over the demands placed on him/her.

In conclusion, to promote widespread commitment to continuously improve service rendering, radiographers must know and understand the goals, policies and protocol followed by the organization, and why they are undertaken. The degree to which a radiographer identifies with a service organization and its objectives will have an important bearing on the behaviour of the radiographer during the rendering of a quality service.

2.9 Summary

In summary, from the extensive literature pursued from various nursing and marketing sources it is evident that there is a relationship between OS and OC and this may affect the radiographer in delivering quality service. However, the significance of this relationship and the extent to which OS and OC can affect radiographers is not known and therefore needs further investigation.

Chapter three

Methodology

3.1 Introduction

The preceding chapter pertaining to the literature review necessitates a methodological investigation of organizational commitment and occupational stress within an organizational context. The research material must represent structured views of radiographers from different backgrounds and settings. Therefore, it is important to report from a quantitative stance based on findings of previous studies[63].

3.2 The main aim

The main aim of this study is derived from the research question proposed in chapter one, namely to investigate the effect of OS and OC on the quality of service delivery by diagnostic imaging radiographers. It is supported by the organizational health approach[41], which focuses on interactions between individual factors (such as coping mechanism/s) and organizational factors (such as leadership behaviour) in determining the well-being and important organizational outcomes such as turnover intentions, organizational commitment, as well as employee health status.

3.3 The objectives

Objectives identified based on the main aim of this study guided the researcher in formulating the hypotheses and enabled the researcher to collect data structurally. The objectives are to determine:

3.3.1 The level of OC amongst diagnostic imaging radiographers.

3.3.2 The sources of OS amongst diagnostic imaging radiographers.

3.3.3 The level (emotional, mental and physical symptoms) of OS amongst diagnostic imaging radiographers.

3.3.4 The coping mechanisms applied by radiographers to deal with OS.

3.3.5 If there is any significant difference between radiographers in private and public organizations with regards to level of OC, level of OS and mechanisms of coping applied by radiographers.

3.3.6 The relationship between sources of OS on the level of OS experienced by diagnostic imaging radiographers.

3.3.7 The relationship between OS and OC amongst diagnostic imaging radiographers.

3.4 Hypotheses

The hypotheses is based on the main aim (see Section 3.2, p 43) and objectives (see Section 3.3, p43) of this study. According to objectives 3.3.2 and 3.3.3:

H_0 There is no relationship between the sources of OS and the level of OS amongst diagnostic imaging practising radiographers.

H_1 There is a relationship between the sources of OS and the level of OS amongst diagnostic imaging practising radiographers.

According to objective 3.3.7:

H_0 There is no relationship between high OS and low OC amongst diagnostic imaging practising radiographers.

H_1 There is a relationship between high OS and low OC amongst diagnostic imaging practising radiographers.

H_0 There is no relationship between high OS and low OC and rendering quality service amongst diagnostic imaging radiographers. Alternatively there is no relationship between rendering quality service, OS and OC.

H_1 There is a relationship between high OS and low OC and rendering quality service amongst diagnostic imaging radiographers. Alternatively there is a relationship between rendering quality service, OS and OC.

These hypotheses formed the basis for establishing the study design, plan for data collection and analysis for this dissertation[63].

3.5 Research design

The purpose of a research design is to achieve greater control and to improve the validity of this study in examining the research question put forward. The purpose of a descriptive correlational design is to examine the relationships that exist in a situation[63]. Based on this and the hypotheses a decision on a descriptive correlational design was adopted. Another benefit of using this design is that it facilitates identification of interrelationships in a situation in a short period of time[63]. This was important to the researcher because the material proposed was the implementation of a questionnaire[64,65]. The decision to use a questionnaire instead of interviews was because:

i) It allowed the researcher to reach a large number of radiographers.

ii) There was time for respondents to consider their opinions before committing to the paper.

iii) It made it convenient for the researcher to analyze the data obtained.

iv) Bias was minimized as no middleman was involved and there was uniformity of question and/or statement presentation.

v) The researcher's own opinion/s could not influence respondents to answer questions in a certain manner.

vi) Questionnaires are less intrusive than telephonic or face-to-face surveys.

3.6 Sample

Sampling decisions have a major impact on the meaning and general findings of a study[63]. With reference to the descriptive correlational research design for this study, the sampling criteria were defined to ensure an encompassing representative group with a broad range of values on the variables being examined[63]. Furthermore, with reference to the inequality of resource distribution, it was important to investigate the radiographers working life from a sample that is representative of the radiographer population.

The Tshwane (Pretoria) region has a large number of practicing radiographers. This area was selected within the framework of convenience sampling[63] based on a fair amount of private and public organizations, providing the researcher with a diverse group of individuals. The public health organizations (hospitals) are divided into academic and regional organizations. Private organizations mainly consist of co-operate bodies or companies which consist of branches that are owned by radiologists and the majority of them are also partially academic. They operate mainly within private hospitals.

Radiographers from the private (affiliated to academic and non-academic) and public organizations (academic and regional) are included. The sample (see Table 3.1, p47) comprises 240 radiographers in the Tshwane region determined by simple random sampling[64,65]. This was achieved on a 50/50 basis in consultation with the statistician. The reason for the latter was to reduce systematic bias from creeping into the study[64,65].

Table 3.1 Sampling framework

Organization	Name of organization (type)	Total number of radiographers per organization	Number of radiographers included in the sample
1	Muelmed (Private)	32	16
2	Kalafong (Public regional)	28	14
3	Garankuwa (Public academic)	30	15
4	Unitas (Private academic)	20	10
5	Little Company of Mary (Private academic)	28	14
6	Pretoria Academic (Public academic)	50	25
7	Wilgers (Private academic)	15	8
8	Montana (Private academic)	12	6
9	Moot Hospital (Private academic)	8	4
10	Jakaranda (Private academic)	5	3
11	Eugene Marais (Private academic)	15	8
TOTAL		243	123

The sample included radiographers from very small to very large organizations, thereby ensuring non-biased organization participation. The participants ensured representation of sampling.

3.7 Material

According to the literature reviewed the choice between self-report and alternative methods of data collection cannot be made in isolation from theoretical considerations. In

the present study the focus is on perceptions of individuals in conjunction with organizational outcomes. This is supported by studies done in organizational behaviour that self-reporting continues to offer both practical and conceptual advantages[66]. Also, OS research tends to integrate multiple concepts and constructs, often of a perceptual or attitudinal nature, in an attempt to establish causal and contingency relationships. This is often extended to cover most of the other domains of organizational behaviour striving to establish quantitative relationships between predictors (see Section 3.3, p43).

In addition to this, self-reported measures are to a large extent dependent on the psychometric properties of the instruments used in survey research, in particular their reliability and validity. These properties are fundamental to classic psychometric theory and their assessment is critical to the interpretation of results[67].

Based on the above discussion, the material for data collection was a self-administered questionnaire.

3.7.1 The questionnaire

A self-administered questionnaire consisting of seven main measures (referred to as sections in the questionnaire), consisting of 169 items in total was structured (see APPENDIX 3, p177-187). The response format for the 1st main measure was to fill in an empty space provided and/or marking with an "X". For the 2nd to 6th main measures the response format was close-ended and tightly structured answers (see APPENDIX 3, Section 2 – 6, p178-187) in order to easily encode and analyze data[30, 31]. The length of the questionnaire and reduction of respondent confusion demanded this approach[21]. Radiographers had to choose an option from number "1 to 5" by marking an "X" in the

appropriate box. The 7th main survey measure made provision for respondents to remark, add, and/or comment.

One of the limitations of the questionnaire the researcher had to overcome was that it allowed little flexibility to respondents with respect to response format. In essence, the respondents probably may loose the "flavour of the response" (that is, respondents often want to qualify their answers)[66]. This could be overcome by allowing frequent space for comments, but this would result in more time spent completing the questionnaire. The researcher partially overcame this disadvantage by providing a comment and suggestion section at the end of the questionnaire (see APPENDIX 3, Section 7, p187).

3.7.1.1.1 Questionnaire content

The questionnaire content is discussed with reference to APPENDIX 3 (see p178-187).

3.7.1.1.2 Section 1 – Demographic information

The sample composition was obtained by V1 and V2 (see APPENDIX 3, Section 1, p177) to confirm contextualization of data analysis. Included were 15 independent variables acquiring the demographic information (see APPENDIX 3, V3-17, p177). Demographic information is often used to establish correlations between main surveys and sub-survey measures and examination of scale scores. The other aspect is that individual attributes may affect an employee's view of his/her work, organization, and occupation[21]. But for the purpose of this study the demographic profile was more for determining the repetitiveness of the sample, namely practising diagnostic imaging radiographers from public and private organizations and to safeguard against bias.

3.7.1.1.2 Section 2 – Organizational commitment

This main measure determined the level of OC, of radiographers consisting of 17 items instead of the 18-item scale using Meyer and Allen's[62] scale (see APPENDIX 3, V18-34, p178-179). The items most relevant to radiographers were adopted verbatim. The reason for adopting the Meyer and Allen[62] scale is because of the multiple foci approach for the purpose of this research[40]. Respondents were instructed to respond to the three sub-item scales, affective (V18-23), continuance (V24-28) and normative (V29-34) commitment by means of a five-point response scale ranging from 1=strongly agree to 5=not sure.

3.7.1.1.3 Section 3- Emotional and mental symptoms of OS

Psychological stress is usually accompanied by negative emotions and associated with maladaptive behaviours, including depression, hostility, anger and aggression[19]. This main survey measure comprised of a 25-item scale determining the level of OS of radiographers (see APPENDIX 3, V35-59, p179-180). The most relevant items were adopted from the 40-item scale of the Work Life Questionnaire (WLQ). A forced choice version namely a 4-point scale, 1= "never" to 4="always" was used to indicate how often certain feelings (such as anxiety, frustration and depression) of stress occurred[63]. The reason for this forced version is to direct respondents in making a clearer choice[63]. A high score points to a high level of stress. Dr G Pickworth reviewed and assisted with validity and question item interpretation of phrasing of statements relating to this section and the section that follows, as advised by the Department of Psychology, University of Pretoria and with permission from Professor E van Zyl author of the WLQ. The level of stress can affect the behaviour of the radiographer during a service encounter.

3.7.1.1.4 Section 4 - Sources of OS

This main measure consisted of 10 sub-measures determining the sources of OS amongst radiographers. A 5-point response scale was employed ranging from 1=strongly agree to 5=not sure, to which radiographers had to respond. Each sub-measure will be discussed below.

a) The overall function of the organization

Organizational factors play a vital contextual role in both the effectiveness of rendering a quality service and the degree of OS experienced by radiographers[47]. The results obtained for this item scales is based on shared experience by groups of individuals[45]. This main measure consisted of three-item scales, namely organizational culture and climate, management style and general work environment.

Organizational culture and climate

A 10-item scale (see APPENDIX 3, V60-69, p180), adopted verbatim from Li Eldon and Abraham[47]. This study was conducted against an organizational outcomes background and possessed all three psychometric qualities (reliability, validity, and construct validity). The first determined whether the mission statement and policies were clearly stated as a well stated set of policies act as a guiding force and a statement of the mission connect employees to organizational outcomes, namely service excellence. The second investigated the effectiveness of an Employee Assistance Programme (EAP), as it promotes, maintains and supports a positive and productive workplace. The next eight statements determine radiographers' satisfaction with regards to compensation and benefits, including level of pay, rules and regulations, and communication channels regarding grievance procedures.

Management style within the organizational context

An 11-item scale (see APPENDIX 3, V70-80, p181), adopted verbatim from Li Eldon and Abraham[47]. This study was conducted against an organizational outcomes background and possessed all three psychometric qualities (reliability, validity, and construct validity). Items included were, a workplace meeting or discussion allowing people to share their views about work procedures (V70-V73), work design (V74), assists the radiographer in meeting the goals and objectives of the organization. The job demand control model reveals that employees faced with high job demand but not allowed much latitude to make decisions (V70-73) often react with high levels of stress[69]. The following statements, determined management's participation in empowering radiographers by supporting them (V75) and acting on their expertise by providing access to information and resources (V77 to 78), maintaining productivity (V79) and fairness in allocating work activities (V80) to accomplish their work ensures a high quality outcomes[32].

b) General physical work environment

A 9-item scale measured the general physical working environment defined as the extent to which adequate resources available to support radiographers to conduct a radiographic examination, including physical facilities for staff and patients[48] (see APPENDIX 3, V82-89, p181-182). The scale was adopted verbatim from the WLQ[68]. Statements included were sensible organization (V81) and design (V87) of examination rooms as this is important for the health and safety of the radiographers (radiation safety, additional strain) and patients (radiation safety, result in congestion of through-flow of patients). Inappropriate physical conditions and facilities, both for patients and staff have a direct implication on health and safety of staff and patients (see V82-85). Non-availability and poor maintenance of accessories and equipment (see V86, 88 and 89) has direct negative impact on service delivery.

c) Management trust, support and leadership ability

This sub-survey consisted of two nine-item scales (see APPENDIX 3, V90-V98, V99-V107, p182-183) determining trust, support, and leadership ability of Head of Department (HOD) and supervisor by individual radiographers. This 18-item scale was adopted from the WLQ[68], and Winefield et al[71]. Trust and confidence in management is very important during a period of change. Employees' perception of management as unsupportive or insensitive to their needs can contribute to the stress levels experienced by them in an organization. This can result in an unhealthy work environment and contribute to decreased commitment. The same criteria applied for items.

d) Career development

An 8-item scale measured career development of radiographers (see APPENDIX 3, Sect. 4, V108-115, p183). This scale was modified and adopted from Winefield et al[71]. It becomes important from a perspective of rendering a quality service delivery, making work interesting and challenging promoting a healthy positive work environment. This can be achieved by appraising an individual's performance (V108) and applying promotion procedures fairly (V109), by recognizing their good performance (V110), and providing opportunities for career development (V111 to V113). An unhealthy relationship with management can result in a negative career development (V114, 115).

e) Role ambiguity

A four-item scale measured role ambiguity defined as individual/s not having clear direction of expectations of their role in the workplace or organization (see APPENDIX 3, V116-119, p183-184). These items were adopted from the 14-item scale of Rizzo et al[72]. Role ambiguity also has a direct impact on service delivery. Items included here, determined whether radiographers had clear, planned goals and objectives (V116), knew what their responsibilities were (V117), utilized time effectively (V118), and felt certain of the authority they had on the job (V118).

f) Role conflict

A 5-item scale measured role conflict referring to incompatibility in communicated expectations that impinge on perceived performance[72] (see APPENDIX 3, V120-124, p184). These items were adopted from the 14-item scale of Rizzo et al [72]. Role conflict also has a direct implication of the level of service delivered. Items included here are: the manner of conducting radiographic examinations differed under different circumstances (V120), working with colleagues who worked quite differently (V122), inconstancy of acceptance of work done (V123) and working without adequate resources (V121, V124).

g) Social support

Social support was measured by an 11-item scale (see APPENDIX 3, V125-135, p184) adopted verbatim from a study on the relationship between burnout and occupational factors in staff[73].

Social support has been shown to reduce stress and burnout[1,15]. Improving a psychological bond among all employees concerned that is fostering a feeling of team spirit and group cohesion is more likely to enhance service quality than training or higher remuneration[13]. This can involve work and non-work settings, for example family/or friend support[19] (V134, 135).

h) Workload

This 12-item scale measuring workload (see APPENDIX 3, V136-147, p185) was resourced from the nursing stress scale[74]. Modifications involved selecting items most relevant to radiographers, substituting the word "radiographer" for "nurse". The indication of how frequently a radiographer experiences workload was substituted by the extent to which radiographers agree to the items.

Workload is often described in quantitative terms and can be considered to be excessive when the volume of work exceeds the ability of the worker to meet the demands over a specified period of time[19]. Work overload has a direct negative effect on service delivery. Items included here were the degree of physical and mental work (V136), sufficiency of examination rooms (V137), working through breaks (V138), and so forth.

h) Shift work

A 12-item scale (see APPENDIX 3, V148-156, p185-186) measured the radiographers' experience of shift work adopted from thesis. Shift work can be classified into afternoon or night shift, whereby radiographers are expected to work these hours on a regular basis[56]. Items included here were to determine if shift work was fairly rotated (V148), to perceptions of feeling unsafe in the workplace after hours (V156).

3.7.1.1.5 Mechanisms of coping applied by radiographers

This main measure consisting of an eight-item scale (see APPENDIX 3, V157-164, p186) measured radiographers' mechanism of coping with stress adopted from Winefield et al[71]. Coping refers to efforts or behaviours of people to solve problems, deal with demands or pressures and/or establish a sense of mastery over the environment. Five items evaluated emotional-focused coping (V158-161, & V164), and three items (V157, 162, 163)

evaluated problem-focused coping. For the purpose of this study it was important to include more negative emotion-focused statements to determine the radiographers' discretionary behaviour during a service encounter.

3.7.1.1.6 Physical symptoms of Occupational Stress

This main measure consisting of a nine-item scale (see APPENDIX 3, V165-173, p187) measuring radiographers' physical symptoms of OS. This scale was adopted from Winefield et al[71]. The physical symptoms experienced due to stress[38] include headaches, muscle pain, tiredness, and so forth. Radiographers had to indicate how frequently they experienced the above, by responding to a five-point scale, 1="never" to 5="always".

3.8 Pilot study

Prior to collecting the data, a pilot study was conducted to validate the covering letter and questionnaire[63]. A pilot study of the questionnaire was completed to determine the clarity of questionnaire items, effectiveness of instructions, completeness of response sets, time required to complete the questionnaire, and to evaluate data collection techniques. Participants were specifically requested to constructively criticize the questionnaire on the language and relevance of items to radiographers. Six academic radiographers from the Medical University of South Africa and four practicing radiographers from Pretoria Academic Hospital piloted the questionnaire (as recommended by academic radiographers). Amendments to the covering letter and questionnaire were made after feedback from participants. The participants were acknowledged for their valuable input. These participants were excluded from participating in this study.

3.9 Ensuring reliability and validity

Reliability refers to the repeatability or dependability of measurement; hypothetical changes in levels of a completely reliable instrument reflect a true change in the characteristic of interest. Recommendation of psychometric theorists is that questionnaire measures should comprise more than a single item as the use of multiple items to assess the construct of interest acts to reduce measurement error in the scale as a whole and thereby tends to increase reliability[65].

Validity, or trustworthiness, is defined as the: " extent to which the researcher's findings are accurate, reflect the purpose of the study and represent reality[75]". Unlike reliability, it cannot be captured in a single coefficient, as it is a multifaceted concept determined by relations with other variables[76]. Ultimately, the determination of the validity of a measure relies on evaluative judgment of the adequacy of inferences made from test scores, in terms of both empirical evidence and theoretical rationale[77].

The 17-item scale of the OC has previously demonstrated an alpha reliability coefficient of 0.85 for affective, 0.83 for continuance, and 0.77 for normative commitment[62]. For emotional and mental symptoms of OS, calculated according to the Kuder Richardson formula 8 (KR 8) measured 0.92 and the test retest 0.79[68]. For the sources of OS, the reliability alpha coefficient on the first two sub-scales on overall function of the organization was 0.94 and the third, general physical work environment measured with KR 8 was 0.84 and the test retest 0.62[68]. The internal reliability (Cronbach alpha) for the 18-item scale measuring the management's trust, support and leadership ability measured 0.93[70,71]. The reliability coefficient for the nine-item scale measuring career development was 0.84[70]. Role conflict and role ambiguity measured a reliability (alpha) coefficient of 0.91 for role ambiguity and 0.85 for role conflict[69]. Social support was measured by an 11-item scale

whose reliability (alpha) measured 0.75[73]. Items measuring workload were resourced from the nursing stress scale reported a reliability of 0.81[74]. To investigate shift work only items most relevant to radiographers were selected from thesis the reliability (Cronbach's alpha) was 0.85[56]. Eight-item scale measure of coping mechanisms applied by radiographers and the 9-item scale determining physical symptoms of OS measured reliability between 0.70-0.96[71].

