

Peer Reviewed **Original Article****A SUPPORTIVE CONTEXT AS AN OCCUPATIONAL STRESS MANAGEMENT STRATEGY: VIEWS FROM ETHEKWINI DISTRICT DIAGNOSTIC RADIOGRAPHERS**NP Gam<sup>1</sup> PhD | N Gqweta<sup>2</sup> MA<sup>1</sup>Department of Radiography, Faculty of Health Sciences, Durban University of Technology, Durban, South Africa<sup>2</sup>Department of Psychology, Faculty of Humanities, Witwatersrand University, Johannesburg, South Africa<https://doi.org/10.54450/saradio.2024.62.1.821>**Abstract**

**Background.** Occupational stress negatively impacts radiographers' wellbeing in ways that undermine their coping strategies and affects occupational functioning. The purpose of this study was to investigate coping strategies used and perceived necessary by public sector diagnostic radiographers in a selected district of KwaZulu-Natal.

**Methods.** A quantitative approach, with a descriptive cross sectional design, was used to understand stress management strategies used by radiographers within the eThekweni district health sector. The research tool of management standards indicator developed by Health and Safety Executive in the United Kingdom (UK) was adapted. The questionnaire included demographic data and open-ended questions in order to meet the selected regional requirements. A random stratified sample of public health institutions within the eThekweni District of KwaZulu-Natal was conducted to select research sites. A sample of 101 respondents was selected following ethical approval processes.

**Results.** Majority (65.1%) of the respondents denied availability of employer provided resources to support them through occupational stress. Almost half (48.8%) stated that they engaged in physical exercise to manage stress. A supportive occupational environment, and good interpersonal relations, in terms of the analysis of replies to the open-ended questions, were identified as occupational stress alleviating resources.

**Conclusion.** Whilst some employers provided occupational stress relieving resources these competed for time with work-related pressures. Radiographers need secure and supportive working environments with healthy interpersonal relationships to cope with occupational stress.

**Keywords.** coping strategies, diagnostic radiography, autonomy, occupational stress, secure occupational environment

**INTRODUCTION**

Occupational stress is the harmful physical and emotional response to a conflict between job demands and employee level of control.<sup>[1]</sup> It manifests psychologically (emotional & cognitive), physically, behaviorally, physiologically<sup>[1-7]</sup> and impacts both employee functioning as well as institutional productivity. Concordantly, a positive correlation is observable between occupational stress and the development as well as exacerbation of systemic diseases.<sup>[8]</sup> Increased stress has also been linked to spiking levels of cortisol and adrenaline which affect an individual's immune system, cognitive ability and general physical health.<sup>[1, 9]</sup> Moreover, unattended stress has been associated with increased staff turnover amongst radiographers.<sup>[10, 11]</sup>

Occupational stress is also linked to age, organisation-related stressors, marital status, as well as individual radiographer specific stressors.<sup>[12]</sup> Radiographers experience a variety of stressors in their workplace, and the most notable are related to interpersonal relationships.<sup>[13]</sup> Another area of concern is role conflicts, which also have the greatest impact on perceived stress.<sup>[14]</sup> Generally, radiographer occupational stressors can be summed up to include increased workload, staff shortages, faulty equipment, lack of communication, excessive demands and external controls<sup>[12, 15]</sup> leading to a sense that "there is a lack of everything".<sup>[16]</sup> Therefore, occupational stress is a function of a number of factors including organisational challenges, interpersonal relationships and individual coping strategies, which negatively impact job satisfaction.

Coping is defined as constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person.<sup>[17]</sup> In the workplace, coping is the way in which employees respond to stressful occupational situations,<sup>[12]</sup> which is impacted upon by individual appraisal systems. The appraisal of the stressful situation impacts one's ability and approach to effectively manage it. For example, stressor anticipation has been noted to be a sufficient stimulus to elicit physiological responses that are comparable to or exceed those typically observed during stressor exposure.<sup>[18]</sup> This demonstrates the significance of individual stressor appraisal patterns in stress management. Research findings also demonstrate that work situations for radiographers are better, as well as less stressful, if colleagues and superiors have a good helpful relationship.<sup>[13]</sup> Thus, whilst occupational stressors are external the stress response is modulated by individual appraisal system and external supportive structures. There is a complex interaction connecting individual internal vulnerabilities, appraisal systems, coping strategies, external stressors and supportive systems requiring a multifaceted approach to occupational stress management.

Specific strategies pertaining to workplace stress are discussed in the literature. Examples include specific strategies in managing occupational stress, namely, changes within an organisation like increase in staffing; reviewing work practices; feedback to radiographers on issues affecting them; team building, staff training; informing staff regarding organisational changes; appraisals for radiographers; clarity of job descriptions; monitoring of image quality by senior radiographers; availability of resources; time management workshops; reasonable remuneration; handling of booking systems by radiographers; introduction of policies encouraging work-based support; and introducing methods enforcing good work morale.<sup>[12, 14, 19-26]</sup> These studies further suggest an individualised skills approach that can assist in improving perceived social support and decrease psychological distress in employees.<sup>[25]</sup> They underscore the importance of a joint institutional and individual approach in combating occupational stress. The aim of the study was (i) to elucidate ways in which radiographers within eThekweni region cope with occupational stressful situations, (ii) to establish how radiographers perceive the level of support provided (if any), and (iii) the type of support they need.

## RESEARCH METHODS

A quantitative research approach, using a cross sectional descriptive survey design, was used in this study. Potential study sites of employment of diagnostic radiographers were the public health institutions offering diagnostic radiography services within the eThekweni District of the KwaZulu-Natal Province in South Africa. These facilities included primary healthcare centers (PHCs), district hospitals, regional hospitals, central hospitals, and tertiary hospitals. Due to the large number of sites within the eThekweni District

random stratified sampling was used to obtain a balanced representative sample of the various levels of public clinical facilities in which radiographers were employed. Nine (n=9) study sites were selected: PHC (n=2), district hospitals (n=2), regional hospitals (n=4), and a central hospital (n=1). Non-probability purposive sampling was used to select diagnostic radiographers who met the selection criteria. A self-administered questionnaire, originally designed by the Health and Safety Executive (HSE) in the United Kingdom (UK),<sup>[15]</sup> was adapted to collect data in terms of the aims of the study. The questionnaire was adapted to align with the South African context. A demographic data section, which tracked years of experience, occupational rank, educational level, specialty, age and gender, was included in the adapted research tool. The questionnaire comprised Likert scale questions dealing with six management standards: work demands, control, manager support, peer support, relationships, role ambiguity, organisational change, and methods of.<sup>[15]</sup> Open-ended questions were included to allow for thematic reading of the data, to bridge the gap often visible in descriptive studies where they lacked deep exploration of the phenomenon studied.<sup>[27]</sup> Open-ended statements were included to explore causes of stress, strategies used by radiographers to manage stress, and resources provided by the employer to support employees in dealing with occupational stress.

The study population comprised 156 radiographers. The inclusion criterion was diagnostic radiographers at the study sites, and who were registered with the Health Professions Council of South Africa (HPCSA) as independent practitioners. Exclusion criteria were community service and student radiographers to minimise bias resulting from on the job educational/training stress. The sample population comprised 101 potential respondents (65% / n=156 study population). Ethical approval was obtained from the Institutional Research Ethics Committee, and the KwaZulu-Natal Department of Health (KZNDOH). Permission to access public sector diagnostic radiographers was also received from the KZNDOH.<sup>[15]</sup>

The researcher presented the purpose of the study to potential respondents by means of an information letter. Meetings between the researcher and potential respondents were coordinated with each site's departmental manager to avoid disruptions to service delivery. Those in the sample population who indicated they were willing to participate in the study were requested to complete a consent form. They were then handed the questionnaire to complete privately. The response rate was 42.6% (n=43 / n=101).

Qualitative analysis software, ATLAS.ti vers 23 was used to record, code and develop themes and networks of the open-ended responses. The resultant reading of the themes provided responses to the ways in which radiographers felt about the support provided (if any) and how they would like to be supported. Seven statements were used to elucidate the opinion of the radiographers on the support they receive from their employer as well as own ways of dealing

with stress. These statements were measured using a five Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 strongly agree. Ethical approval was obtained from the Institutional Research Ethics Committee, and the KwaZulu-Natal Department of Health (KZNDOH). Permission to access public sector diagnostic radiographers was also received from the KZNDOH.<sup>[15]</sup>

The Statistical Package for Social Sciences (SPSS), version 21.0 was used to analyse the quantitative data. Descriptive statistics cross tabulations, Pearson's correlation coefficients, and Chi square tests were used to determine relationships between variables at a 95% level. Cronbach's alpha of 0.75 provided an acceptable level of the internal consistency of the questionnaire.<sup>[15]</sup>

## RESULTS

The response rate was forty-three percent (43%) and was within the norm as suggested by Yehuda Baruch.<sup>[28]</sup> This response rate could be understood to mean, in part, that potential respondents did not wish to partake in the study or there were other systemic issues, internal to specific institutions, which could have impacted the response rate. We ensured that these results are reported to reflect the experience of the respondents.