3.10 Procedures

After designing the survey instrument, that is the questionnaire, the researcher proposed a method for data collection and analysis of data obtained.

3.10.1 Data collection procedures

Organizations in the Tshwane region were telephonically contacted for agreement to participate in this study and written consent obtained. This entailed a detailed explanation to the head of the section/s on the aim of the study and how it could benefit their organization/s. The organizations as outlined (see Table 3.1, p47) agreed to participate in this study. An appointment was made with the head of the section to hand over questionnaires. The head of section was asked to provide a list of staff members' names in alphabetical order. Every second staff member was selected to participate in the study.

A full explanatory letter accompanied the questionnaire (see APPENDIX 1, p173-174). Radiographers were given three weeks to respond by completing the questionnaire and handing it in to the head of the section. A follow-up call was made towards the beginning of the third week. The questionnaires were collected at the end of the third week.

3.10.2 Data analysis process

The data analysis process entailed a descriptive analysis, followed by item correlation scales to determine the reliability coefficients; correlational tests were performed for public and private radiographers and for investigating relationships between item scale measures. A detailed discussion follows.

3.10.2.1 Raw data

Firstly, the raw data was captured on a computer in order to determine the overall response rate to the entire questionnaire.

3.10.2.2 Item correlation scales and internal reliability coefficients

An Item correlation for each item was performed in relation to the item scales of each survey measure. An item correlation score of 0.3 was accepted satisfactory as determined by the statistician based on the results obtained. The importance of an item correlation scale was also to assist the researcher in determining internal reliability coefficients for each measure. One of the main reasons for this was the non-availability of survey questionnaire/s specifically for radiographers to determine OS, levels of OS and OC amongst radiographers. The researcher did attempt to acquire the questionnaire from the authors Eslick and Raj[17], but was unsuccessful. The study, done on hardiness and burnout amongst radiographers adopted the Gray Toft and Anderson[74], nursing scale for its survey measures. OC is being researched for the first time amongst diagnostic imaging radiographers to determine the level of commitment. Therefore, the OC questionnaire of Meyer and Allen[62] (with permission) was used. This questionnaire was used in a longitudinal study and for this study it was used for a descriptive correlational study (see Chapter 3, Section 3.3, p43).

3.10.2.3 Comparison between private and public organization Radiographers

To determine if there was a significant difference in the level of OC and OS, sources of OS, mechanisms of coping with OS and physical symptoms of OS between private and public organization radiographers, a comparison between the mean response, and

standard deviations were obtained. A T Test was then performed (*p* value), for all the measures. A *p* value of 0.05 or <, indicated a significant difference.

3.10.2.4 Descriptive analysis of each item

A detailed descriptive analysis for each item was necessary, to determine the level OC, the level, sources coping mechanisms, and physical symptoms of OS, by frequency distribution of each item (see APPENDIX 4, Tables A1- A173, p188-239). It was important for the researcher to analyze and interpret the frequency distribution of each item based on the argument that any item scale decreasing radiographers' OS, OC, radiographer well-being, performance, or such like to even a small degree, may have important consequences for the organization they are employed in.

Firstly, the response per individual category such as "strongly agreed" to "strongly disagreed" was analyzed individually with a descriptive analysis and interpreted according to the statement to which radiographers had to respond. Throughout the survey the "not sure" response was considered a neutral response.

Secondly, the overall rating per item was obtained by the sum of categories "strongly agree" and "agree", "strongly disagree" and "disagree", and "sometimes", "often" and "always". This was done in order to obtain tendencies with reference to public or private radiographers per item and interpretation of results based on the study done in Australia.

For the response per individual category of "never" to "always" was also first analyzed individually, with a descriptive analysis and interpreted according to the statements to which radiographers had to respond. To determine the overall rating per item the sum of categories "sometimes to always" were combined to interpret the results. To obtain the

tendencies between private and public organizations per item the "often" to "always" categories were combined.

Calculation

For example, if radiographers were not happy to spend the rest of their careers with one organization revealed a result of 60%. This was analyzed further with reference to the raw data obtained per private and public organization response with the total response of radiographers from both private and public organizations.

That is, if 20 private radiographers were not happy the percentage was obtained by n= 20 (strongly agreed and disagreed) divided by n=65 (total private radiographers) and multiplying by 100.

3.11 Ethical considerations and clearance

Holloway and Wheeler[75] wrote that four principles were important when considering ethical concerns:

Firstly, the principle of justice stands somewhat in tension with that of autonomy, recognizing individuals do not always act as though they are rational and autonomous[75]. In practice, the principal of justice requires that no researcher should use any power over their consent[75]. Finally, it is important that no payment is offered in order to persuade them to take part in the research[75]. In order to achieve this, the head of the sections of the participating organizations were first consulted telephonically for participation. An informed consent was faxed to the relevant organizations and consent was obtained from the relevant heads of sections. The content of the consent entailed a detailed explanation to the head of the section/s on the aim of the study and how it could benefit their organization/s (see APPENDIX 1, p173-174). It was reiterated in the consent obtained

that confidentiality of the organizations and respondents would be maintained throughout the study.

Secondly, the researcher should respect the autonomy of the subjects[75]. For this study the subjects were radiographers employed in organizations. The radiographers were free to make an independent and informed choice to participate or not in the study, or withdraw from it should they so wish. This was included in the covering letter sent to the individual radiographers (see APPENDIX 2, p175-176).

Consent for the individual radiographers participating in the study was obtained by the content of the covering letter, which stated as follows: "Completion of the questionnaire will be regarded as consent to participate in the study." According to Holloway and Wheeler[75], an individual might consent at one stage of the research process (such as when the relevant section heads had a discussion with the radiographers prior to consent), their consent can only be assumed at later stages as the research write up is finalized.

Thirdly, the research should do little or no harm, or hold few (no) risks for the individuals concerned, their respective professions, or the organization that employs them[75,78]. Related to this issue is one of anonymity. The researcher should ensure that the participants could participate freely without fear of victimization by ensuring such confidentiality[75]. The researcher ensured this by coding the participants with numerical codes independent of the organization code. Also, during the piloting phase of the study the participants were requested to examine the phrasing of the items to ensure that no harm is brought about.

Fourthly, the principle of beneficence should apply – the benefit derived from the research should outweigh any possible potential harm or risk[75]. Also, the good of the whole should

also be factored into the process. In the context of the present research study undertaken, only organizations that requested feedback on the basis of benefiting the organization would be informed of the research outcomes.

Fifthly, permission to conduct the study was requested from the Ethics Committee of the University of Pretoria, the Academic Advisory Committee and the Dean of the Faculty were involved. Each discipline chair was contacted by the researcher via the co-leader for this study and requested to discuss with, and inform their respective members of the proposed research and research process. Final approval was granted by registering the title of the research project.

3.12 Conclusion

In conclusion, the researcher chose the research method from a quantitative stance, allowing for an approach to the research design, which is based on the correlational descriptive design, supported by the main aim, objectives and the hypotheses for this study. It assisted the researcher to identify the material required for data collection.

3.13 Summary

In summary, based on the main aim of this study, the objectives were formulated in order to identify the hypotheses for this study. The methodology and material, the procedure for obtaining the data were put forth for analyzing the data by justifying it with literature reviewed. This will enable the researcher to present the results obtained in chapter four.

Chapter four

The results

4.1 Introduction and setting

This chapter presents the results of the questionnaire survey underpinning the empirical study undertaken based on the objectives identified in chapter three of the dissertation.

The first part

First, the survey sample is described with respect to demographic characteristics, academic development of participants and employment status.

The second part

Four of the objectives identified in chapter three are presented here:

- The level of organizational commitment of public and private organization radiographers;
- The sources of occupational stress amongst radiographers in public and private organizations;
- The level of occupational stress amongst private and public organization radiographers; and
- The mechanisms of coping applied by radiographers in public and private organizations.

The third part

The comment section of the questionnaire is presented here.

The fourth part

The remaining of the two objectives are presented here, namely the relationships:

- The relationship between sources of OS and OC;

- The relationship between sources of OS and level of OS;
- The relationship between level of OS and OC;
- The relationship between mechanisms of coping and OC; and
- The relationship between mechanism of coping and sources and level of OS.

Part one (A)

A4.1 The sample

Of the 123 questionnaires delivered, 119 questionnaires were collected, yielding a return rate of 97% (see Figure 4.1).

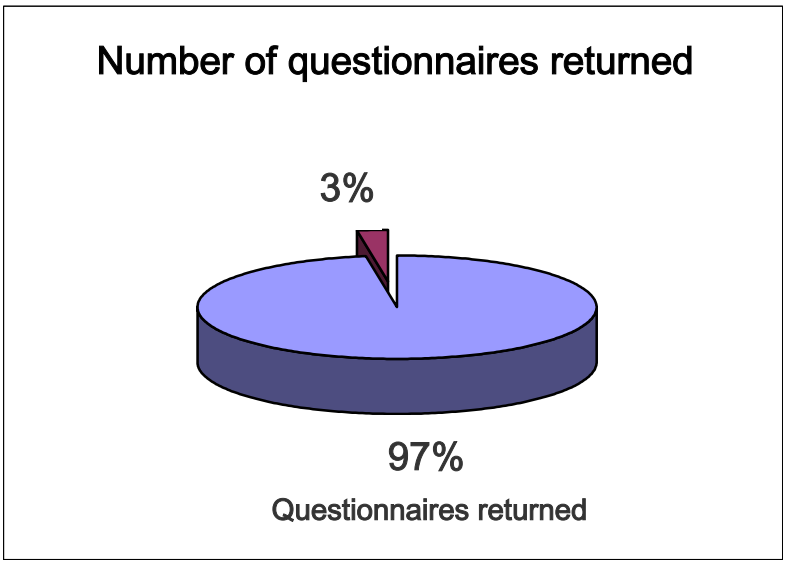

Figure 4.1 Total number of questionnaires collected

Comment

Only 3% of questionnaires were not returned.

A4.1.1 Return rate

The total number of organizations participating in this study was 11. There was a 100% response from 10 of the 11 participating organizations (see Table 4.1,p66).

Table 4.1 The sampling framework of participants and respondents per organization

Organization	Number of participants	Number of respondents (n)	Percentage respondents per organization
1	16	12	97%
2	14	14	100%
3	15	15	100%
4	10	10	100%
5	14	14	100%
6	25	25	100%
7	8	8	100%
8	6	6	100%
9	4	4	100%
10	3	3	100%
11	8	8	100%
Total	**123**	**119**	**99.72%**

Comment

Only organization number one had a 97% return rate of questionnaires. There was a 100% response from public organization radiographers.

A4.1.2 Public and private organization response

Participants from public organizations totalled 45% and private organizations 55% (see Figure 4.2).

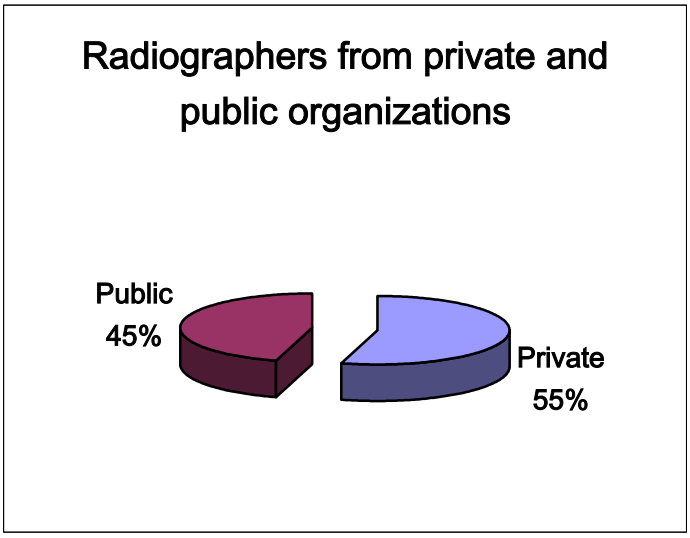

Figure 4.2 Percentage radiographers from public and private organizations

Participating private organization radiographers all belonged to academic private organizations. Of the participating 46% public organization radiographers, 34% were from academic and 12% from non-academic public organizations (see Table 4.2).

Table 4.2 Respondents per type of organization

Type of organization	Respondents (n=119)	Percentage (%)	Total radiographers
Public academic	40	33.61	54 public
Public regional	14	11.76	
Private academic	65	54.62	65 private

Comment

Of the participating radiographers, there were 10% more private than public organization radiographers. In total 88% were radiographers from academic institutions.

A4.2 Demographic information

The response to gender identity, revealed 94% identifying themselves as female and 6% as male (see Table 4.3).

Table 4.3 Gender identity of radiographers

Gender	Respondents (n=119)	Percentage (%)	Type of organization
Female	112	94	Private and public
Male	7	6	Public

Age categories of radiographers revealed 42% between 21-30years, 31% between 31-40, 19% between 41-50 and 8% > 50 years (see Table 4.4).

Table 4.4 Radiographers' age categories

Age category	Respondents (n=114)	Percentage (%)
21-30	48	41.74
31-40	36	31.30
41-50	22	19.13
51+	9	7.83

The result on marital status of radiographers revealed that 54% were married, 34% had never been married, 9% were divorced and 3% were widowed (see Table 4.5).

Table 4.5 Radiographers' marital status

Marital status	Respondents (n=119)	Percentage (%)
Never married	40	33.6
Married	64	53.8
Divorced	11	9.2
Widowed	4	3.4

The category determining the number of dependents revealed that 36% had none, 49% had one to two, 14% had three to four, and only one had five children (see Table 4.6).

Table 4.6 Dependents - children

Respondents (n=110)	No. of children	Percentage (%)
40	0	36.36
25	1	22.73
29	2	26.36
11	3	10.00
4	4	3.64
1	5	0.91

Dependents other than children, to which 83% radiographers responded, revealed that 75% had no dependents, 8% had one, 7% had two, 6% had three, and 1% had four dependents, and 3% had five dependents (see Table 4.7).

Table 4.7 Dependents other than children

Other dependents	Respondents (n = 99)	Percentage (%)	
0	74	74.75	
1	8	8.08	**Total radiographers with dependents 25%**
2	7	7.07	
3	6	6.06	
4	1	1.01	
5	3	3.03	

Determining whether dependents contributed to radiographers' monthly income revealed a 99% response, of which 58% contributed (see Figure 4.3).

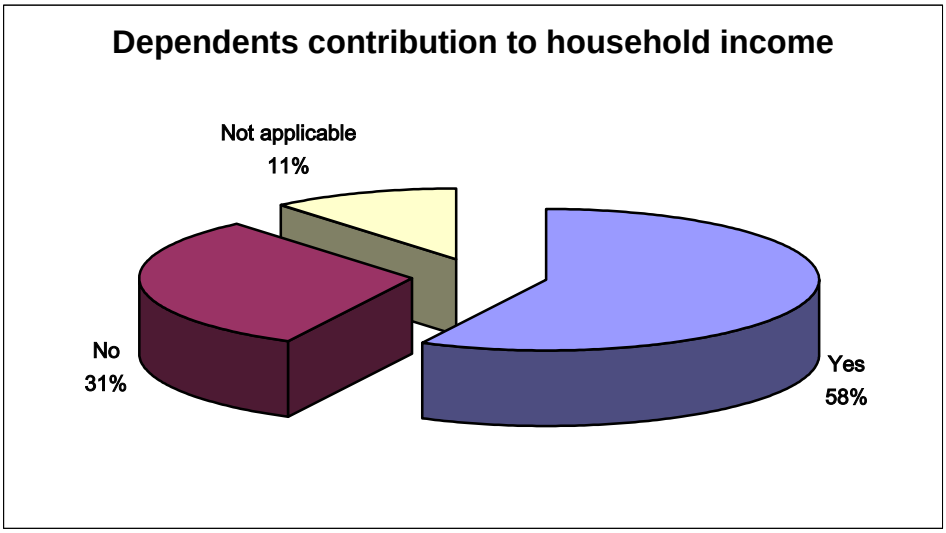

Figure 4.3 Dependents' contribution to monthly income

Comment

The 6% male radiographers were all employed at public organizations. Radiographers (73%) were between 21-40years. More than 50% of these radiographers were married. Approximately 50% had 1-2 children, 25% had dependents other than children. But 58% of the dependents contributed to radiographers' financial income.

A4.3 Academic development of radiographers

Determining radiographers' highest qualification obtained revealed a 100% response, of which 46% had a National Diploma in Radiography (DRAD) and 31% had Bachelors in Radiography (BRAD), 13% a Bachelors Technology in Radiography [BTech R], 3% Honours in Diagnostic Radiography [BRAD (Hons)], and 3% Radiation Therapy (BRAD (Hons) T], 2% Diploma in Ultrasound, and 3% Supplementary certificate in Radiography (see Table 4.8).

Table 4.8 Radiographers highest qualification

Qualification	Respondents	Percentage (%)		
BRAD	37	31.09	77%	
DRAD	55	46.20		Additional qualifications
BTech R	15	12.61		23%
BRAD (Hons)	3	2.52		
Diploma in Ultrasound	2	1.68		
BRAD (Hons) T	3	2.52		
Supplementary Radiography (D)	4	3.36		

Radiographers' engagement studies for additional qualification revealed that 18% were studying for additional qualifications (see Figure 4.4)

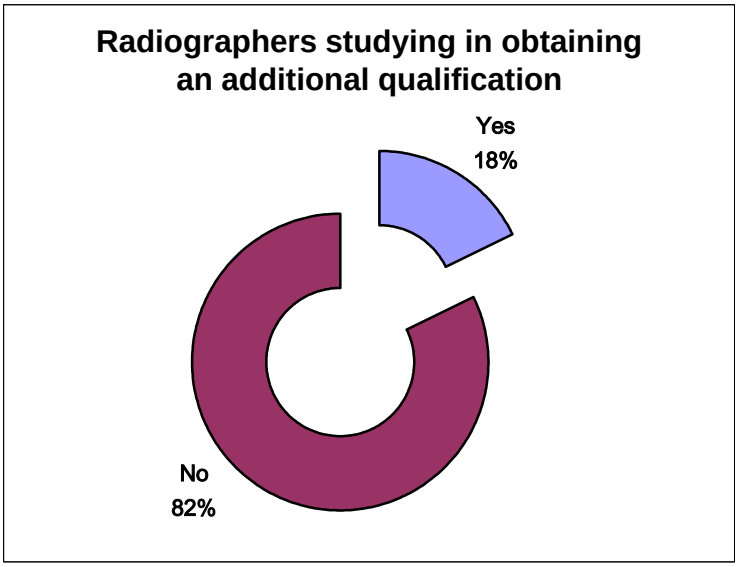

Figure 4.4 Radiographers engaged in obtaining an additional qualification

Of the 18%, only 7% (8) radiographers were studying for an additional qualification in radiography (see Table 4.9).

Table 4.9 Respondents obtaining an additional qualification

Respondents	Yes	No	Radiography	Other
119	21	97	8	13
Percentage (%)	17.64	81.51	6.7	10.9

The remaining 11% (13) were enrolled for advancing their careers in Commerce (such as Computer Science, Bachelors in Commerce and Market Management), Social Science, Law, Education, Physiotherapy or Beauty Technician.

Comment

With regards to academic development of radiographers, 77% had a basic entry-level qualification, 23% had acquired an additional qualification and only 7% were studying for an additional qualification in radiography.

A4.4 Radiographers' employment status

The result revealed a 94% response of which 22% had spent 1-2 years with their current employers, 26% between 3-5 years, and 52% > 5 years (see Table 4.10).

Table 4.10 Number of years employed at organization

Number of years	Respondents (n=112)	Percentage (%)
1-2	25	22
3-5	29	26
6-31	58	52

Radiographers' condition of employment revealed a 100% response (see Figure 4.5), of which 90% were full-time, 5% contract, 3% part-time, and 2% "other" (namely session workers).

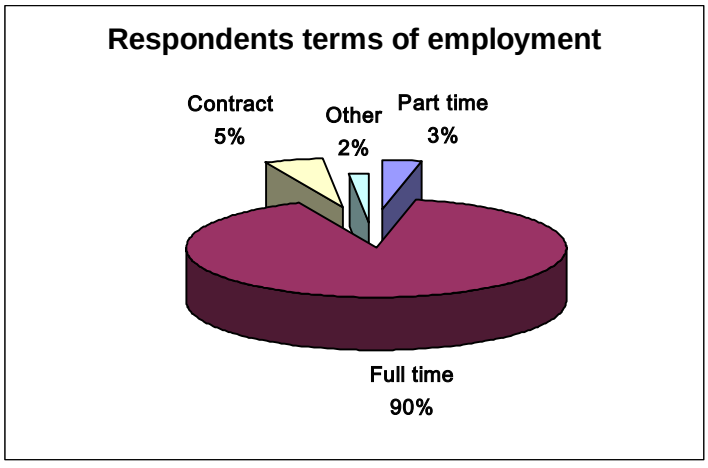

Figure 4.5 Radiographers' terms of employment at organizations

The response to radiographers' rank at their organization, revealed a 99% response, of which 41% were "senior", 27% "junior", 31% "chief", and one radiographer in an assistant director's post (see Figure 4.6).

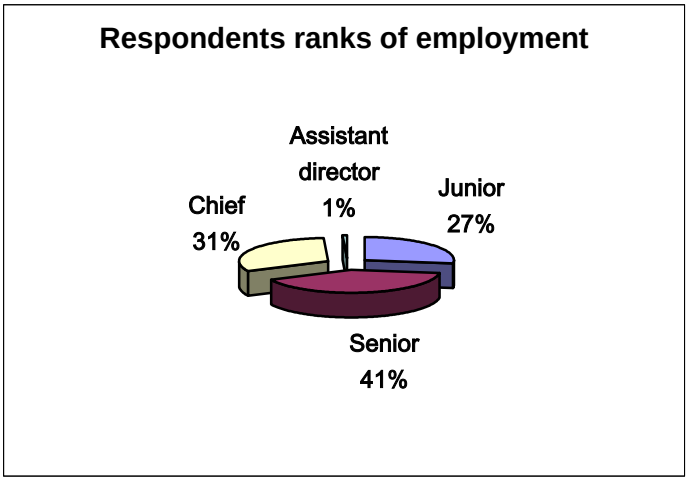

Figure 4.6 Ranks of employment

Comment

Radiographers (78%) were in employment for three or more years in their organization, only 27% were in the junior rank and 90% had a full-time employment status.

Part two (B)

The results presented in part two are in accordance with the questionnaire sections two to seven respectively. To determine the levels of OC, sources of OS, level of OS (emotional, mental, and physical symptoms) and mechanisms of coping are presented as follows:

- The descriptive data;
- Presentation of the item correlational scores;
- Presentation of the internal reliability coefficients; and
- A summary of the descriptive data for each item scale taking into account the response from both public and private organization response for interpretation of the results (see chapter five).

B4.1 The descriptive data

The detailed descriptive data was obtained by frequency distribution for each category per item. The analysis of the results per item categories is presented in APPENDIX 4, Table A1 to A156, p188-239 enabled to determine the item correlation scores below.

B4.2 Item correlation scores

Item scale correlation for each item was obtained in conjunction of the relevant item-scale. Item correlation scores for each item ranged from 0.15 to 0.91 (see APPENDIX 4, Table A1 to A156, p188-239). Generally, item correlation scores were satisfactory and in some instances excellent. Only three items revealed an unsatisfactory item correlation score of 0.15 and 0.18. These items were included in the analysis of the result based on the following argument that any variable decreasing a radiographer's OC and/or OS to even a small degree may have important consequences for the organization in delivering a quality service.

B4.3 Internal reliability coefficients

The reliability of the item scales used for this study revealed an internal reliability coefficients for the item scales ranged from 0.546 to 0.967 (see Table 4.11, p74).

Table 4.11 Internal reliability coefficients for item-scales

Survey measure	Conbranch alpha	Item (V)
Affective commitment	0.868	V18-23
Continuance commitment	0.656	V24-28
Normative commitment	0.836	V29-34
Levels of stress	0.888	V35-59
Organizational context and characteristics	0.689	V60-68
Management style within an organizational context	0.828	V69-80
General working conditions	0.865	V81-89
Trust and support of the departmental head	0.950	V90-98
Trust and support of the supervisor	0.967	V99-107
Career development	0.764	V108-115
Role ambiguity	0.733	V116-119
Role conflict	0.546	V120-124
Social support	0.781	V125-135
Workload	0.825	V136-V147
Shift work	0.616	V148-V156
Coping mechanisms applied	0.601	V157-V164
Symptoms of stress	0.808	V165-V173

The internal reliability coefficients of all the item scales were rated satisfactory.

B4.4 Determining level of organizational commitment

Organizational commitment consisted of three sub-scales. Rating of the level of commitment to the various sub-scales is rated as follows: Strongly agree = very high, agree = high, not sure = neutral, disagree = low, strongly disagree to = very low.

B.4.4.1 Affective commitment

Response to the “strongly agreed” category revealed a 6% to 13% response, and the “strongly disagreed” an 8% to 11% response, indicating that the level of affective commitment was neither very low nor very high. However, the “agree” category response

rate was between 29% and 50% and the "disagree" rate between 21% and 31%. Therefore, the level of affective commitment can be rated as moderate (see APPENDIX 4, Tables A1 to A6, p188-190).

The overall rating presented in the table below revealed the following:

Table 4.12 Affective commitment

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Happy to spend the rest of my career	42%	37% (n=44)	24	44%
			20	31%
Organization's problems are my own	53%	39% (n=45)	18	33%
			27	42%
Part of the family	61%	29% (n=34)	23	43%
			11	17%
"Emotionally attached" to this organization	53%	42% (n=50)	25	46%
			25	38%
Great deal of personal meaning	59%	32% (n=37)	20	37%
			17	26%
Strong sense of belonging	60%	30% (n=35)	18	33%
			17	26%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Radiographers (42%) were happy to spend the rest of their careers with the organization, although 37% (44% public and 31% private) were unhappy. Determining whether radiographers felt as though the organization's problems were their own revealed that 53% agreed and 39% (42% private and 33% public) radiographers disagreed. Radiographers (61%) felt part of the family of the organization and 29% (43% public and 17% private) did not feel part of the family. An emotional attachment was also experienced by 53% radiographers, whilst 42% (46% public and 38% private) did not. Determining whether the organization had a personal meaning to them revealed a 59% response, while to 32% (37% public and 26% private) radiographers the organization had

no personal meaning. However, 60% felt a sense of belonging to the organization.

Response between private and public radiographers

Determining if there was a significant difference in the level of affective commitment amongst private and public radiographers did not reveal a significant difference (see Table 4.13).

Table 4.13 Affective commitment - Public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Affective commitment	Mean	Std dev	Mean	Std dev	0.6772
	3.3025	0.9148	3.0393	0.9292	

*** *p*-value < than = 0.05 represented significant difference between public and private**

Although statistically not significant, according to the summary, radiographers in private organizations felt more part of the family of the organization than did public radiographers.

B4.4.2 Continuance commitment

The results on the level of continuance commitment of radiographers revealed 9% to 19% "strongly agreed" and 5% to 17% "strongly disagreed", implicating radiographers' level of continuance commitment was neither very high nor very low. Thus, the level of affective commitment was neither very high nor was it very low. The "agree" category revealed a response of between 27% and 50% and the "disagree" a response of between 21% and 46% (see APPENDIX 4, Tables A7 – A11, p190-192). Taking the above into consideration, radiographers' level of continuance commitment can be rated as moderate.

The overall rating presented in the table below revealed the following:

Table 4.14 Continuance commitment

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54) / Private (n=65)	%
Right now, staying with this organization is a matter of necessity	66%	27% (n=35)	22	41%
			13	20%
Very hard for me to leave right now, even if I wanted to	57%	37% (n=44)	22	41%
			22	34%
Too much of my life would be disrupted if I decided I wanted to	56%	41% (n=48)	24	44%
			24	37%
Had not already put so much of myself into this organization	36%	57% (n=66)	29	54%
			37	60%
Scarcity of available alternatives	42%	53% (n=61)	29	54%
			32	49%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

According to the summary, radiographers (66%) were presently staying with their organization because it was a necessity as much as a desire, but this was not so with 27% (41% public and 20% private) of them. Determining whether radiographers would find it hard to leave, revealed that 57% would find it hard and 37% (41% public and 34% private) radiographers would not find it hard. This was probably because 56% felt too much of their lives would be disrupted, but 41% (44% public and 37% private) radiographers felt this was not so. But 57% (60% private and 54% public) radiographers would consider working elsewhere, even if they had put much of themselves in the organization. This was not because of scarcity of job alternatives as reported by 53% (49%private and 54%public) radiographers.

Response between private and public radiographers

There was not a significant difference in the level of continuance commitment amongst private and public radiographers (see Table 4.15).

Table 4.15 Continuance commitment - Public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Continuance commitment	Mean	Std dev	Mean	Std dev	0.4181
	2.9555	0.9100	2.8308	0.7308	

*** *p*-value < than = 0.05 represented significant difference between public and private**

But according to Table 4.14 a significantly greater number of private radiographers were remaining with the organization because of a necessity as much as a desire.

B4.4.3 Normative commitment

Determining the level of normative commitment amongst radiographers revealed that 4% to 16% "strongly agreed" and 7% to 18% "strongly disagreed" (see APPENDIX 4, Tables A12 - A17, p192-194). Thus the level of normative commitment of radiographers was not very high nor very low. The "agree" response rate was between 31% and 44% and the "disagree" between 37% and 42%. In comparison to affective and continuance commitment, the level of normative commitment can be rated as moderate towards a tendency of low amongst radiographers.

The overall rating presented in the table below revealed the following:

Table 4.16 Normative commitment

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Feel an obligation to remain	43%	47%(n=56)	33	61%
			23	35%
Do not feel right to leave, even if it is to my advantage	39%	58%(n=69)	37	69%
			32	49%
Feel guilty if left the organization	37%	59%(n=70)	37	69%
			33	33%
Organization deserves my loyalty	60%	34%(n=40)	20	37%
			20	31%
Sense of obligation to people in it	54%	39%(n=47)	26	48%
			21	32%
Owe great deal to my organization	45%	48%(n=57)	27	50%
			30	46%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Analysis of the above summary revealed 47% (61% public and 35% private) felt no obligation to remain. Determining whether radiographers would leave if it were to their advantage revealed that 58% (69% public and 49% private) would leave and 59% (69%

public and 33% private) would not even feel guilty leaving. However, 60% radiographers felt the organization deserved their loyalty. The only reason for staying was because of a sense of obligation to the people in it as reported by 39% (48% public and 32% private) radiographers. Lastly, 48% (50% public and 46% private) felt they owed nothing to their organization.

Response between private and public radiographers

Determining if there was a significant difference in the level of normative commitment amongst private and public radiographers revealed that it was not statistically significant (see Table 4.17).

Table 4.17 Normative commitment -- public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Normative commitment	Mean	Std dev	Mean	Std dev	0.1051
	3.1852	0.8982	2.9128	0.9143	

*** *p*-value < than = 0.05 represented significant difference between public and private**

However, according to the summary, public radiographers indicated a significantly higher rating than private radiographers that they were under no obligation to remain, and would not feel guilty leaving the organization.

B4.4.4 Summary of organizational commitment

Radiographers' level of organizational commitment can be rated as moderate towards a tendency of low. Although statistically no significant difference was found, the summary of the results revealed that radiographers in private organizations were slightly higher in organizational commitment than public radiographers.

B4.5 Rating the sources of occupational stress

Eleven sources of OS were identified. Rating of the sources is based on the detailed descriptive data of this study (see APPENDIX 4 Tables A43 to A139, p202-233). This is followed by an overall rating of the results obtained to enable the interpretation of the results (see Chapter five). For the positive statement responses the source is rated as follows: Strongly agree = very low, agree = low, not sure = neutral, disagree = high and strongly disagree = very high. For the negative statements, strongly agree = very high, agree = high, not sure = neutral, disagree = low and strongly disagree = very low.

B4.5.1 Organizational climate

According to the detailed descriptive results (see APPENDIX 4, Tables A43 to A52, p202-205), the "strongly agreed" category revealed a 3% to 13% response, indicating that organizational culture and climate were not a very low source. However, the "strongly disagree" category revealed a response of 4% to 49%, indicating that organizational culture and climate is a not a very high source of stress but has a tendency towards high. But the "agree" response rate revealed a 14% to 64% and the "disagree" category a response of 9% to 43%. Taking the latter into account, organizational culture and climate can be rated as a moderate towards a high tendency to be a source of stress (see "strongly disagree" response rate).

The table below representing the overall rating, revealed the following:

Table 4.18 Organizational culture and climate

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Organization's mission and policy	52%	41% (n=48)	16	30%
			32	59%
Effective employee assistance programme	25%	64% (n=76)	32	59%
			44	68%
Promotion opportunities	20%	70% (n=83)	41	76%
			42	65%
Salary is market-related	26%	64% (n=76)	39	72%
			37	57%
Satisfactory uniform allowance	21%	76% (n=90)	48	89%
			42	65%
Rules regarding uniforms are satisfactory	60%	38% (n=35)	27	50%
			8	12%
Regulations regarding working hours are fair	76%	20% (n=24)	14	19%
			10	15%
Rules regarding termination of employment are fair	67%	15% (n=18)	14	26%
			4	6%
Rules regarding transfers are fair	50%	28% (n=33)	14	26%
			19	29%
Communication channels regarding grievances are adequate	34%	59% (n=68)	36	67%
			32	49%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

According to Table 4.18, 41% (59% private and 30%public) radiographers felt the mission statement and policies were unclear, whilst 64% (68% private and 59% public) radiographers rated the EAP as ineffective. In addition to this 70% (76% public and 65% private radiographers) felt promotion opportunities were applied unfairly. With regards to salaries 64% (72% public and 57% private) radiographers felt it was not market-related. Although a high level of dissatisfaction was reported between both public (89%) and private (65%) organization radiographers regarding uniform allowance, 60% were satisfied with rules regarding uniforms. Determining whether working hours were fair revealed that

76% agreed and 20% (19% public and 15% private) disagreed. Rules regarding the termination of employment were fair as reported by 67% of the radiographers but 26% public and 6% private felt these were unfair. Determining whether rules regarding transfers were fair, revealed that 50% of radiographers agreed, however, 26% public and 29% private felt this was not the case. Communication regarding channels of grievance procedures was also rated as inadequate among 49% private and 67% public organization radiographers.

Response between private and public radiographers

The table below indicates that a significant difference between public and private organization radiographers were found with regards to organizational climate and culture.

Table 4.19 Organizational culture and climate - public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Organizational culture and climate	Mean	Std dev	Mean	Std dev	0.0233
	3.3025	0.6324	3.0393	0.6081	

*** *p*-value < than = 0.05 represented significant difference between public and private**

Items contributing to a higher source of stress amongst public radiographers were promotion opportunities, salaries, uniform rules and allowances, and termination of employment (see Table 4.18). Amongst private radiographers, it was the mission statement policies and the EAP (see Table 4.18).

B4.5.2 Management style from an organizational perspective

Analyzing the detailed descriptive results (see APPENDIX 4, Tables A53 to A63, p205-209) revealed the following: The “strongly agree” category revealed a 0.85% to

11% response rate, indicating style of management was not a very low source of OS. The "strongly disagree" category, with a 3% to 27% response, revealed it not a very high source of stress. However, referring to the " agree" category the response was 24% to 61% and the "disagree" category 15% to 44% response. In accordance with the category response rates management style can be rated as a moderate source of OS.

The overall rating as presented in the table below revealed the following:

Table 4.20 Management style from an organizational perspective

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Decisions made at top level adequately communicated	27%	68% (n=79)	37	69%
			42	65%
Persons affected are consulted	26%	64% (n=75)	36	67%
			39	66%
Management meet staff to discuss future work goals	25%	68% (n=80)	25	46%
			55	85%
Adequate consultation when changes are made	35%	64% (n=76)	30	56%
			46	85%
Every employee has a job description	72%	24% (n=28)	7	13%
			23	43%
Real interest in welfare of staff	30%	62% (n=73)	26	48%
			47	72%
Tries to improve working conditions	43%	50% (n=59)	29	54%
			30	46%
Management quick to respond to technical changes	41%	53% (n=62)	36	67%
			26	40%
Staff is generally quick to adopt improved methods	66%	28% (n=33)	23	43%
			10	15%
Productivity maintained	56%	40% (n=46)	26	48%
			20	31%
Work activities sensibly organized	69%	26% (n=30)	24	44%
			6	9%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Referring to the values in Table 4.20, management failed to accurately and adequately communicate decisions made at top level as reported by 68% (69% public and 65% private) radiographers. When it came to decision-making, 64% (67% public and 66% private) affected radiographers had no input. To determine whether management met with radiographers to discuss their future work goals it was revealed that management never met with 68% (85% private and 46% public) radiographers. When changes were to be implemented, 64% (85% private and 56% public) radiographers were not even consulted. Radiographers (24%) did not even have job descriptions. Determining whether management had interest in the welfare of staff revealed that 62% (72% private and 48% public) radiographers felt management had no interest in the welfare of staff. A total of 50% (54% public and 46% private) of radiographers were also dissatisfied with management for not trying to improve working conditions for them.

Results concerning implementing of new technology to improve work methods revealed that 66% of radiographers were quick to adapt, but 43% public and 15% private radiographers were slow. Management's response to latest technology revealed that 41% of radiographers rated it quick while 67% public and 40% private rated it slow.

The result on managements' responsibilities regarding the overall function of the department revealed that radiographers (48% public and 31% private) felt productivity was not maintained by good organization and planning. But 69% of the radiographers felt that work activities were sensibly organized, although 26% (44%public and 9% private) disagreed.

Response between private and public radiographers

A non-statistical difference was found with regards to style of management between private and public organizations (see Table 4.21).

Table 4.21 Management style - Public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
	Mean	Std dev	Mean	Std dev	
Management style	3.1667	0.7404	3.1872	0.6357	0.8729

*** *p*-value < than = 0.05 represented significant difference between public and private**

According to Table 4.20, radiographers in private organizations, however, experienced no discussion of future work goals, inadequate consultation when changes are implemented, not having job descriptions and management not having a real interest in the welfare as items contributing to a higher source of stress. Amongst public radiographers, management and staff were not quick enough to respond and adapt to technical changes and work activities not sensibly organized were the items contributing to the higher source of stress.

B4.5.3 General physical working environment

Analyzing the detailed descriptive results (see APPENDIX 4, Tables A64 to A72, p209-212) revealed, the “strongly agree” category scored a 4% to 9% response, indicating that general working conditions for radiographers were not a very low source of OS. However, the “strongly disagree” category revealed a 7% to 14% response, therefore a not a very high source either. But the “agree” response was 47% to 58%, and “disagree” 25% to 36%. Analyzing these categories revealed that general working conditions could be rated as a low source of OS.