The mean and standard deviation of respondents' ages: 31,7 and  $\pm 9,5$  years, respectively. Most (51.2%) were within the age group of 21-30 years; two were close to retirement age. A quarter (25%) of the respondents were between the ages of 31 and 40 years; close to a fifth (19%) were be-

tween the ages of 41 and 50 years. Marital status: 58.1% were unmarried; 34.9% were married; 4.7% were divorced, and 2.3% were widowed. The majority (88%) of respondents were females. More than two-thirds (67.4%) of the respondents had a national diploma in radiography.

Strongly disagree and strongly agree options were not selected for statements on methods provided by the employers to alleviate stress. The results were based on disagree, agree, and neutral responses. The reading of the open-ended responses resulted in the identification of the following themes: perceived management driven stress alleviation methods and stress management strategies (interpersonal).

### • Methods of stress reduction used by radiographers

The majority of respondents denied availability of employer provided resources to support them through stress. In keeping with this observation, sixty-five percent (65.1%) disagreed that there were gym facilities provided by their employers. These results are illustrated on Figure 1. Sixty-five percent (65%) disagreed with the statement "my employer provides methods to alleviate stress". This is despite fifty-three percent (53%) agreeing "there is an employee assistance programme" in their work place. Half (50%) agreed that they "engage in creative activities outside of the work place"; 48.8% expressed that they "maintain good physical health through exercise". This demonstrates a pattern of a perceived lack of employer support; the respondents used their own coping strategies to deal with occupational stressors.

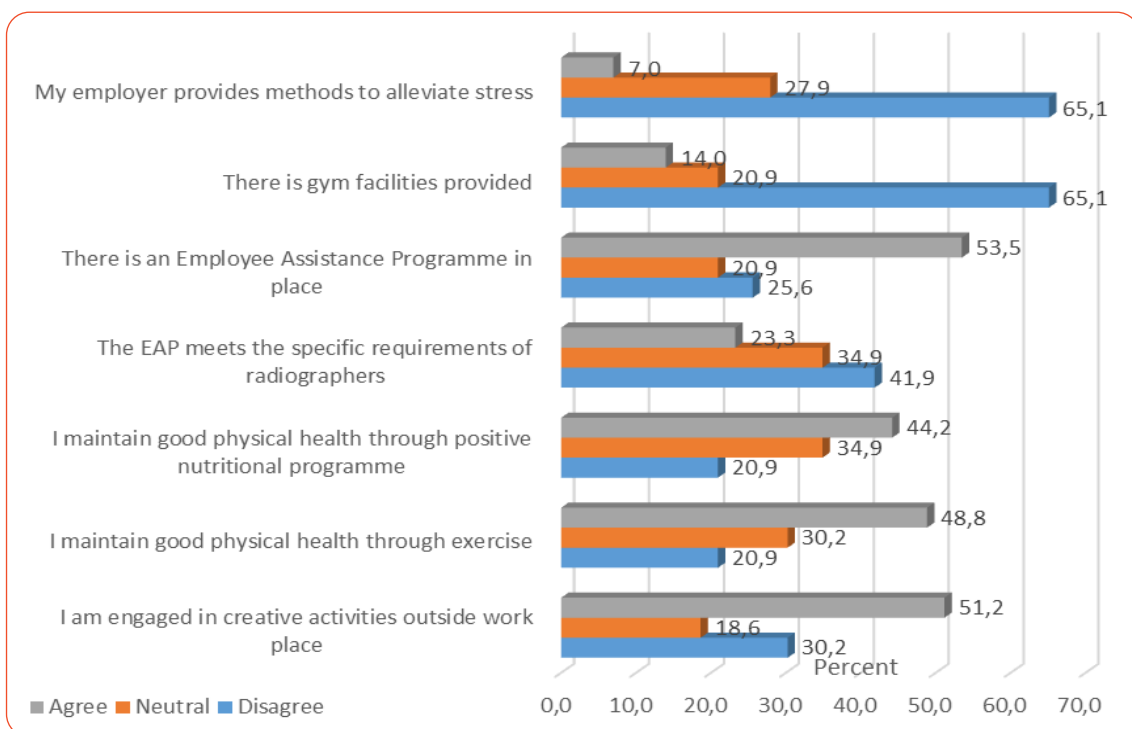
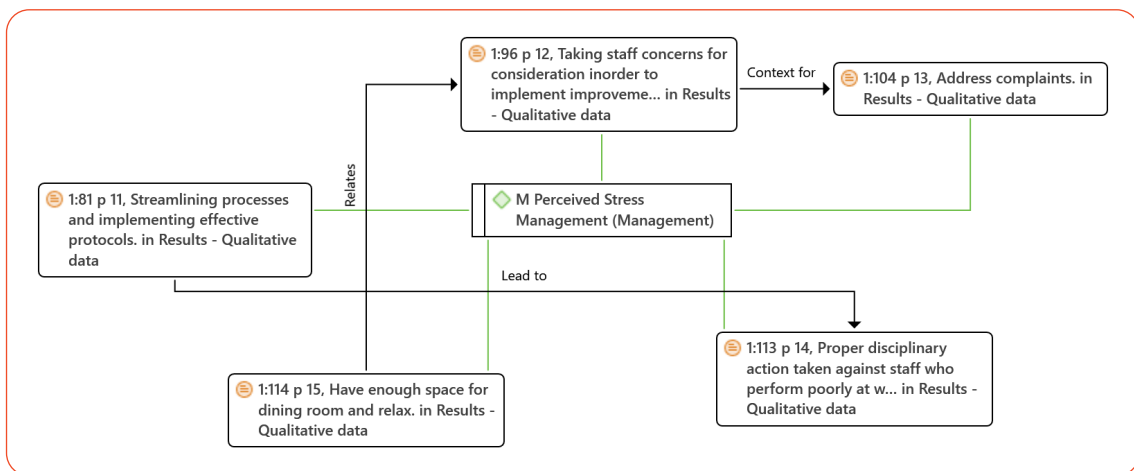


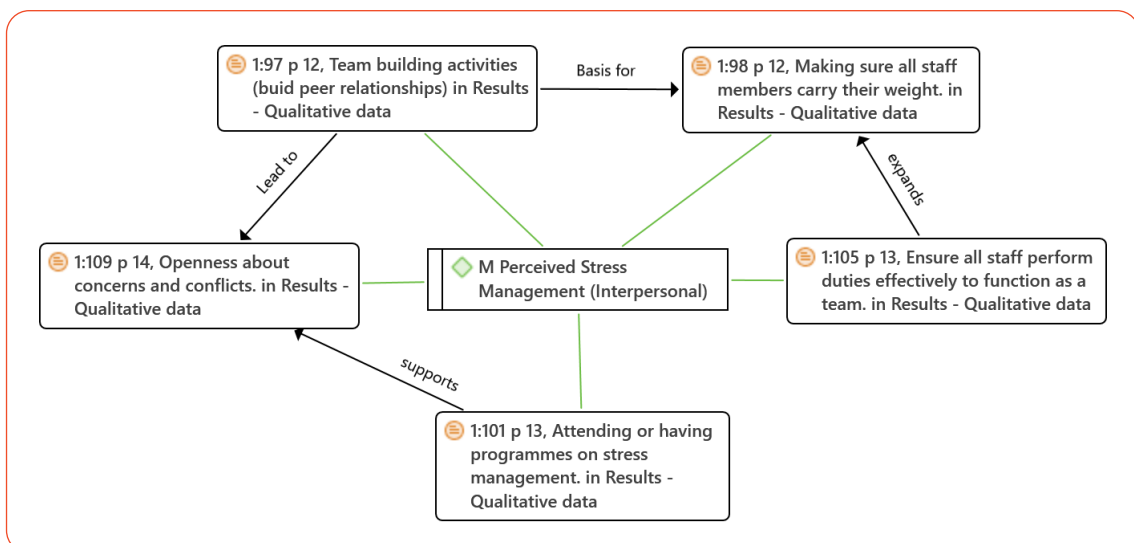
Figure 1. Employer provided resources and personal coping strategies.

**Table 1.** Employer support and sense of autonomy

Statement	Pearson's r. (p value)	Correlating statements
My employer provides methods to alleviate stress.	.366 (0.016).	I have a say in my own work speed.
	.347 (0.023).	I am given supportive feedback on the work I do.
	.369, (0.015).	I can rely on my line manager to help me out with a problem.
	.400 (0.008).	I have time for personal growth.
	.423 (0.005).	I can talk to my line manager about something that has upset or annoyed me about work.
	.680 (0.00).	My line manager encourages me at work.
	.375 (0.013).	I get help and support I need from my colleagues.
	.520 (0.00).	I receive the respect I deserve from my colleagues at work.
	.477 (0.001).	I am supported through emotionally demanding work.
	.380 (0.012).	I have sufficient opportunity to question managers about changes at work.
	.312 (0.041).	Staff are always consulted about change at work.
	.345 (0.024).	When changes are made at work, I am clear about how they will work out in practice.