The overall rating as presented in the table below revealed the following:

Table 4.22 General physical working environment

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Examination rooms/sections sensibly organized	64%	33% (n=38)	25	46%
			13	20%
Physical conditions for staff	65%	34% (n=40)	38	63%
			12	18%
Physical conditions for patients	59%	38% (n=45)	32	59%
			13	13%
Facilities meet staff's needs	53%	45% (n=53)	31	57%
			24	37%
Facilities meet patient's needs	60%	40% (n=48)	34	63%
			14	21%
Accessories are always available	58%	41% (n=49)	37	69%
			12	18%
Examination rooms adequately designed	61%	36% (n=43)	23	43%
			20	20%
Equipment and resources are adequate	53%	45% (n=54)	37	69%
			17	26%
Equipment and resources are well maintained	59%	38% (n=45)	34	63%
			11	17%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Radiographers (64%) felt radiographic examination rooms or sections (although no structural changes can be made) were sensibly organized, although 33% (46% public and 20% private) disagreed. The result on physical conditions for staff being satisfactory revealed 65% radiographers agreed and 34% (63% public and 18% private) disagreed. Also, 59% felt physical conditions for patients was adequate but 38% (59% public and 13% private) radiographers felt it inadequate. Determining whether facilities met staff's needs revealed that 53% agreed but 45% (57% public and 37% private) radiographers disagreed. Facilities did meet patients needs as reported by 60% radiographers, although 40% (63% public and 21% private) felt this was not so. The item on easy availability of accessories revealed that to 58% radiographers it was easily accessible, but 41% (69% public and 18% private) felt this was not so. Radiographers (61%) felt examination rooms were adequately

designed, to accommodate beds, stretchers, although 36% (43% public and 20% private) felt it was inadequate. Determining whether equipment and accessories were adequate to work with revealed that 53% radiographers agreed, while 45% (69% public and 26% private) disagreed. Lastly, results on maintaining equipment and accessories revealed that 59% felt that it was well maintained, although 38% (63% public and 17% private) felt the adverse.

Response between private and public radiographers

A significant difference in the general work conditions was found between private and public radiographers.

Table 4.23 General working conditions - Public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
General working conditions	Mean	Std dev	Mean	Std dev	
	3.2881	0.8389	2.4769	0.6170	0.000

*** *p*-value < than = 0.05 represented significant difference between public and private**

This is in keeping with the summary of the results as presented in Table 4.22, namely that public radiographers experienced their working conditions as a higher source of stress than private radiographers.

B4.5.4 Management trust, support and leadership ability

This measure consisted of two item scales.

a) Trust, support and leadership ability of HOD

According to APPENDIX 4, Tables A73 to A81 (p212-215), the “strongly agree” response was 12% to 23%, indicating it as not a very low source of OS. However, the “strongly disagree” category response revealed a 3% to 7% rate, therefore, not a very high source of stress. Reflecting on the “agree” category the response was 43% to 55% and

"disagree" response of 17% to 27%. The results confirm that HOD was a low source of OS.

The overall rating as presented in the table below revealed the following:

Table 4.24 HOD trust, support and leadership ability

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Can be counted upon to be trustworthy	69%	20% (n=23)	15	28%
			8	12%
Does a good job of leading	66%	27% (n=31)	20	37%
			11	17%
Considers input seriously	62%	27% (n=31)	19	35%
			12	18%
Communicates openly	68%	27% (n=31)	18	33%
			13	20%
Treats me fairly	73%	16% (n=14)	10	19%
			4	6%
Performs his/her job competently	68%	22% (n=25)	16	30%
			9	14%
Looks out for what is important	57%	30% (n=35)	20	37%
			15	23%
When having difficulties can talk freely	63%	29% (n=33)	20	37%
			13	20%
Treats me with dignity and respect	71%	20% (n=23)	9	17%
			14	22%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Radiographers (69%) felt the HOD was trustworthy. With regards to doing a good job of leading the department, 66% agreed. Also, 62% radiographers felt their inputs were considered seriously, although 27% (35% public and 18% private) felt they were not. Regarding communicating openly with individual radiographers, the results revealed that with 68% the HOD communicates openly, but with 27% (33% public and 20% private) not. The HOD treated 73% fairly and 16% (19% public and 6% private) unfairly. Also, 68% felt the HOD was performing his/her job competently, but 22% (30% public and 14%) radiographers felt it was not so. The response to HOD looking at things that are important

to each individual radiographer revealed that 57% in total agreed and 30% (37% public and 23% private radiographers) disagreed. Radiographers (63%) could talk freely to the HOD, although 29% (37% public and 20%) felt they could not talk freely. Lastly, 71% felt they were treated with dignity and respect, whilst 20% (22% private and 17% public radiographers) felt they were not.

Response between private and public radiographers

A significant difference in the trust, support and leadership of HOD was found between private and public organization radiographers as shown in the table below.

Table 4.25 Head of department trust, support and leadership ability - Public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
HOD – trust, support and leadership ability	Mean	Std dev	Mean	Std dev	0.0009
	2.7304	0.9100	2.1639	0.8630	

*** *p*-value < than = 0.05 represented significant difference between public and private**

Trust, leadership ability and support of HOD were a lower source of OS amongst private than public organization radiographers.

b) Supervisor

According to APPENDIX 4, Tables A82 to A90 (p215-218), the “strongly agree” category revealed a 20% to 27% response, indicating it not a very low source of OS. The “strongly disagreed” category revealed a response rate of 1% to 6%, indicating it a not a very high source. However the “agree” category revealed a 34% to 46% and the “disagree” a 20% to 26% response. The supervisor could therefore be rated as a low source of OS.

The overall rating as presented in the table below revealed the following:

Table 4.26 Supervisor trust, support and leadership ability

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Can be counted upon to be trustworthy	63%	26% (n=18)	10	19%
			8	12%
Does a good job of leading	69%	25% (n=18)	11	20%
			7	11%
Considers input seriously	59%	28% (n=20)	12	22%
			8	12%
Communicates openly	68%	25% (n=18)	11	20%
			7	11%
Treats me fairly	66%	23% (n=16)	11	20%
			5	8%
Performs his/her job competently	64%	27% (n=18)	13	24%
			6	9%
Looks out for what is important	55%	28% (n=20)	12	22%
			8	12%
When having difficulties can talk freely	69%	24% (n=17)	11	20%
			6	9%
Treats me with dignity and respect	66%	23% (n=16)	8	15%
			8	12%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Radiographers (63%) could count upon the supervisor as being trustworthy, despite 26% (19%public and 12% private) radiographers feeling the supervisor was untrustworthy. They (69%) felt the supervisor was doing a good job of leading the department. With regards to inputs considered seriously, the results revealed that 59% of the radiographers' inputs were considered seriously and 28% (22% public and 12% private radiographers) not. The item on supervisors communicating openly with individual radiographers revealed that with 68% the supervisor did and with 25% (20% public and 11% private) he/she did not. Radiographers (66%) felt they were being treated fairly and 23% (20% public and 8% private) felt they were treated unfairly. Determining if the supervisor was performing his/her job competently revealed that 64% of the radiographers totally agreed and 27% (24% public and 9% private) disagreed.

The response to the item if the supervisor "looked out" for things that were important to individual radiographers, revealed that 55% in total agreed and 28% (22% public and 12% private) radiographers disagreed. Individual radiographers (69%) could talk freely to the supervisor, although 24% (20% public and 9% private radiographers) felt they could not. Lastly, 66% felt they were treated with dignity and respect, whilst 23% (15% public and 12% private) radiographers felt they were not.

Response between private and public radiographers

A not significant difference was found in the trust, support and leadership ability of supervisor between private and public organizations.

Table 4.27 Supervisor trust, support and leadership ability - Public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Supervisor – trust, support and leadership ability	Mean	Std dev	Mean	Std dev	
	2.5667	0.9854	2.2054	1.0383	0.1347

*** *p*-value < than = 0.05 represented significant difference between public and private**

However, according to Table 4.26, the supervisor could be rated as a lower source of OS amongst private than public organization radiographers.

B4.5.5 Career development

The detailed descriptive results (see APPENDIX 4, Tables A91 to A98, p218-220), revealed the following: The "strongly agree" category revealed a 4% to 15% response, indicating it not a very low source of OS. The "strongly disagree" category revealed a response rate of 2% to 10%, indicating it a not very high source of stress. The "agree" category response rate was 37% t0 70%, whilst the "disagree" was 10% to 38%. Therefore, career development could be rated a low towards a tendency of a moderate source of OS.

The overall rating as presented in the table below revealed the following:

Table 4.28 Career development

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
My performance is fairly appraised	50%	37% (n=40)	16	30%
			24	37%
Promotion procedures are applied fairly to me	41%	43% (n=48)	23	43%
			25	38%
My good achievements are recognized	42%	41% (n= 45)	22	41%
			23	35%
Staff are exposed to the necessary courses	72%	25% (n=28)	17	32%
			11	17%
My skills and abilities are developed and extended	51%	41% (n=45)	21	39%
			24	37%
For the qualifications I have, abilities and skills utilized	74%	23% (n=25)	18	33%
			7	11%
My relationship with the supervisor is good	83%	11% (n=12)	6	11%
			6	9%
My relationship with the HOD is good	80%	13% (n=14)	11	20%
			3	5%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

However, the above table revealed that only 50% radiographers agreed that their performance was appraised fairly, whilst 37% (30% public and 37%private) rated it unfair. However, 43% (43% public and 38% private) radiographers felt promotion opportunities were unfairly applied to them. There was also no recognition for good achievements as reported by 41% (41% public and 35% private) radiographers. Radiographers (72%) were exposed to courses relevant to the profession, although 25% (32% public and 17% private) felt this was not so. The results also revealed that 51% of radiographers' abilities and skills were developed and extended, although 41% (39% public and 37% private) reported the adverse. In addition to this the abilities and skills of 74% were effectively utilized, and 23% (33% public and 11% private) radiographers felt their skills and abilities were not

effectively utilized. Also, radiographers (80-83%) rated their relationship with the HOD and supervisor as good.

Response between private and public radiographers

Taking into consideration the mean response rate there was not a significant difference in career development in private and public organizations.

Table 4.29 Career development - public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Career development	Mean	Std dev	Mean	Std dev	0.5470
	2.6827	0.7278	2.6102	0.4979	

*** *p*-value < than = 0.05 represented significant difference between public and private**

However, according to Table 4.28, the relationship with HOD, utilization of abilities and skills, staff's exposure to necessary courses were contributing to higher source of stress amongst public radiographers.

B4.5.6 Role ambiguity

Analyzing the detailed descriptive data (see APPENDIX 4, Tables A99 to A102, p220-221) revealed a 10% to 21% response to the "strongly disagree" category, indicating it as not a very low source of OS. The "strongly disagreed" category revealed a 1% to 3% response, therefore not a very high source of stress. The "agree" category response was 53% to 75% and disagree response was 3% to 25%. With reference to the latter, it is indicative that role ambiguity is a low towards a tendency of very low source of OS.

The overall rating as presented in the table below revealed the following:

Table 4.30 Role ambiguity

Item	A* (%) + SA* (%)	DA* (%) + SDA* (%)	Public (n=54) / Private (n=65)	%
Have clear planned goals and objectives	63%	28% (n=31)	14	26%
			17	26%
Know what my responsibilities are	96%	4% (n=4)	3	5%
			1	2%
Know how to utilize my time effectively	93%	5% (n=6)	4	7%
			2	3%
Certain about authority on job	93%	13% (n=15)	10	19%
			5	8%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Radiographers (96%) knew what their responsibilities were, 93% also knew how to utilize their time effectively and were also very certain about the authority they had at the workplace. But only 63% of the radiographers had clear plans and objectives whilst 28% private and public radiographers did not have any.

Response between private and public radiographers

Table 4.31 revealed not a significant difference in role ambiguity between private and public radiographers.

Table 4.31 Role ambiguity - Public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Role ambiguity	Mean	Std dev	Mean	Std dev	0.5734
	2.1415	0.7556	2.2077	0.4365	

*** *p*-value < than = 0.05 represented significant difference between public and private**

This is in keeping with findings presented in Table 4.30.

B4.5.7 Role conflict

Regarding role conflict as a source of OS, revealed the following results (see APPENDIX 4,Tables A103 to A107, p222-223), the "strongly agree" category revealed an 18% response for V120 (positive statement). For V121 to V124 (negative statements), the

"strongly disagree" category revealed a 3% to 9% response, indicating a not very low source of OS.

The "strongly disagree" category for V120 revealed a response of 1%, and the "strongly agree" category for V121 to V124, revealed a response of 5% to 18% indicating that role conflict was not a very high source of stress. But the "agree" category for V120 revealed a 69% response and the "disagree" for V121 to V124, revealed a 27% to 51% response. For the "disagree" category of V120 was 12% and "agree" category for V121 to V124 was 27% to 55%. Therefore role conflict with reference to the above could be rated as a high source of OS.

The overall rating as presented in the table below revealed the following:

Table 4.32 Role conflict

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Conduct examination differently	86%	13% (n=15)	8	15%
			7	11%
Item	**A* (%) + SA* (%)**	**DA*(%) + SDA* (%)**	**Public (n=54)**	**%**
			Private (n=65)	**%**
Perform exam without adequate staff	65% (n=77)	37%	36	67%
			41	41%
Work with colleagues, working quite differently	63% (n=74)	36%	37	69%
			37	57%
Work accepted by one and not by others	47% (n=55)	48%	18	33%
			36	55%
Perform without adequate equipment and accessories	40% (n=47%)	60%	23	43%
			17	26%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

According to the above table, 86% were able to adapt their radiographic technique in order to achieve a diagnostic quality image/s whereas 13% (15% public and 11% private radiographers) were not able to adapt their radiographic technique. Also, 65% (67% public

and 41% private) radiographers were expected to perform radiographic examinations without adequate staff support. Determining whether colleagues worked quite differently from them with regards to radiographic technique and exposure setting revealed the following: 63% of radiographers (69% public and 57% private) agreed that colleagues did work quite differently from them. The result on work acceptance by colleagues revealed that 47% (55% private and 33% public) work done was accepted by one, and not another colleague. Lastly, 40% (43% public and 26% private) radiographers had to work without adequate equipment accessories (see V124).

Response between private and public radiographers

Not a statistically significant difference was found in role conflict between private and public organizations.

Table 4.33 Role conflict - public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Role conflict	Mean	Std dev	Mean	Std dev	
	2.6000	0.6771	2.7908	0.6368	0.1209

*** *p*-value < than = 0.05 represented significant difference between public and private**

Public organization radiographers experienced a higher incidence of working without adequate equipment (see Table 4.32).

B4.5.8 Social support

Item scale on social support revealed (see APPENDIX 4, Tables A108 to A118, p223-227) that the "strongly agreed" category recorded a 5% to 50% response, indicating social support had a tendency towards a very low source of OS. The "strongly disagree" category response of 1% to 18%, indicates it is not a very high source of stress. The "agree" category revealed a response of 32% to 76%, therefore it is obvious that social

support can be rated as a low towards a high tendency of a very low source of OS.

The overall ratings as presented in the table below revealed the following:

Table 4.34 Social support

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Talk openly with other colleagues	80%	17% (n=20)	13	24%
			7	11%
Share experiences and feelings	89%	9% (n=11)	4	7%
			7	11%
Express negative feelings	79%	14% (n=17)	11	20%
			6	9%
Colleagues are there to assist	85%	14% (n=17)	15	28%
			2	4%
Attend social functions	86%	9% (n=11)	7	13%
			4	6%
Ward sisters willing to assist	37%	60% (n=71)	34	63%
			36	56%
Relationship with nursing staff	75%	19% (n=22)	14	26%
			8	12%
Relationship with radiologist	92%	7% (n=8)	7	13%
			1	2%
Willing to assist clinicians	94%	5% (n=6)	5	9%
			1	2%
Get along with family and friends	97%	3% (n=4)	4	7%
			0	0%
Family always there to support	94%	4% (n=5)	5	9%
			0	0%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Radiographers (80%) could talk openly about their problems and 89% could share their experiences and feelings with their colleagues. Also, 79% of the radiographers could express their negative feelings to their colleagues. Colleagues were always willing to

assist as reported by 85% radiographers. Social functions organized by colleagues were attended by 86% of the radiographers.

However, nursing staff was not willing to assist 60% (63% public and 56% private) of radiographers in the ward, although 75% felt that their relationship with nursing staff was good.

Radiographers (92%) also reported a good relationship with the radiologist. Determining whether radiographers were willing to assist clinicians requiring their assistance revealed a 94% response.

Also included were two items outside the work domain: The first determined whether radiographers got along with their family and friends and revealed that 97% did. The second item, whether family supported them, revealed that 94% radiographers' family supported them.

Response between private and public radiographers

A statistically significant difference was found in social support between private and public radiographers.

Table 4.35 Social support - Public and private radiographers

Survey measure	Public		Private		p-value (< & = 0.05)
Social support	Mean	Std dev	Mean	Std dev	0.0382
	2.559	0.6196	2.0587	0.3252	

*** *p*-value < than = 0.05 represented significant difference between public and private**

Referring to the overall ratings, social support was a higher source of OS amongst public than private organization radiographers.

B4.5.9 Workload

Results on workload as a source of OS revealed the following according to APPENDIX 4, Tables A119 to A130 (p227-230), the “strongly agree” category revealed for the negative statement response, 8% to 43% indicating it a tendency towards a high source of OS and the “strongly disagree” category revealed a 2% to 7% response, therefore not a very low source of OS.

The “agree” category revealed a 24% to 56.3% response and the “disagree” category a 6% to 57% response. Workload could therefore be rated as a high with a tendency of very high source of OS.

The overall ratings as presented in the table below revealed the following:

Table 4.36 Workload

Item	DA(%) + SDA(%)	A(%) + SA(%)	Public (n=54) / Private (n=65)	% / %
Physical and mental hard work	8%	92% (n=106)	46	74%
			60	94%
Insufficient radiographic examination rooms	39%	59% (n=70)	32	59%
			38	58%
Staff scheduling is inadequate	55%	44% (n=52)	27	50%
			25	38%
Frequent equipment breakdown	45%	55% (n=65)	40	74%
			25	38%
Rushed in completing examination	29%	69% (n=82)	37	69%
			45	69%
No time to emotionally support patients	40%	58% (n=68)	38	70%
			30	46%
No time to give proper instructions	62%	36% (n=43)	16	30%
			27	42%
Not enough support staff	39%	58% (n=68)	38	70%
			30	46%
Work through lunch and tea break	37%	59% (n=68)	38	70%
			30	46%
No control over through-flow	45%	53% (n=63)	25	46%
			38	58%
Duplication of radiographic examinations	49%	48% (n=57)	43	80%
			14	22%
Examinations not adequately discussed by clinicians	29%	64% (n=76)	46	85%
			30	46%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Response between private and public radiographers

Taking into consideration the mean response rate there was a significant difference in workload between private and public organizations.

Table 4.37 Workload - public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Workload	Mean	Std dev	Mean	Std dev	0.000
	2.3534	0.6530	2.9654	0.59654	

* *p* -value < than = 0.05 represented significant difference between public and private

According to the overall ratings workload was a higher source of OS amongst public radiographers than private.

B4.5.10 Shift work

Shift work according to APPENDIX 4, Tables A131 to A139 (p230-233), revealed the "strongly agree" category revealed for V148 (positive statement) an 18% response and for V149 to V156 (negative statements), the "strongly disagree" category revealed a 2% to 24% response. Therefore, shift work was not a very low source of OS.

However, the "strongly disagree" category for V148 revealed a 2% response and the "strongly agree" category for V149 to V156, revealed a 3% to 37% response indicating it not a very high source of OS.

But the "agree" category for V148 revealed a 68% response and the "disagree" for the rest of the items revealed a 6% to 63% response. The "agree" category revealed (except for V148) a response of 8% to 57%. Therefore, shift work can be rated as a moderate source of OS.

The overall ratings as presented in the table below revealed the following:

Table 4.38 Shift work

Item	A* (%) + SA* (%)	DA*(%) + SDA* (%)	Public (n=54)	%
			Private (n=65)	%
Shift work fairly rotated	86%	10% (n=13)	9	17%
			3	5%
Cannot attend social functions	29%	64% (n=35)	24	44%
			11	17%
Cannot attend recreational activities	32%	62% (n=37)	18	33%
			14	22%
Friends work normal hours	85%	12% (n=101)	43	80%
			58	89%
Rely on take-away foods	50%	47% (n=56)	30	56%
			26	40%
Difficulty with transport	11%	87% (n=13)	12	22%
			1	2%
Miss spouse/children	80%	19% (n=93)	43	80%
			50	77%
Difficult patients after hours	89%	8% (n=104)	46	85%
			58	89%
Feel unsafe and insecure	61%	34% (n=71)	32	59%
			39	60%

A* = Agree, SA*= Strongly agree, DA* = Disagree, SDA= Strongly disagree

Only 10% felt that scheduling regarding shift work was unfairly rotated. Social functions could not be attended by 29% (44% public and 17% private) and 32% (33% public and 22% private) radiographers were unable to attend recreational activities. Most (85%) had families and friends working normal working hours. Radiographers (56% public and 40% private) relied on take-away foods. Determining whether radiographers experienced transport problems, revealed that 11% (22% public and one private) did. The majority of the radiographers (80%) missed their spouse or children when doing shift work. Also, 89% private and 85% public radiographers agreed that they encountered difficult patients and 61% (60% private and 59% public) felt unsafe and insecure at their work place after normal working hours.

With reference to results obtained, shift work can be rated as a moderate source of stress.

Response between private and public radiographers

A significant difference was found in shift work as a source of OS between private and public organization radiographers.

Table 4.39 Shift work - public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Shift work	Mean	Std dev	Mean	Std dev	0.0157
	2.5720	0.5813	2.8051	0.4199	

*** *p*-value < than = 0.05 represented significant difference between public and private**

According to Table 4.38, shift work can be rated a higher source of OS amongst public than private organization radiographers.

B4.5.11Summary of the sources of occupational stress

Based on the analyses of the above findings, organization culture and climate was a moderate towards a tendency of high source of OS amongst public radiographers. Although not a significant difference was found between public and private radiographers with regards to management style, it was rated a high source of OS. Overall general working conditions were rated a moderate source of OS with public radiographers experiencing it as a higher source of OS. Trust, support and leadership abilities of both supervisor and HOD revealed it a low source of OS. But radiographers in public organizations experienced the HOD as a higher source of OS. Career development rated as a moderate source and had a tendency towards a tendency of low source amongst private more than public radiographers. Role ambiguity amongst private and public radiographers was rated low towards a tendency of very low source of OS. But role conflict rated as a high source of OS amongst private and public radiographers.

Although a significant difference was found between private and public organization radiographers social support was the lowest source of OS. Overall workload was rated a high source of OS, more so amongst public than private radiographers. Lastly, shift work was a moderate source of OS, but experienced as a higher source amongst public radiographers.

B4.6 Level of occupational stress

The level of OS consisted of two item scales, that is the mental and emotional symptoms (see APPENDIX 3, Section 3, p179-180) and the physical symptoms of OS (see APPENDIX 3, Section 6, p187). Rating of the level of OS for the mental and emotional symptoms is as follows: Never = very low, sometimes = low, often = high and always very high.

B4.6.1 Emotional and physical symptoms of OS

According to APPENDIX 4, Tables A18-A42 (p194-201) revealed the "never" category response of 6% to 74%, "sometimes" from 24% to 78%, "often" from 0.86% to 34% and the "always" category 0.86% and 8%. Therefore the mental and emotional symptoms of OS can be rated as moderate towards a tendency of high in some instances.

The overall ratings as presented in the table below revealed the following:

Table 4.40 Emotional and mental symptoms of OS

Item	N* (%)	S* (%)	O* (%) + A* (%)	Public (n=54)	%
				Private (n=65)	%
Work not varied enough to prevent boredom	30%	51%	18% (n=21)	13	24%
				8	12%
Have lost interest in work	41%	45%	14% (n=17)	8	15%
				6	9%
Accept things as they are	13%	42%	43% (n=50)	32	59%
				18	28%

Can do nothing about a situation	8%	54%	37% (n=44)	23	39%
				21	35%
Do not wish to participate	40%	42%	18% (n=21)	13	24%
				8	12%
Have no interest in activities around you	56%	33%	10% (n=12)	10	19%
				2	3%
Feel uneasy to go to work	53%	38%	8% (n=9)	7	13%
				2	3%
Have no support	38.98%	46%	15% (n=18)	13	24%
				5	8%
Experiencing conflict	16%	64%	19% (n=22)	13	24%
				9	14%
Views clash with those of another person	6%	78%	16% (n=19)	14	26%
				5	8%
Turning up against a wall	22%	52%	26% (n=31)	20	37%
				11	17%
Work situation compares unfavorably with those of others	32%	47%	21% (n=24)	14	26%
				10	15%
Feel irritated	10%	64%	26% (n=31)	15	28%
				16	25%
Feel aggressive	55%	34%	10% (n=12)	6	11%
				6	9%
Feel inferior	58%	32%	9% (n=11)	5	9%
				6	9%
Someone/situation is annoying	7%	63%	28% (n=33)	15	28%
				18	28%
Feel guilty	60%	39%	0.86% (n=1)	Not statistically significant	
Getting sad	32%	55%	13% (n=15)	11	20%
				4	6%
Afraid without any specific reason	68%	26%	6% (n=7)	6	11%
				1	2%
Afraid of loosing job	74%	24%	1.71% (n=2)	2	2%
				0	0%
Not exactly sure how to act	41%	54%	5% (n=6)	4	7%
				2	3%

Trouble concentrating	44%	50%	7% (n=8)	5	9%
				3	5%
Continuously needs assistance	72%	28%	0.86 (n=1)	Not statistically significant	
Never ever get out of the mess	58%	34%	8% (n=10)	7	12%
				3	5%
Too much responsibilities and too many problems	46%	46%	9% (n=11)	8	13%
				3	5%

*N=Never, S=Sometimes, O=Often, A=Always

Referring to the overall ratings in the above table, with special reference to the "never" category, revealing items that contributed to very low level of OS (above 50%), were as follows: Radiographers (56%) did not loose interest in the activities around them, 53% did not feel uneasy going to work, 55% never felt aggressive, 60% never felt guilty, 58% also had high self-confidence, 68% were not afraid of a person or a situation, 74% were not afraid of loosing their job, 72% never required continuous assistance, and 58% felt they can get out of a mess.

Items revealing to a low to a very high symptoms of OS is analyzed, according to the sum of categories "sometimes to always" in order to determine the overall rating.

Radiographers (51%) felt their work was sometimes not varied enough to prevent boredom, but 18% felt it was not varied enough at all. With regards to loosing interest in their work 45% sometimes were and 14% almost lost total interest. Also, 42% sometimes accepted things as they were, but 43% "often to always" did not. With regards to doing something about a situation revealed that 54% sometimes could but 37% could not do anything about a situation. Radiographers (42%) sometimes felt to participate, however 18% never wished to participate. Loosing interest in the activities around them also revealed that 33% sometimes did, whilst 10% lost interest totally. Sometimes 38% of the

radiographers felt uneasy to go and work whilst 8% “often to always” felt uneasy. Having feelings of no support was sometimes experienced by 46% of the radiographers, whereas 15% felt they had no support. Conflict was sometimes experienced by 64% of the radiographers, but 19% experienced it almost all or most of the time. Sometimes a feeling of turning up against a wall when no progress was made was reported by 52% radiographers, whilst 26% experienced it frequently. Work situation not comparing favorably with that of others was sometimes experienced by 47% of the radiographers, and 21% “often to always” experienced it. Sometimes 64% radiographers felt irritated but 26% were experiencing irritation almost most of the time. However, 34% sometimes also experienced aggression, whilst 10% experienced this frequently. A feeling of low self-confidence was experienced by 32% of the radiographers, but 9% felt very inferior. Radiographers (63%) sometimes experienced a feeling that someone or situation was annoying them, and 28% were annoyed most of the time. A feeling of guilt was experienced sometimes by 39% radiographers. Also, a feeling of sometimes becoming sad was reported by 55% radiographers, however, 13% frequently experienced sadness. Radiographers (26%) were sometimes afraid without any specific reason, although 6% were “often” to “always” afraid. With regards to fear of loosing their job revealed that 24% sometimes feared this. The result on determining not sure how to act revealed that 54% sometimes were not sure how to act. Sometimes 50% of the radiographers had trouble concentrating. Also, 28% sometimes required assistance on a continuous basis. A feeling of not getting out of a mess was experienced by 8% of radiographers most of the time, whilst 34% sometimes experienced a similar feeling. Lastly, 46% sometimes felt they had too many responsibilities and problems and 9% “often” to “always” felt that way.

Response between private and public radiographers

A not significant difference was found with regards to mental and physical symptoms of OS between private and public radiographers as presented in the table below.

Table 4.41 Emotional and mental symptoms of occupational stress - Public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Mental and physical symptoms of OS	Mean	Std dev	Mean	Std dev	0.1410
	1.8489	0.4643	1.7440	0.2528	

*** *p*-value < than = 0.05 represented significant difference between public and private**

But referring to the overall rating as presented in Table 4.41, public radiographers experienced mental and emotional symptoms of OS more frequently with regard to the following: Work not been varied enough, accepting things, as they are, not wishing to participate, lost interest in activities around them, feeling of no support, views clashing, no progress made, even if they turned up against a wall, work situation comparing unfavorably with those of others and experiencing sadness.

B4.6.2 Physical symptoms of OS

Item scale measuring physical symptoms of OS according to APPENDIX 4, Tables A148 to A156 (p236-239) is analyzed here according to the rating for each category response as follows: Never = very low, rarely = low, sometimes = moderate, often = high and always = very high.

The results of the "never" category revealed a 0.85% to 65%, "rarely" a 4% to 37%, "sometimes" a 10.17% to 44%, "often" a 4% to 45% and "always" a 0.85% to 17%. According to these responses physical symptoms of OS could be rated as moderate towards a tendency of high.

The overall ratings as presented in the table below revealed the following:

Table 4.42 Physical symptoms of OS

Item	N* (%) + R* (%)	S* (%)	O*(%) + A* (%)	Public (n=54)	%
				Private (n=65)	%
Headaches	28%	44%	28% (n=33)	12	22%
				21	32%
Muscle pain	33%	31%	38% (n=44)	21	39%
				25	38%
Colds	42%	38%	20% (n=33)	22	41%
				11	17%
Sleep disturbances	34%	35%	30% (n=35)	13	24%
				22	34%
Back pain	21%	31%	47% (n=55)	26	48%
				29	45%
Neck pain	28%	30%	42% (n=49)	34	63%
				15	23%
Tiredness	5%	33%	62% (n=73)	38	70%
				35	54%
Breathing difficulties	85%	10%	5% (n=4)	2	4%
				2	3%
Feeling dizzy	64%	24%	12% (n=14)	5	9%
				7	11%

*A=Always, N=Never, O=Often, R=Rarely, S=Sometimes

The two lowest physical symptoms experienced by radiographers with reference to the overall rating was breathing difficulties which revealed a 85% response and feeling dizzy a 64% response.

Radiographers experienced the following frequently: Headaches were experienced sometimes by 44% radiographers but 32% private and 22% public radiographers “often” to “always” experience it. Radiographers (31%) sometimes experienced muscle pain, although 38% reported that they “often to always” experienced it. With regards to colds, 38% sometimes had cold infections but 20% “often to always” had one. Sleep disturbances were also sometimes experienced by 35% radiographers, although 30% “often” to “always” did. Back pain was sometimes experienced by 31% of the

radiographers, whilst 47% "often to always" experienced it. Radiographers (30%) sometimes experienced neck pain, whilst 42% "often to always" experienced it. With regards to tiredness, 33% sometimes did and 62% were "often to always" tired. Only 24% sometimes experienced dizziness and light-headedness and 5% "often" to "always" did. Lastly, 10% sometimes experienced breathing difficulties but 12% frequently experienced breathing difficulties.

Response between private and public radiographers

Not a significant difference was found between radiographers in the private and public organizations (see Table below).

Table 4.43 Physical symptoms of OS- public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Physical symptoms of OS	Mean	Std dev	Mean	Std dev	0.5246
	2.7922	0.7399	2.875	0.5827	

*** *p*-value < than = 0.05 represented significant difference between public and private**

Cold infections and neck pain was experienced more frequently amongst public radiographers (see Table 4.42).

B4.6.3 Summary on level of occupational stress

The level of occupational stress amongst diagnostic imaging radiographers with regards to the emotional, mental and physical level of OS can be rated as moderate towards a tendency of high amongst private and public radiographers.

B4.7 Mechanisms of coping applied by radiographers

Mechanisms to coping with OS revealed the following according to the overall rating based on the descriptive results in APPENDIX 4, Tables A140 to A147 (p233-236).

Table 4.44 Coping mechanisms applied by radiographers

Item	O*(%) + A* (%)	S* (%)	N* (%) + R* (%)	Public (n=54)	%
				Private (n=65)	%
Talk with others	54%	36%	8% (n=9)	5	9%
				4	6%
Item	**N* (%) + R* (%)**	**S* (%)**	**O* (%) + A* (%)**	**Public (n=54)**	**%**
				Private (n=65)	**%**
Blame and criticize oneself	46%	39%	15% (n=18)	7	13%
				11	17%
Ask others to change or modify	71%	19%	9% (n=11)	9	17%
				2	4%
Dwell on what should have been done	39%	46%	14% (n=12)	1	2%
				11	17%
Change the situation	14%	45%	40% (n=48)	23	37%
				25	39%
Draw on past experience	7%	21%	72% (n=86)	45	83%
				41	63%
Develop an action plan	7%	27%	66% (n=79)	37	69%
				42	65%
Think of situation day and night	43%	31%	26% (n=31)	14	69%
				17	65%

*A=Always, N=Never, O=Often, R=Rarely, S=Sometimes

Analyzing the “emotion” focused coping methods used by radiographers revealed that 39% sometimes blamed or criticized themselves and 15% hardly blamed or criticized themselves. Sometimes radiographers (19%) asked others to modify or change their behaviour, however, 9% “often to always” did. Radiographers (46%) sometimes dwelt on what should have been done, whereas 14% “often to always” dwelt on what should have been done in a particular situation. Radiographers (45%) sometimes modified their own behaviour to avoid frustration or dissatisfaction, whilst 40% “often to always” did. Also, 31% sometimes thought about a situation constantly during the day and night and 26% “often to always” did so.

Analyzing the "problem"' focused coping methods, the results revealed that 36% sometimes, but 54% "often" to "always" asked others for their opinion and/or advice. Radiographers (21%) sometimes drew on past experiences, whilst 72% "often to always" did that. An action plan was developed sometimes by 27% of the radiographers, however 66% "often to always" developed an action plan in dealing with a situation.

Response between private and public radiographers

Not a significant difference was found in coping mechanisms between private and public organization radiographers (see Table 4.45).

Table 4.45 Mechanisms of coping - public and private radiographers

Survey measure	Public		Private		*p*-value (< & = 0.05)
Mechanisms of coping	Mean	Std dev	Mean	Std dev	0.7868
	3.0694	0.5223	3.0942	0.4635	

*** *p*-value < than = 0.05 represented significant difference between public and private**

This was also in keeping with the overall rating in Table 4.44.

In conclusion, radiographers to some extent relied on emotion-focused coping mechanisms, but more heavily on problem-focused coping mechanisms.

Part three (C)

C4.1 Respondents' comments

Two respondents suggested that the radiologist should be informed of how radiographers felt about working in their organization. Seventy-five percent of the radiographers verbally commented on the relevancy of conducting such a survey where they could associate with the various items. Two respondents from institution three wished the researcher well in her studies. One respondent from institution eight felt that the questionnaire was too long. Four respondents from institution six complimented the

researcher's effort in compiling a questionnaire of this nature. Respondents from institution four and a few respondents from institution six felt that the first section was very personal.

Part four (D)

D4.1 Relationships

Results of the relationships between OS and OC are presented here. The purpose of determining the level of significance is to reduce the chance of making incorrect conclusions. In chapter 3 the level of significance for correlation of the survey and sub-survey measures was set at $p<$ and = 0.05. The Pearson Correlation Coefficients obtained the correlations between the survey measures. Coefficient r = -1 as a significant but negative correlation and r = +1 as a positive correlation.

D4.2 Organizational commitment

Correlations between the sub-scales of OC according to Table 4.46 revealed the level of significance of correlation between affective, continuance and normative commitments as very high (p<0.0001). A moderate but positive correlation between affective and continuance (r = 0.439), continuance and normative (r = 0.438), but a slightly stronger correlation between affective and normative commitment (r = 0.622) was found.

Table 4.46 Organizational commitment

Variables	Affective commitment	Continuance commitment	Normative commitment
Affective commitment	1	*	*
Continuance commitment	r 0.43881 p <0.0001	1	*
Normative commitment	r 0.62241 p <0.0001	r 0.43809 p <0.0001	1

D4.3 Relationship between organizational commitment and level of occupational stress

Determining the relationship between OC and mental and emotional symptoms of OS, revealed the level of significance of correlation between mental and emotional symptoms of OS and affective and normative commitment as significantly high (p<0.0001). Moderate positive correlations between the mental and emotional symptoms of OS and affective (r = 0.367) and normative (r = 0.379) was found. The level of significance for correlations between physical symptoms of OS and OC was not significant (see Table 4.47).

Table 4.47 Organizational commitment and level of OS

Variables	Mental and emotional symptoms of OS	Physical symptoms of OS
Affective commitment	r 0.36739 p <0.00001	r 0.11702 p 0.2070
Continuance commitment	r 0.12224 p 0.1854	r 0.03892 p 0.6757
Normative commitment	r 0.37941 p <0.0001	r 0.15686 p 0.0898

D4.4 Relationship between organizational commitment and sources of occupational stress

Table 4.48 below represents the level of significance and correlation between OC and sources of OS.

Table 4.48 Organizational commitment and sources of OS

Variables	Affective commitment	Continuance commitment	Normative commitment
Organizational culture and climate	0.34816 0.0001	0.09656 0.2962	0.27765 0.0022
Management style	0.33056 0.0002	0.1756 0.0561	0.25771 0.0047
General physical working environment	0.14841 0.1072	0.15528 0.0917	0.13417 0.1457
Leadership ability of HOD	0.28378 0.0021	0.15445 0.0993	0.28634 0.0019
Leadership ability of supervisor	0.39693 0.0005	0.13956 0.239	0.2220 0.0591
Career development	0.38833 <0.0001	0.27376 0.0036	0.3183 0.0007
Role ambiguity	0.2497 0.0064	0.26776 0.0034	0.24951 0.0064
Role conflict	0.10929 0.2387	-0.01664 0.8581	0.00231 0.2289
Social support	0.33992 0.0002	0.13246 0.151	0.28913 0.0015
Workload	-0.04985 0.5903	0.02522 0.7854	-0.03043 0.7425
Shift work	-0.09649 0.2965	0.01297 0.8887	0.00785 0.9324

The level of significance between affective commitment and sources of OS was significantly high ranging from p0.0064 to p<0.0001 for organizational culture and climate, management style, trust and support of HOD and supervisor, career development, role ambiguity and social support. Positive weak to moderate correlation were found between affective commitment and organizational culture and climate, management style, general work environment, trust and support of HOD and supervisor, career development, role ambiguity, role conflict and social support with r ranging from 0.109 to 0.397 (see Table 4.48).

The level of significance for continuance commitment and sources of OS revealed a high level of significance for only two of the sources of OS, namely career development and role ambiguity (p<0.0034 to 0.0036). A positive weak correlation was found between continuance commitment and career development (r = 0.274) and role ambiguity(r = 0.2678) [see Table 4.48].

For normative commitment and sources of OS, the level of significance ranged from p<0.0001 to 0.0064 with regards to organizational culture and climate, management style, trust and support of HOD, career development, role ambiguity and social support. Positive weak correlations were found with sources identified with r ranging from 0.13417 to 0.3183 (see Table 4.48).

D4.5 Relationship between levels of OS and sources of OS

The level of significance and correlation between mental, emotional and physical symptoms of OS and sources of OS is presented in the table below:

Table 4.49 Relationship between levels of OS

Variables	Emotional and mental symptoms	Physical symptoms
Organizational culture and climate	0.3864 <0.0001	0.25197 0.005
Management style	0.41794 0.0001	-0.10492 0.2561
General physical working environment	0.26631 0.0034	0.08156 0.3800
Leadership ability of HOD	0.48764 <0.0001	0.36463 0.0067
Leadership ability of supervisor	0.3702 0.0013	0.18447 0.2545
Career development	0.30017 0.0014	0.17428 0.0686
Role ambiguity	0.2033 0.0272	0.22118 0.0166
Role conflict	0.00231 0.9802	-0.04969 0.5947
Social support	0.34627 0.0001	0.16503 0.0741
Workload	-0.19022 0.0383	-0.10577 0.2543
Shift work	-0.22912 0.0122	-0.32675 0.0003

The level of significance between emotional and mental symptoms of OS and organizational culture and climate, management style, general working conditions, trust and support of section head and supervisor, career development, role ambiguity, social support, workload, shift work revealed a highly significant (p0.0383 to p<0.0001). Correlational coefficient (r) between emotional and mental symptoms and above identified sources of OS revealed a moderate to very weak positive correlation with r ranging from 0.203 to 0.488 except for workload and shift work (r = -0.19022 and –0.229, respectively).

The level of significance for physical symptoms and sources of OS ranged from *p*0.0166 to 0.0003 (organizational climate and characteristics, trust and support of HOD, role ambiguity and shift work). Positive weak to very weak correlation reported for identified sources of OS with *r* ranging from 0.0815 to 0.3646, except for shiftwork where a negative correlation was found *r* = –0.32675.

D4.6 Levels of occupational stress and mechanism of coping applied by radiographers

The level of significance was *p*=0.0087 for emotional and mental symptoms and for physical symptoms of OS it was *p*=0.0113.

Table 4.50 Levels of OS and mechanisms of coping applied by radiographers

Variables	Emotional and mental symptoms	Physical symptoms
Mechanisms of coping applied by radiographers	0.23944 0.0087	0.23255 0.0113

Positive weak correlation was found between mechanism of coping and emotional, mental, and physical symptoms of OS (see Table 4.50).

D4.7 Relationship between sources of occupational stress and mechanisms of coping applied by radiographers

The level of significance for role ambiguity, role conflict and shift work (*p* 0.0107 to 0.0457) was acceptable. Negative weak correlation with *r* ranging from -0.18432 to -0.23328 were found with role ambiguity, role conflict and shift work (see Table 4.51).

Table 4.51 Sources of OS and mechanisms of coping applied by radiographers

Variables	Mechanisms of coping applied by radiographers
Organizational culture and climate	-0.12476 0.1764
Management style	-0.10492 0.2561
General working conditions	0.0047 0.9595
Leadership ability of HOD	0.00925 0.9471
Leadership ability of supervisor	0.10594 0.5153
Career development	-0.01596 0.8680
Role ambiguity	-0.18854 0.0409
Role conflict	-0.18432 0.0457
Social support	-0.03975 0.6678
Workload	-0.04584 0.6205
Shift work	-0.23328 0.0107

D4.7 Summary of relationships

In summary the correlation between OC, level of OS, sources of OS and mechanisms of coping were moderate positive but generally weak and in some instances weak negative correlations were also found.

4.2 Conclusion

The results presented in this chapter revealed a 97% return rate. Ten % more private organization radiographers than public radiographers were found. The 13 independent measures determining the sample representativeness of diagnostic imaging radiographers were satisfactory. The item correlations and internal reliability coefficients were satisfactory for each item scale. The level of OC amongst radiographers could be rated as moderate to low. The level of OS amongst radiographers could be rated as moderate. Sources of OS, namely role conflict and workload were rated high, whilst management style was rated moderate to high. The remaining sources were rated as moderate, with social support and role ambiguity as the lowest sources of OS. With regards to mechanisms of coping radiographers relied heavily on problem-focused rather than emotional mechanism of coping. An analysis on determining if there was a significant difference between private and public radiographers revealed that radiographers in public organizations were experiencing organizational climate and culture, general working conditions, trust, support, and leadership abilities of HOD, social support, workload and shift work as a higher source of OS.

With regards to determining relationships between OC, levels of OS, sources of OS, mechanisms of coping, moderate positive but generally weak to very weak correlations were found. Also, in some instances negative weak correlations were also found.

4.3 Summary

In conclusion, in this chapter the objectives identified in Chapter 3, Section 3.3, p43, were analyzed and represented in detail. This analysis underpins the discussion for Chapter five.

Chapter five

Discussion

5.1 Introduction and setting

In this chapter the interpretation of the analyses of the results obtained is discussed: Firstly to determine the level of service delivered; secondly to validate the findings of this study based on theoretical concepts of previous research findings; and thirdly to determine the acceptance or rejection of the hypotheses identified in chapter three.

5.1.1 The first part

First, the survey sample is interpreted with respect to demographic characteristics, academic development and employment status of the radiographers.

5.1.2 The second part

Acceptance or rejection of the hypotheses based on the relationships found in Chapter four, Section D4.1 to D4.7, p113-119 by firstly, interpreting the levels of organizational commitment and occupational stress, sources of occupational stress and mechanisms of coping applied by radiographers to deal with occupational stress and its effect on service rendering.

Part one (A)

A5.1 Representativeness of sample size

A 97% response rate, in comparison to previous radiographer stress-related studies[4,11,12,13,17] can be rated as excellent. Factors contributing to this and which need to be acknowledged are the method of delivering and collecting questionnaires from various organizations and the efficiency of the heads of sections in collection the questionnaires. The 3% non-return rate, which is fairly minimal, can be due to the absence of participating radiographers or possible non-participation by radiographers. Ten of the 11 participating organizations were academic organizations and participants ranged from three to 25 per organization. In total, there are 10% more private radiographers in the Tshwane region of the Gauteng province and therefore the findings of this study are representative of the radiography population from the drawn sample size.

A5.2 Demographic information

The demographic information for this study was representative of the sample size drawn for the radiography population. Age could have been used as an antecedent for commitment to the organization[28], but this was not the intent of the purpose of this study. The result also revealed an imbalance in representation with regards to gender, as there were only seven male respondents (see Table 4.3,p67). A fair balance in age distribution, marital status and the number of dependants per radiographers was also revealed.

However, it should be mentioned that although only 25% dependants other than children resided with radiographers, 58% of the dependants contributed to their financial income. Therefore, 23% of the radiographers were dependent on financial contributions from dependants not residing with them. An interpretation of these findings suggests that the

salary of these radiographers is not market-related or that they live beyond their means.

A5.3 Academic development of radiographers

See section B5.3.5 of this chapter for a discussion on career development.

A5.4 Radiographers' employment status

A depletion of skilled and experienced staff hampers the quality of service rendered (see Ch., Section,1.2, p2), therefore it is important to retain staff. The result revealed that most radiographers had been working in their organization for more than five years, implicating some form of commitment by the radiographers to their organization. Theoretically, an organization benefits as individual skills and channels of communication are still strong[12].

Also, the majority of the radiographers were occupying full-time positions and most were in senior posts (including a chief post). This is an indication that the period of transition had little influence over their long-term job prospects.

Part two (B)

The acceptance or rejection of the hypotheses for this study is investigated by interpreting the overall ratings and the relationships obtained. The establishment of cause/effect relationships requires longitudinal studies and the present study was a descriptive study. The cause/effect relationship to determine the level of service delivered is supported by previous research findings, theoretical concepts and clinical experience.

B5.1 The hypotheses

Positive relationships were found between emotional and mental symptoms of OS and organizational culture and climate, management style, general working conditions, trust and support of section head and supervisor, career development, role ambiguity and social support, while negative relationships were found with workload and shift work. Positive relationships were also found between physical symptoms of OS and the sources of OS, namely organizational climate and culture, trust and support of HOD, role ambiguity and a negative relationship with shift work. Thus the first alternate hypothesis, that there is a relationship between the sources of OS and the level of OS amongst diagnostic imaging radiographers, is accepted for this study.

A positive relationship was found between OC and mental and emotional symptoms of OS, with affective (r = 0.367) and normative (r = 0.379) commitment. There was not a significant relationship between physical symptoms of OS and OC but positive relationships were found with the most of the sources of OS and OC (see Chapter 4, Table 4.48, p115). Also, according to the descriptive analysis of the results on the sources and level of OS, OS was rated moderate towards a tendency of high and OC was rated moderate towards a tendency of low. Thus the partial acceptance of the second alternate hypothesis is based on the descriptive analysis of the results obtained.

The partial acceptance of the third hypothesis is based on the second part of the alternate hypothesis, namely that there is a relationship between quality of service delivered and level of OS and level of commitment. It is proven by relationships found between the sources of OS itself, the level of OS and OC and the findings of previous studies (see discussion below: Section B5.2 to B5.5).

It is important to note that interpretation of the results is discussed by referring to Tables 4.12 to 4.39 (p75-103) of the overall ratings in Chapter four for OC and sources of OS and for levels of OS and mechanisms of coping the reader is referred to APPENDIX 4, Tables A18 to A59 (194-206) and A148 to A156 (p236-239). For more detailed information the reader is referred to the summaries of the overall ratings in Chapter four.

B5.2 Organizational commitment

For the purpose of this study and as recommended by Meyer & Allen[10,62], OC was viewed more than a mechanism to reduce turnover (see Chapter one, Section 1.1, p1). OC was measured with the intent of the well-being of radiographers in the work environment toward attainment of organizational goal/s, namely the quality of service delivery. This was based on commitment characterized by an employee's relationship with the organization he/she works for.

For this study private and public radiographers' level of affective commitment was moderate, continuance commitment moderate, and normative commitment moderate towards a tendency of low. Interpreting the above, implies that radiographers who stay with their organization do so because of a desire and a need more than an obligation. This is supported by the argument that although affective, continuance and normative commitment are presented as three distinct psychological states, some evidence suggests that they are not completely independent[10,62], because positive relationships were found between all three facets of commitment. Interpreting the above also revealed that most radiographers felt part of the family and a sense of belonging, but that only 40% were prepared to spend the rest of their careers with the organization they were working for. Radiographers remained with their organizations because of a sense of obligation to the people there. In other words, radiographers affective commitment was somewhat

influenced more by the people than the organization. The implication is therefore that radiographers are unlikely to engage in behaviour beneficial to the intended objective, namely, to go beyond the discretionary effort to render a quality of service delivery (see Chapter two, Figure 2.2, p37). This is less likely for those whose commitment is based primarily on a sense of obligation; indeed the latter might be unwilling to do anything that is not required of them. This is further supported by the findings of this study where radiographers remained because of a desire as much as a necessity as they would find it hard to leave. A possible reason for this was not because of a scarcity of job alternatives but because too much of their lives would be disrupted if they were to leave. Based on Darwish[40], findings and the findings of this study, this may impact negatively on an organization's outcomes. For instance service delivery on a short-term basis will not be affected, as radiographers were moderate in their affective commitment and continuance commitment towards the organization.

However, analyzing the level of normative commitment of radiographers revealed most radiographers wanting to work elsewhere, even if they had put much of themselves in the organization. They will not even feel guilty leaving the organization if it were to their advantage. Some radiographers also felt they owed nothing to their organization. According to Iverson[6], external opportunities always have a substantial negative effect on employees' perception of service accomplishments. External opportunities will cause employees to reassess their attitudes in the present organization. Therefore, based on the above discussion, long-term quality of service delivered could be negatively affected at organizational level. A turnover intent among radiographers could also hamper the transition process in maintaining the level of quality service delivered, because an organizational change does not happen overnight (see Chapter two, Section 2.2.2, p21).

Although turnover intent was not the main purpose of this study, it is important to address this from a service delivery aspect as well as retaining radiographers. One of a few avenues open to staff to broaden their own technical expertise is by routine transfers from one specialty to another, as borne out by clinical experience and supported by Sonpal Valias[79]. For example, a radiographer from the general radiography section transfers to the CT scan or angiography sections and this is widely seen as the most practical way for staff to enhance their own professional careers. Unfortunately, at the service delivery level, this pattern limits levels of provider competence in so far as service delivery units end up being staffed by those who have not yet obtained the level of expertise necessary to move on, namely the junior radiographers. Clinical experience shows that senior members of staff are often transferred to another specialty because of staff shortages. Junior staff members are left with very few senior staff members, with the result that the sub-section (mainly after normal working hours) is sometimes without any senior staff. Because participating organizations are mainly academic and supervision and ongoing training is mandatory, the level of service may be hampered.

Stress and traumatic stress due to overwhelming accountability requirements, and concern over liability could also result in turnover intent[79]. Besides the turnover intent, the level of service delivery can be negatively affected if radiographers experience high levels of OS. Based on this, it is important to discuss the results obtained on the sources of OS.

B5.3 The sources of OS

Based on the literature reviewed, individuals would not be persistent and effective in delivering quality of service if a revised organizational system is perceived as stressful[7] (see Chapter one, p1).

B5.3.1 Organizational climate and culture

Organizational factors play a vital contextual role in both the effectiveness and the degree of stress experienced by employees[47]. According to the organizational support theory, the development of perceived organizational support is encouraged by employees' tendency to assign humanlike characteristics to the organization[48]. Actions taken by agents of the organization are often viewed as indications of the organization's intent rather than attributed solely to the agents' personal motives[48]. On the basis of the organization's personification, employees view their favourable and unfavourable treatment as an indication that the organization favours or does not favour them[48]. Although organizational climate was rated as a moderate source towards a tendency of a high source of OS, this was more the case with public radiographers.

As referenced in Chapter two, Section 2.5.1 (p25), the mission, vision and philosophy statements of an organization, as well as the standards and policies, are indicative of the primary interests of the organization, what it stands for and the parameters that govern performance and expectations of employees[46]. Radiographers (41%) in private organizations, more so than in public organizations, report that the mission statement and policies are unclear. This impacts on their performance and expectations from an organizational perspective. In other words, radiographers are not sure what the organization expects from them.

Management contributes to improved service delivery and promotes professional collaboration, commitment, and achievements of mutual goals[46]. To this end, the majority of radiographers feel that management does not meet staff on a sufficiently regular basis to discuss their future work goals and some do not have a job description. Future work goals and the job description (section's outcomes) are part of the performance appraisal system. By not complying with the above, management fails to communicate the organization's outcomes, which are integrated into the section's outcome, namely job descriptions. From a radiographer's perspective, the standard of service provided may vary, as he or she does not know what is expected within the section, for example, improvising on patient care by not knowing what is expected of him or her[80].

Management's failure to personify and interpret organizational goals and mission, to discuss future work goals and not ensuring that staff have job descriptions are all pivotal in promoting a negative work environment[46]. According to theory a lack of integration of the standard of service delivery by radiographers in relation to the standard of the organizational quality management system outcomes[2], may lead to compromised patient care.

Furthermore, being valued by an organization can yield benefits such as approval and respect, pay and promotion, and access to information and other forms of aid needed to carry out one's work better (see Chapter one, Figure 1.1, p6). The results revealed that radiographers in public organizations more so than those in private organizations felt that their salaries were not market-related and that opportunities for promotion were unfair. In addition to this the majority of radiographers in public organizations felt that the uniform allowance and rules regarding uniforms were unsatisfactory. For example, radiographers in public organizations received only R15.00 per month as uniform allowance. According to the effort-reward model an imbalance or lack of reciprocity between costs and gains

(that is high cost/low gain conditions) defines a state of emotional distress, which can lead to the arousal of the autonomic nervous system and associated strain reactions (see Chapter two, Section 2.5.2, p28). For instance, having a demanding, but unstable job, achieving at a high level without being offered any promotion prospects, are examples of high cost/low gain conditions at work[49,50]. Based on the above discussion and the interpretation of the findings of this study there is definitely some degree of distress experienced by radiographers with regards to pay, promotion and benefits the organization has to offer.

Procedural justice is concerned with fairness of ways used in determining the distribution of resources among employees[48]. Structural determinants of procedural justice involve formal rules and policies concerning decisions affecting employees[48]. For this study, few radiographers felt rules regarding termination of employment; rules regarding transfers and working hours were unfair. Furthermore radiographers in public more than private organizations felt communication channels regarding grievance procedures were inadequate. These may be some of the many possible reasons why radiographers sometimes felt trapped in their present work environment. Although minimal, there is some perception of unfairness reported by radiographers regarding the structural determinants of procedural justice.

Most radiographers also rated the employee assistance program as ineffective. This could affect health organizations by financial loss due to work disruptions caused by employees' personal or work problems and can affect job performance by becoming tardy and being absent[81]. These short-term actions produce expensive, time-consuming, and often unnecessary turnover[81]. Rehiring and retraining are simply not as efficient in the long run as restoring the mental and physical health of an experienced employee[81]. As mentioned

earlier in the context of turnover intent, this negatively impacts on the level of service delivered.

A positive relationship was found with organizational climate and affective (r =0.34816), and normative (r =0.27765) commitment, indicates the climate of an organization affects the level of affective and normative commitment of radiographers. This may be the reason for radiographers' moderate affective commitment and low normative commitment due to low perceived organizational support[48]. Positive relationships were also reported between organizational climate and level of OS, coping mechanisms and physical symptoms of OS (see Chapter four, Table 4.49, p117), indicating organizational climate as a source of OS increased level of OS experienced by radiographers.

B5.3.2 Management style within an organizational context

A positive work environment fostered by strong leadership can over time boost staff's morale and lead to decreased absenteeism and an increase in quality care[46]. On the basis of organizational support theory it is perceived that favorable treatment received from the organization, namely fairness, manager (supervisor) support and trust could also increase perceived organizational support. For purposes of this study management style within an organization was rated as a moderate source of OS between private and public organization radiographers, but public radiographers experienced it as a stronger source of OS.

According to Karasek[82], OS results from unresolved mental strain on the job. The two factors determining job strain are job demands and decision latitude[82]. Decision latitude is expressed as autonomy, discretion, and control on the job. Most radiographers felt management failed to communicate decisions made at top level, they had very little to no

input in decision-making, they were inadequately consulted when changes were implemented and lastly, management never met with them to discuss future work goals. Based on Karasek's[82] job demand control model, the above findings confirm that radiographers were low in decision latitude and job authority. This is consistent with the view that employees form a general belief regarding an organization's commitment to them[82]. Interpreting the above findings indicates that there was a tendency among radiographers that management had a negative orientation toward them[48]. Most radiographers also felt that management had little to no interest in the welfare of staff.

Regarding management's responsibilities on the overall function of the section, the results revealed that radiographers (50%) were dissatisfied with management for not trying to improve working conditions. They also felt that productivity was not maintained through good organization and planning and a few also felt that work activities were not organized sensibly. According to the Job Demand - Control model and the results obtained, radiographers were low in decision latitude and had very little control over their work activities, resulting in high strain[82].

By upgrading or changing existing processes and procedures, facilities can increase volume and patient satisfaction[83], to which radiographers (53%) felt that managers were slow in responding to technology and thereby improving work methods. In public and private organizations this may be due to budgetary constraints or lack of interest in improved work methods and could have a negative impact on staff. For quality of service delivery outcomes, staff must be highly competent[20], to which most radiographers were quick to adapt to new technology and to improve work methods. A study on technology and training of radiographers suggests that if new technology were to be introduced and radiographers were not fully engaged in a vendor-prescribed applications training programme, there was a greater likelihood of radiographers not possessing the

competency necessary to properly operate the equipment and the service delivery could be compromised[34]. Based on the findings of this study, one can suggest that although some radiographers (28%) felt they were slow, management would have to ensure that enough time was allocated to develop their competency. This could be achieved by obtaining feedback from radiographers.

A positive relationship was reported between affective commitment and management style (r =0.33056), and normative commitment and management style (r =0.25771). Thus, the style of management had a positive effect on affective and normative commitment. Interpreting this relationship revealed that management style rated as a moderate to high source of OS and could influence the level of commitment of radiographers. This may be the reason why 42% did not feel emotionally attached to their organization/s and they would not feel guilty leaving the organization if it were to their advantage. It is apparent from the literature reviewed that lack of participative management style will definitely affect the level of service rendered[15].

Although not the main objective of this study a positive relationship between management style and organizational climate (r =0.60238) was found, indicating that the style of management had an influence on the organizational climate. A moderate positive relationship was also found regarding mental and emotional level of OS (r =0.41794), indicating some level of distress experienced by radiographers, probably due to lack of authority and/or decision-making.

B5.3.3 General physical working environment

The general physical working environment influences an employee's perception of organizational support[46,48]. Moderate positive relationships were found between general

physical work environment and organizational culture and climate, management style and supervisor support, and HOD support with *r* ranging from 0.37463 to 0.56716. This indicated that although the radiographers' perception of support, trust and leadership was satisfactory, the lack in decision-making, of not involving radiographers when changes were made influenced the general physical work environment. Because some radiographers (33% to 45%) felt the diagnostic imaging section was not properly planned (to which no constructional changes could be made), examination rooms were inadequately designed and equipment and accessories not maintained. In addition to this, radiographers (45%) felt that the equipment and resources to work with were inadequate. Furthermore, 41% reported an unavailability of accessories such as gowns, linen and drip sets. All of the above directly impacts on staff and patient safety, which may result in longer patient waiting time. This eventually results in the delay of the clinical treatment of the patient. From the staff's perspective it implicates additional workload pressure, which in turn results in additional physical strain on staff.

Radiographers (33% to 40%) felt physical conditions and facilities for staff and patients did not meet their needs. For the diagnostic imaging section, inadequate ventilation can lead to impaired equipment function. This can result in sub-optimum quality resultant images. From a radiographer's health perspective, physical stressors can be harmful as body systems are forced to continuously compensate for conditions that are outside the normal range. Examples would be exposure to excessive heat or excessive cold, while other physical agents that cause excessive stress are high levels of noise (chemical processor)[14]. In addition, the workstation design (the entire outlay of the diagnostic imaging section) may cause excessive physical strain, whereby radiographers would need to walk from one end of the department to the other to chemically process their film containing the latent image. Heavy manual labour may have similar effects if supportive staff (darkroom assistance) is not available. Or the non-availability of "x-ray" trolleys

specifically designed to carry out radiographic examinations may result in radiographers transferring patients on the x-ray table. This adds to the physical strain experienced by radiographers, supported by a positive relationship found between general physical work environment and emotional and mental symptoms of OS (r =0.26631). But a positive relationship was also found between physical and mental and emotional symptoms of OS (r =0.32049). Therefore, general physical conditions indirectly influenced physical symptoms experienced by radiographers.

Based on the findings (see Chapter two, Section 2.5.2, p28) of Lundstrom et al[30], even if a small percentage of patients exposed to sub-optimal ventilation results in deficiency of the immune system, from a radiographer's perspective, physical exhaustion may result in an increase in mistakes being made. Although general physical working conditions rated a low source of OS, with regards to the level of service delivered, it can be rated as poor. This was more so in public organizations than in private organizations. Radiographers in public organizations experienced poorer physical working conditions than those in private organizations.

B5.3.4 Management trust, support and leadership ability

Measurements of trust can be characterized in terms of benevolence in the form employee perceptions of managerial support. According to Iverson[6], managerial support is characterized by several terms routinely connected to trust such as respect, friendship and concern for the need of employees. Supervisor support has been shown to reduce the effect of stress and burnout[4]. Positive moderate relationships were found between mental and emotional symptoms of OS and HOD (r =0.48764) and supervisor (r =0.3702). These relationships indicate that management's trust, support and leadership ability directly influence the emotional and mental level of OS experienced by radiographers. Therefore,

management's trust, support and leadership ability rated a low source of OS and had a minimal effect on radiographer's emotional and mental symptoms of OS.

Although, public radiographers experienced the HOD as a higher source of OS, generally the supervisor and HOD were rated as a low source of OS. However, some radiographers (16% - 30%) did feel management was untrustworthy, and did not treat them with dignity and respect, OC and trust are significant determinants of organizational performance (see Chapter one, Figure 1.1, p6). A positive relationship was also found between affective commitment and management indicating that management support did have some influence on affective commitment. This could have some effect on the behaviour of the radiographer during the service encounter.

B5.3.5 Career development

Career development was rated as a moderate source of OS amongst private and public radiographers. Radiographers in public organizations experienced career development as a higher source of OS.

Ahora et al[34], found that continuing education provides a mechanism for radiographers to fulfill their responsibility to maintain competence and prevent professional obsolescence. In the diagnostic imaging discipline it is very important that current knowledge on existing and new technology of procedures be maintained (see Chapter two, Section 2.2.1, p19 and Chapter five, Section B5.3.2, p132) in order to deliver a quality of service. One way of achieving this is by obtaining an additional qualification in radiography, for example by registering for an honours degree or bachelors in technology in radiography. These courses are tailored to enhance a radiographer's knowledge of current technological advancements as well quality improvement methods in radiography. At the time of

conducting this study, the majority of radiographers had basic entry-level qualification and only 7% were studying to obtain an additional qualification in radiography (see Chapter four, Table 4.8 and 4.9, p70). These findings suggest that radiographers were possibly not encouraged to pursue their career from an organizational perspective. In addition, some radiographers (28%) were not exposed to courses relevant to the profession. Burns[33], emphasized that Continuous Professional Development programmes (CPD) for radiographers were rated vital in maintaining a high quality of service. From an organizational perspective this could be achieved if topics presented were relevant to radiographers' area of practice. Hereby radiographers could identify the topic relevant to shortcomings experienced in their area of practice. For example, if radiographers are experiencing increased repeats on horizontal ray projection of the lateral cervical spine, then this topic could be included with demonstrations to enhance radiographers' knowledge on producing lateral cervical spine projections.

Although not investigated in this study, Dua[28] reports that staff often reach a stage where career development is not their major concern. Radiographers, who do obtain an additional qualification, may not necessarily be promoted and/or their skills not effectively utilized due to a lack of posts and/or facilities. Hence radiographers felt their performance was unfairly appraised, promotion procedures were not fairly applied and their good achievements were not recognized. Some radiographers also felt that their abilities and skills were ineffectively utilized and their abilities and skills were underdeveloped and not extended. A possible explanation for this could be attributed to the introduction of new technologies where work has become fragmented and duties narrowed[43]. This process of "deskilling" results in increased levels of boredom, making work less challenging and less satisfying (see Section B5.4). Relationship with

management can indirectly contribute to a lack of career development, which was not the case in this study as the majority of radiographers felt that their relationship with management was good.

As already mentioned, career development has a direct effect on the behaviour of the radiographer and the quality of work done. Although it was a low towards a tendency of a moderate source of OS, the levels of service delivered will to some extent be negatively affected, because a positive relationship was found with mental and emotional level of OS (r =0.300). As indicated, skills not effectively utilized, can result in boredom. Unfair promotion opportunities and unfair performance appraisal can result in a perception of the work situation not comparing favorably with others and this can contribute to the conflict experienced by radiographers. A lack of opportunity in rewarding good achievements can result in demotivation and a lack of interest in the work itself. However, a slightly stronger relationship was found between career development and supervisor (r =0.502) or HOD (r =0.522). In other words, management's trust, support and leadership ability had a positive influence on career development as confirmed by the 80-83% who rated their relationship with their supervisor and HOD as good.

Promotional opportunities are the degree of potential occupational upward mobility within an organization[15,46,48]. However, radiographers (43%) reported unfair application of promotion opportunities, 37% felt performance appraisal was unfair and lastly, 41% reported no recognition for good achievements. Promotional opportunities focus on future incentives and job training is discretionary practice communicating an investment in the employee[15,46,48]. The latter is of importance as it enhances the employee's affective commitment to the organization, thereby producing a strong sense of belonging, involving the employee's membership and role status into their social identity[15]. The

results of this study revealed a positive relationship not only with affective (r =0.38833), but also with continuance (r =0.27376) and normative (r =0.31830). The development of a radiographer's career therefore directly influences all three constructs of commitment to the organization.

B5.3.6 Role ambiguity

Although 28% did not have clearly planned goals and objectives, the majority of radiographers knew what their responsibilities were, they knew how to utilize their time effectively and they were certain about the authority they had on the job. Therefore, role ambiguity was rated as a very low source of OS amongst private and public organization radiographers – an indication that radiographers knew what was expected of them. It could be that radiographers were relying more on their professional and academic competency in their work situation.

Role conflict contributes to increased levels of role ambiguity (see Chapter two, Section 2.5.4.2, p31), to which a positive relationship was found between role ambiguity and role conflict (r = 0.27028). Thus radiographers experiencing high role conflict also experienced high role ambiguity. However, according to the descriptive analysis a negative relationship was found, that is radiographers were experiencing high role conflict and low role ambiguity. This could be due to a limitation on not reverse coding the items for role conflict as these were negative statements, or as already indicated, that radiographers were relying more on their professional knowledge. No relationship was found between levels of OS, coping mechanisms and role ambiguity. In other words role ambiguity did not affect the level of OS amongst radiographers. But positive weak relationships were found with all three constructs of OC (see Chapter four, Table 4.48, p115). The implication is that role ambiguity influences the level of commitment of radiographers to the organization. To

some extent radiographers were staying in their organization because of professional obligation.

B5.3.7 Role conflict

Role conflict was rated as a high source of OS amongst private and public organization radiographers. A positive relationship was found between workload and role conflict (r =0.54133). This indicated increased workload resulting from an increase in role conflict experienced by radiographers or vice versa. This relationship is supported by the 13% radiographers who were unable to adapt their radiographic technique in order to achieve diagnostic quality image/s. Radiographers who are unable to adapt their radiographic technique can lead to sub-optimal images produced or omission of projections can result in incomplete radiographical examination, thereby hampering the radiological diagnosis of the patient. Alternatively, another radiographer may be called to assist or the patient may return to the section later for additional projections (if a radiologist is not available to report the initial set of radiographs). This results in compromising patient safety in terms of radiation and also the clinical treatment of the patient.

Most radiographers (63%) also experienced colleagues who worked quite differently from them; therefore impacting negatively on teamwork. A possible reason for this could be that the training received from the academic training institutions varied. This does not necessarily mean that service delivery is compromised. However, private organization radiographers more so than public radiographers reported a variation in work acceptability. This directly impacts on the standard of the quality of radiographs produced, and by having a direct effect on an increased repeat/reject rate, therefore, an increase in workload. Student training will be negatively affected, because a variation in

the standard of images produced and colleagues working quite differently from one another, implicate different approaches in conducting radiographic examinations. Based on the above discussion there is some indication of a lack of protocols in the organizations with regards to standardization of work methods.

Other factors influencing the increased role conflict experienced were radiographers in public more than private organizations who had to work with inadequate equipment and accessories. This resulted in increased time spent with patients, and the possibility of additional radiation implicated for an assistant to restrain a patient. For example, if a patient was required to maintain a certain position for a lateral shoot through the hip projection, it is vital to support the opposite limb in maintaining the position to visualize radiographically the femur head. Due to inadequate support the femur head is not visualized and the radiograph has to be repeated by asking for assistance from another member of staff (if a relative is not available) thus having a negative impact on the level of service delivered.

Most radiographers (65%) were also expected to perform radiographic examinations without adequate staff support. Therefore, there are additional physical strains on the radiographer, such as lifting up a patient alone, or leaving a very ill and unstable patient unattended in the examination room whilst processing the radiographic image if no darkroom assistant is available.

Although no relationship was found between symptoms of OS, based on a cause effect principle from practical aspect, role conflict may contribute to views clashing with one another (APPENDIX 3, V44, p179). For example, an optimum kVp technique works for radiographer “one”, and radiographer “one” is asked to assist radiographer “two” who works with a variable kVp technique. Radiographer “one” sets the exposures and

radiographer "two" accepts, and the resultant radiograph is of poor quality, which may result in tension between the two radiographers.

B5.3.8 Social support

Social support rated the lowest source of OS, amongst private and public radiographers. The majority of radiographers got along with family and friends and had very strong family support. Family support is very important enabling one to be able to balance work and outside work[58].

In the workplace the majority of radiographers were willing to assist clinicians and had a good relationship with the radiologist. This has a positive impact on the provision of an internal service delivery, which in turn results in benefiting the patient treatment outcomes[8]. Learning to appreciate co-workers is the first step towards overcoming divisions in a workplace[43]. The majority of the radiographers could share experiences and feelings, talk openly about their problems and express negative feelings to colleagues, attend social functions organized by their colleagues and were willing to assist colleagues. Being able to talk to others makes one feel that one is not the only one going through problems and means that one will not end up feeling isolated[43].

Most radiographers (75%) felt that their relationship with nursing staff was good, but were not willing to assist radiographers (60%) in the ward. An increased time is spent on doing an examination when colleagues and/or nurses are unwilling to assist. For example, a portable radiographic examination results in asking an additional member of staff to assist in the ward. In the diagnostic imaging section this results in a backlog of patients by taking one radiographer to the ward if the department is very busy. This is particularly so after hours when there are minimal radiographers on duty. On the other hand, if no staff is

available the radiographer is forced to go alone, resulting in lifting up the patient on her own in order to position the cassette. Thus patient and staff safety is compromised, thereby compromising quality of service care as well.

Social support has been shown to reduce the effect of OS and burnout[11,13]. A positive relationship was found between emotional and mental symptoms of OS and social support. Therefore social support was not that much of a contributing factor to mental and physical symptoms of OS experienced by radiographers. A positive relationship was also found regarding affective and normative commitment (see Ch. 4, Table 4.48, p115). These relationships indicate and confirm that radiographers feel part of the family and a sense of belonging because of the obligation of the people in it (See Ch.4, Section B.4.4.1 and B.4.4.3, p74 and 78).

B5.3.9 Workload

A significant difference was found in workload as a source of OS amongst public and private organization radiographers. Radiographers in public organization experienced workload as a greater source of OS.

Workload is a common source of OS amongst radiographers (see Chapter two, Section 2.5.5, p32), in keeping with the results of this study. Radiographers in private more so than in public organizations agreed that their work required physical and mental hard work. Most radiographers were rushed in completing examinations, some had no time to give proper instructions and most radiographers in public organizations had no time to support their patient/s emotionally. Possible reasons for this are linked to productivity and pressure to perform. Work experience shows that radiographers' performance is often

monitored in terms of the number of patients done per day rather than number of examinations per patient. This results in compromising the actual service encounter.

From an internal service delivery perspective, most public organization clinicians did not discuss radiographic examinations with radiographers and duplication of radiographic examinations were also found more frequently in public organizations. This impacts negatively on staff and patient safety and on the financial resources of the organization itself.

Insufficient radiographic examination rooms were reported by 59% radiographers and may result in inadequate service provided by the organization as patients sometimes have to wait for a long period of time. This applies to the specialized radiographic procedures performed. From a clinical perspective this results in delayed treatment of patients and negative financial implications for the organization. This is applicable particularly in private organizations as patients will go to another service provider.

According to a previous finding the largest deficit factor for radiographers is that of "life overall", a reflection of the perception that they have limited autonomy over their time as their leisure time is not their own and is frequently encroached upon by hospital emergencies[84]. Inadequate staff scheduling was reported by radiographers (more so in public than in private organizations), along with emergencies and staff shortages and most radiographers worked through tea and lunch breaks. This can lead to tension in interpersonal relationships at work coupled with tiredness (see Section B5.4) from quantative and qualitative work overload, which impedes their ability to give and receive on an emotional level[84]. Radiographers (58%) had to work without support staff to assist them effectively in performing their tasks, resulting in unattended patients before, during and after radiographic examinations. Equipment breakdown (more so in public

organizations), no control over through-flow of patients was also experienced by more than 50% radiographers and these all contributed to additional patient waiting time and pressure on radiographers to perform under difficult working conditions (queuing up for examination rooms). Insufficient patient waiting area results in overcrowding and if physical conditions and facilities are inadequate this may impair the patient as well as the staff's health and safety.

No relationship between workload and OC was found for this study, indicating that workload does not affect the radiographers' commitment to the organization. Statistically a negative weak relationship was found between physical and mental symptoms of OS and workload, indicating that radiographers who were experiencing increased physical and mental symptoms of OS were also experiencing decreased performance. A positive relationship was found with role conflict, shift work and workload (r =0.32598), implicating that radiographers who experienced higher workload during their shift work could be due to only three to four radiographers on duty after normal working hours. The workload is generated mainly by doing non-emergency radiographic examination after hours. Another possible reason is increased trauma patients after hours requiring skeletal survey radiographs due to the nature of their injuries. If no consultant/or clinical assistant radiologist is available clinical assistants from various other disciplines interpret their own radiographs and when in doubt request additional radiographic examinations resulting in patients coming back for additional radiographs.

A negative relationship was also found between workload and the general physical working environment (r =-0.33505), as already discussed general physical working conditions impact negatively on the workload experienced by radiographers.

A negative relationship was found between workload and physical symptoms of OS (r=-0.39280), thus, radiographers who experienced increased workloads also experienced decreased physical health, supported by back pain and tiredness (see Section B5.4).

B5.3.10 Shift work

Shift work rotation shows decreased work satisfaction and poorer performance[30]. For this study shift work was rated a moderate source of OS, but it was rated a higher source amongst public organization radiographers. In the researcher's clinical setting, radiographers often swap shifts with other colleagues to avoid working after normal working hours. Although no relationships were found between shift work and OC a few radiographers did leave the organization for another job that only required them to work normal working hours. Others have sought an alternate profession where work after normal hours is not a requirement.

Radiographers also had families and friends who worked normal working hours and this could affect radiographers' social interaction with their families and friends[56]. However, radiographers did have a strong support from families and friends. In other words radiographers could rely on family and friends for support when doing shift work. The majority of radiographers missed their spouse or children when doing shift work and this may lead to emotional symptoms of OS[56].

Irregular sleep periods were identified by Johnson[84], the results revealed that radiographers (65%) were experiencing sleep disturbances. They also encountered difficult patients after normal working hours. Lashinger et al[32], reported that workers' safety could be compromised after normal working hours, to which most radiographers responded by stating that they felt unsafe and insecure at their work place after hours.

From the researcher's shift work experience, patients often harass staff on night duty. Doing portables in the wards after hours is unsafe because the wards are a distance from the diagnostic imaging section and radiographers are expected to walk through dark corridors to get to the required ward.

As already mentioned, shift work does have an effect on the physical well-being of the individual, as 50% of the radiographers relied on take-away foods. According to Johnson[56], this could lead to enhanced stomach disorders. This could result in additional financial implications for radiographers. Although not investigated, this may also be as a result of an inability to cope with household demands when doing shift work. For example, a radiographer on weekend shift duty (working three consecutive nights), comes home after a 12-hour shift, and has to assume household duties and be rested prior to the next shift. Some radiographers were unable to attend recreational activities, which confirms Johnson's[84], findings. Recreational activities are good for physical workouts and stress relief[17]. A few could not attend most social functions, which are important from an interaction point of view. Some 11% radiographers reported unfair shift work, which could be an oversight by the person who drafted the roster, or because of a turnover of radiographers. Some radiographers also experienced difficulty in getting to work. This could be due to a spouse or a number of individuals sharing one car. Individuals who use public transport have often been mugged, and in some residential suburbs there is no access to public transport.

No relationships were found between OC and mental and emotional symptoms of OS but a negative relationship was found with physical symptoms of OS (r =-0.32675). Therefore shift work had a negative impact on the physical health of the radiographers.

B5.4 Levels of OS

The level of OS was measured by the frequency of emotional, mental and physical symptoms experienced by radiographers. The emotional, mental and physical symptoms of OS between public and private radiographers were rated as moderate towards a tendency of high.

The Canadian Centre for Occupational Health and Safety[42], identified boredom as an early warning sign of stress. Boredom at work occurs when work activities become repetitive in nature, making work less challenging. Consequently people subjected to boredom will experience feelings of no obligation to try to improve the work situation[80]. In total 69% of radiographers felt that their work was not varied enough to prevent boredom. Possible reasons for this can be due to a lack of creative opportunities, poor job description, inadequate staff scheduling and "deskilling"[80]. The latter may implicate unfair rotation to various sections in the diagnostic imaging department, to which some radiographers (10%) did respond. For example, radiographers doing CT, never get the opportunity to go and do general radiography and vice versa. Radiographers working in the general radiography section work physically twice as hard as the CT scan radiographers. This immediately increases the possibility of mistakes being made (repeat radiographs), thereby increasing radiation dose to patient and staff.

Staff scheduling was also inadequate as reported by 55% of the radiographers. Staff scheduling guides one in creating an optimum schedule and one that enhances quality care and employee satisfaction while maximizing cost efficiency[85].

Work resulting in boredom could also be due to radiographers (59%) loosing interest in work itself. Loss of interest can also result if one cannot change a situation, to which most radiographers agreed. This could be one of the possible reasons why most radiographers (85%) accepted things as they are. This impacts on the behaviour of the radiographer

during the service encounter, as they will not make the discretionary effort to go beyond the call of duty to make the service encounter a success. For example, doing the radiographic examination for the sake of doing it without empathizing with the patient.

In the literature review of Taris et al[86], depersonalization (distancing oneself from the work environment) and lowered OC can be considered as ways of dealing with strain resulting from an overly demanding work environment. The results of this study revealed that although radiographers (56%) had interest in activities around them, 60% of them did not wish to participate in anything. This was probably because radiographers (61%) felt they had no support and some also felt uneasy going to work. A feeling of uneasiness associated with going to work is an indication of low morale and motivation. Radiographers who feel this way and come to work will not perform optimally and this impacts directly on their colleagues and eventually on the service delivery. According to Taris et al[86], there is some degree of emotional exhaustion arising in response to a demanding work environment leading to withdrawal behaviour[86].

Conflict could arise from numerous sources within a team setting (see Ch.2, Section 2.5.4, p30). The results obtained indicated that most radiographers were experiencing conflict and a clash of views with someone else. As referenced in chapter two barriers to communication are among the most important factors and can be a major source of misunderstanding. Structural disagreements include levels of participation, reward systems, and levels of interdependence among employees. Structural disagreement was also reported for this study (see Section B5.3.2). Conflict with supervisor/s was identified

as one of the most significant causes of stress[19]. For this study the result revealed that relationships with the supervisor were seen as good. Social support was also a low source of OS. Thus one could conclude by saying that conflict experienced was probably organization related, such as style of management within the organization's context and role conflict. Experiencing conflict by virtue of a clash of views can result in variation in the overall quality of work produced; it also hampers productivity and level of stress experienced[80]. This impacts on the day-to-day level of service rendered.

Personal factors include things such as an individual's self-esteem, their personal goals, values and needs. The results of this study revealed that radiographers (41%) felt inferior. In a work situation, work does become unfulfilling preventing employees from realizing their own potential and their own capabilities[43]. Among the major negative effects of OS are its impact on a person's self-image and self-esteem, which in turn affects relationships with family and friends, and co-workers[43], although the result of this study revealed that social support was a low source of stress. Based on this discussion, some degree of job dissatisfaction is experienced by radiographers by not providing them with an opportunity to develop their potential and capabilities (see Section 5.3.5,p137).

An overview of studies on OS and stress-related articles on radiographers revealed that job insecurity was not investigated for radiographers as such because radiography positions were considered to be very stable. But contrary to this, 26% of the radiographers were experiencing job insecurity to some extent. Probst and Brubaker[87], in their literature review, showed that studies done on job insecurity among employees leads to job dissatisfaction, an increase in negative physical health outcomes and reports of psychological distress. Also, employees with perceptions of low job security are more likely to engage in work withdrawal behaviour and report lower OC, leading to employee

turnover[87]. For the purposes of this study and based on the above theoretical findings and Higashuki[88], the perception of job insecurity was probably due to emotional exhaustion.

Innes[44], in her literature overview referenced that mental stress-related disorders include irritation, anxiety, and difficulties in concentration leading to tension headaches and stomach disorders. The results of this study revealed that the majority of radiographers felt irritated, were annoyed and some (57%) had difficulty in concentrating, resulting in tension headaches as a positive relationship (r = 0.32409) was found between emotional and mental and physical symptoms of OS.

Radiographers (32%) were experiencing some anxiety without any specific reason, and according to Innes[44], prolonged anxiety may lead to clinical depression. Also associated with clinical depression are feelings of gloom and inadequacy[44], to which radiographers (68%) were experiencing sadness and were not even sure how to act.

Some early signs of burnout were indicated as some radiographers felt that they were turning up against a wall and simply could not make progress, requiring assistance on a continuous basis and there was some feeling of aggressiveness. Tiredness was reported by 62% of the radiographers.

According to Varca[8], a real or perceived sense of too many responsibilities to which 55% radiographers responded, could result in cutting corners in order to meet demands. For example, rushing to complete a radiographic examination prior to attending a meeting because of a staff shortage. This is a typical method of coping with work overload at the same time compromising on patient care.

Physical stress symptoms include colds, infections and muscle pain[44], to which most radiographers responded by having headaches, neck pain, and muscle pain. Some

radiographers experienced cold infections, dizziness and/or light-headedness and a few experienced breathing difficulties. According to literature, the latter two physical symptoms are indicative of early signs of burnout[15].

A positive relationship was found between mental and emotional symptoms of OS and OC [affective (r = 0.36739), normative (r =0.37941)]. The possible explanation for this is that radiographers' were relying very little on emotion but more on problem-focused coping as a positive relationship was found between mechanism of coping and mental and emotional level of OS (r =0.23944). Despite the low mental and emotional symptoms of stress experienced the mechanism of coping applied by radiographers assisted them in maintaining their desire and need to stay with their organization.

The level of OS experienced by radiographers implicates on the behaviour of the radiographer during a service encounter. For example, an irritated or annoyed radiographer may become irritated with the patient as well. The radiographer may then loose concentration, which can lead to mistakes being made, compromising staff and patient safety. Radiographers' frequency of physical symptoms of stress experienced can result in absenteeism impacting negatively on the remaining staff by increasing their burden to carry the workload. Besides, a radiographer who turns up for work not feeling well will have a similar effect leading to a poor service encounter[8].

B5.5 Mechanism of coping applied by radiographers

The coping mechanisms applied by radiographers can in turn assist radiographers in maintaining the commitment to their organization (no relationship was found between OC and mechanism of coping). The method of coping applied by radiographers could also contribute to experiencing lower level of OS. A positive relationship was found between mechanisms of coping and the physical symptoms of OS (see Chapter four, Table 4.50, p118). This indicates that the method of coping applied by the radiographers directly influenced the level of OS experienced by radiographers. Analyzing the "emotion" and "problem-focused" coping methods revealed that radiographers did to some extent rely on emotion-focused coping but mostly relied on problem-focused coping mechanisms. This could explain why the emotional and mental symptoms of OS experienced by radiographers were moderate in most instances. Lazarus and Folkman[57], also found that nurses who experienced decreased levels of burnout used planful problem-solving methods of coping with stress.

5.2 Conclusion

In conclusion, the sample size was fairly representative of the diagnostic imaging population. The demographic information obtained for the purpose of representativeness of the sample was satisfactory.

The first alternative hypothesis was accepted, where a relationship was found between sources and level of OS. The second hypothesis was rejected based on positive relationships found instead of negative relationships between level of OS and level of OC. The third, alternate hypothesis was partially accepted on the basis of a relationship

between level of OC, and sources of OS and level of OS and rendering a service delivery based on the cause/effect relationship. The latter confirms that service delivery is affected by radiographers' level of organizational commitment and occupational stress experienced by radiographers. Factors contributing to the poor level of service delivered were mainly attributed to the moderate towards a tendency of low level of commitment to the organization, which was influenced by the organizational culture, management style within an organizational context, general physical working conditions, role conflict and workload. The moderate level of OS experienced by radiographers, can be supported on the basis of the problem-focused coping mechanisms applied by radiographers, which in turn assisted them in maintaining their commitment to their organization.

5.3 Summary

The main purpose of this chapter was to interpret findings of the results obtained by validating it with findings of previous studies. Secondly, the effect of OC and OS on the level of service delivered was investigated. Thirdly, the hypotheses identified for study were partially accepted.

Chapter six

Conclusions and recommendations

6.1 Introduction and setting

The final analysis for the research undertaken is presented in this chapter of the dissertation. Analysis of the results obtained for this research undertaken enables one to emphasize factors that could influence the functioning of radiographers in delivering a quality of service. This was achieved by identifying key organizational and non-organizational issues, which could affect the quality of working life of radiographers. In this chapter the researcher is able to confirm the importance of conducting a study of this nature.

Based on the results, the theoretical component and practical experience of the researcher (was a manager at previous place of employment and now practicing as a functional radiographer), strategies to improve the quality of working conditions for radiographers as a whole will also be recommended. This will assist management of the diagnostic imaging section as well as organizational management in achieving their organizational goal (service excellence) based on the background of this (see Ch.1, Section 1.2, p2) namely the Health Summit Report[3]. The reader is referred to the full content for more information[3]. The results of this study can also be used as baseline measures against which the findings of future occupational stress and organizational commitment studies amongst radiographers can be compared. Such comparisons will place this research within a continuous quality improvement framework.

6.2 Conclusions

Conclusions for the various aspects of this study are presented here. An almost 100% response rate was obtained for this study, which made this study fairly representative of the radiography population. The statistical estimation procedure to assess how accurately respondents represent staff at each organizations also suggest that the findings were fairly representative of staff within small and large organizations. There are 10% more private than public organizational radiographers in the Tshwane region, of Gauteng province. A fair representativeness of gender, age distribution, marital status and dependants were reported. However, it should be mentioned that 25% of dependents also contributed to radiographers' financial income. This indicates that there is a tendency of salaries not being market-related as confirmed by this study. Service rendering was not hampered because of lack of skilled and experienced staff.

Radiographers' level of OC can be rated as moderate towards a tendency of low, indicating that radiographers remained in an organization because of a desire and a need more than an obligation. Although statistically no significant difference was reported between private radiographers and public radiographers with regards to organizational commitment, radiographers in private organizations scored slightly higher regarding OC. Positive relationships were found between affective, continuance and normative commitment, which is in keeping with the study done by Meyer and Allen[61]. Although they were not prepared to spend the rest of the career with the organization, they did feel part of the family and a sense of belonging to their organization. They remained with the organization more so because of a desire and necessity as too much of their lives would be disrupted if they were to leave. But they also felt the organization deserved their loyalty. This has a direct effect on the long-term service delivery because they would

leave without having guilt feelings if it were to their advantage. This could negatively affect maintaining the level of service delivered during a period of transition.

Sources of OS were generally rated as moderate with workload and role conflict as high sources and social support, and role ambiguity as low sources of OS. Radiographers in public organizations experienced the organizational culture and climate, general working conditions and workload as higher sources of OS. The level (emotional, mental and physical symptoms) of OS was rated moderate towards a tendency of high in some instances. The moderate level of OS could be due to radiographers using a problem-solving method of dealing with OS.

Based on the first alternate hypothesis of this study, a relationship was found between sources of OS and the level of OS amongst diagnostic imaging radiographers.

The second alternate hypothesis was partially accepted, on the basis of the descriptive analysis and the overall ratings of the results obtained on occupational stress and organizational commitment. As there was a tendency towards low organizational commitment and high occupational stress. Thus, the sources of occupational stress (social support, role ambiguity, career development, management trust, support and leadership ability, organizational culture and climate, management style within the organizational context) have a direct influence on the commitment of radiographers to the organization. According to the positive organizational support theory and the efforts/reward model[48] and the findings of this study, the organizational climate, structure and style of management plays a vital role in rendering a quality service.

Partial acceptance of the third hypothesis, second alternate that there is a relationship between quality of service delivered and level of OS and level of commitment was based

on a positive relationships found between several sources of OS and emotional and mental level of OS (namely organizational climate, management style, general work environment, trust and support of HOD and supervisor, career development, role ambiguity, and social support).

Based on the partial acceptance of the third alternate hypothesis, radiographers' level of service delivery is influenced by factors governing the context within which an organization functions and perceived organizational support received.

6.3 Positive attributes of this study

There are several positive attributes of this study. Firstly, based on the extensive literature reviewed, this appeared to be the first study on diagnostic imaging radiographers' quality of working life from an organizational perspective. Second, it is also unique in that OC of radiographers was measured not with the sole intent of turnover but also from a service delivery point of view. Thirdly, the researcher could not find "off-the-shelf" organizational studies specifically investigating the radiographers' role in rendering a service delivery. Therefore, the researcher developed an OS instrument that measured the radiographers' quality of working life, and the OC instrument was adopted verbatim to determine the level of commitment[48]. Although interviews were not included in this study, the researcher determined that staff satisfaction surveys were not conducted as part of Quality Assurance processes in all participating organizations. Such processes would include staff meetings where radiographers could voice their dissatisfaction. However, staff may feel uncomfortable in doing so. Fourthly, the reader is referred to the research question, supported by the organizational health approach concept; where relationships were found between various sources of OS, physical, emotional and mental level of OS and

organizational commitment. Congratulatory comments were received regarding the content of the questionnaire as most radiographers felt they could freely express their dissatisfaction. Some participants also commented that the results of the research should pertinently be presented to the radiologists so that they could appreciate the hard work radiographers were doing.

6.4 Recommendations

To enhance commitment of the radiographers and reduce occupational stress involves creating a positive work environment. It is suggested that the core concept of a healthy organization appears to lie in the redefinition and clarification of relationships, expectations, obligations and interaction between employees and the organization[20].

- Management could create a positive work environment by refocusing responsibility to radiographers by opening up communication channels by using staff satisfaction surveys to monitor stress levels, needs and stressors in the work environment.
- Conduct collaborative workplace and job redesign to enhance person-environment match.
- Management can create engaging in worker empowerment and participatory management style by discussing future work goals with radiographers. Communicating decisions made at top management level. Input from radiographers when changes are to be implemented in the section.
- Provide continuous technical support from the organization to maintain the level of delivery of quality services.
- Show interest in the welfare of staff.
- Reward staff for their good work. Rewarding does not necessarily have to be financial but can be in the form of a medal and or radiographer of the month.

6.4.1 The level of stress experienced by radiographers is something that cannot be changed immediately. Therefore, it becomes important for management to observe trends of behaviour of radiographers, as some radiographers who experience stress will identify themselves, but management could identify others by observing deteriorating work performance and increasing absenteeism. Topics such as stress management could be included in the continuous education programme of the organization.

6.4.2 Efforts should be made to ensure that all radiographers benefit from a clear career structure that enhances their knowledge and skills and acknowledges their status within the system. For example having more internal continuous education courses, on Quality Assurance, with emphasis not only on the diagnostic imaging section but also linking it to organizational outcomes. Topics on the management of OS could also be dealt with by inviting the hospital psychologist. This will also provide an opportunity for all staff to participate.

6.4.3 Organizations need their employee assistance programmes to be effective. They must enable radiographers to seek assistance on a short-term basis. This reduces absenteeism, which directly impacts on the effectiveness of the organization.

6.4.4 Each and every radiographer should have a job description that integrates the organization's mission and vision. Also, all radiographers should have clear plans and objectives, according to their skill and experience and lastly, include clearly defined responsibilities. At the same time provision should be made for meaningful stimulation and creation of opportunities for radiographers to use their skills.

6.4.5 The human resource department should be invited to provide information on guidelines for salary structure, application of promotion procedures, performance appraisal and rules regarding transfers. This would assist staff to better understand and management to better negotiate on behalf of staff. This could also enhance commitment and reduce turnover intent.

6.4.6 Stress caused by shift work may also be reduced. Eliminating shift work completely is impossible, but management could allocate chief radiographers on a rotation basis to design schedules on a forward rotating basis to minimize the disruption of body rhythms. Asking for inputs from persons doing shift work can amend this schedule.

6.4.7 Radiographers' safety and security after hours can be improved by devising an action plan to deal with difficult patients. Provide training to identify, recognize, and diffuse potentially violent patients. Be alert for potential violence and suspicious behaviour and report it. Provide adequate staffing so that radiographers are accompanied when going to do portables in the ward. Other improvements could be to station a security officer at the section after hours, install concealed panic buttons in the x-ray rooms and rest rooms, and improve light and video surveillance.

6.4.8 Transferring skilled and experienced staff to specialized sections needs to be carefully considered so that junior staff who lack competency are not left on their own to cope with radiographic procedures that they are not competent with.

6.4.9 Some control on productivity should be in place, whereby opportunities are created not to overload the radiographer whilst conducting a radiographic examination. For example, measuring productivity on number of examinations performed per patient by the radiographer and not on number of patients done per radiographer.

6.4.10 The problem of insufficient support staff could be overcome by training and employing radiographic assistants who could assist radiographers in lifting patients. In the interim management can arrange with the physiotherapy department to train radiographers in proper lifting techniques. For future proper selection of equipment is essential, whereby height adjustable tables can be purchased instead of fixed tables.

6.4.11 Problems with accessories such as gowns and linen not being available at all times could be overcome by having disposable gowns and linen stored in the section.

6.4.12 Management must ensure that an effective continuous quality improvement process is in place to ensure that equipment and accessories are in good working order all the time. Identify staff members that are willing to assist with a quality control programme, and devise protocols that will address the care of the patient in the diagnostic imaging section to standardize the level of service delivered.

6.5 Limitations

6.5.1 One of the limitations of this study is that absenteeism was not monitored amongst participating radiographers. Absenteeism would to some extent have given more weight to the level of OS and OC of radiographers.

6.5.2 Interviews with management of the diagnostic imaging sections could have provided better insight into some of the difficulties they may be encountering from top management of the organization.

6.5.3 Some participants viewed the first section as very personal. The researcher should have explained the purpose of the demographic information.

6.5.4 Random interviews with radiographers would have further assisted the researcher in gaining more insight into, for example the conflict experienced by radiographers, which is generally perceived as a negative outcome but conflict can also contribute positively to achieve certain goals in a workplace.

Despite the limitations, the results show that the most important contribution of this study determined the reasons for the lack of motivation among radiographers as frontline service providers in rendering quality service.

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