**Network 1.** Perceived management driven stress alleviation methods.



**Network 2.** Stress management strategies (interpersonal).

### • Employer provided support and sense of autonomy

Pearson's correlation coefficient measures how strong the linear relationship is between two quantitative variables.<sup>[34]</sup> The relationship between employers' support and occupational stress reduction was investigated. The results suggest a link between a supportive occupational environments and a sense of autonomy that leads to a perceived decrease in occupational stress. There were strong correlations observed between statements like "My line manager encourages me at work" and "I have time for personal growth" with correlations and probability values of .680 (p0.00) and .400 (p0.008), respectively, to the statement "My employer provides methods to alleviate stress". Table 1 depicts the statements and their high and positive correlation relationship with high probability linking a supportive environment to a sense of autonomy with decreased stress.

### • Perceived management driven stress alleviation methods

Network 1 illustrates these methods. Thematic reading and analysis of the data revealed a relationship between a secure working environments and relief from occupational stress. This finding is in alignment with the quantitative results depicted in Table 1. The respondents felt that a supportive, structured and responsive management approach would assist in decreasing the amount of stress experienced in the workplace. For example, respondent 14 expressed that management needs to "take staff concerns into consideration in order to implement improvements". In alignment with respondent 14's assertions, basic conditions of employment, like the availability of proper resting facilities, were stated as fundamental to reducing occupational stress. The respondents felt that a responsive management style that takes proper disciplinary action against poorly performing employees would contribute to reducing the amount of stress experienced in the working environment. They felt that a structured and predictable management style that had a degree of flexibility would greatly mitigate occupational stress. The responsive management style and a secure working environment were understood to provide a secure context for optimum performance and stress reduction.

### • Stress management strategies (interpersonal)

These strategies are presented in Network 2. The analysis of this data revealed the respondents' basic need for human contact and interaction in pursuit of reducing occupational stress. The respondents expressed the need for interpersonal activities that foster good peer relations, as well as psycho-educational programmes that develop individual stress management skills. These ways of managing occupational stress were both interpersonal and personal in nature. A combination of healthy interpersonal relationships and personal stress management skills forms one pillar of

occupational stress management. There was a sense that team building activities would lead to openness to explore relational difficulties between colleagues, especially when supported by skills based training on stress management. The second pillar of occupational stress management, expressed by respondents, was the fair distribution of work amongst competent colleagues. This expressed both the need for fairness and competency. Healthy interpersonal relationships with individual coping skills and fairness with competency were two pillars expressed by respondents as fundamental in the process of creating stress free working environments.

## DISCUSSION

A 43% response rate for a quantitative study was acceptable but not satisfactory.<sup>[28, 29]</sup> Analysis was conducted after numerous unsuccessful attempts to get more responses from the respondents. The low response rate in radiographer-related studies could be attributed to high workload in public health imaging departments. It was also observed that there was poor representation of older radiographers in the study; this could be attributed to a number of factors including greater responsibilities aligned with experience, position and perhaps a general sense of despondency.

The average age of the respondents was 31,7 years suggesting that the current radiography population is within early to middle career stages. They may have specific personal and occupational stressors that might be, in part, dissimilar to those who have been in the industry longer. The age range was quite similar, but slightly higher than respondents in a study by Thambura, Swindon and Amusa<sup>[11]</sup> in the same region; the average age range was between 25 and 30 years. It seems like the majority of radiographers, within the public sector in this region, are young and have a certain level of experience. This may be important in understanding the ways in which they engage with stressful working environments.

Gender disparities in the profession of radiography in South Africa are historical and favour females.<sup>[11, 30-33]</sup> The majority of respondents in this study were females (88%). There were more males in a 2011 South African study.<sup>[34]</sup> The age and gender of the current population of radiographers may intersect to provide clues to postulate about underlying factors that may contribute to their occupational stress. The majority of the respondents in the study sites are of child bearing age; this may lead to an intersection between occupational stress and personal challenges relating to family responsibility.

In terms of employee suggested occupational stress reduction methods the majority of respondents expressed there was a lack of employer provided stress reduction methods. In keeping with this observation, 65.1% disagreed that there were gym facilities provided. Literature underscores that in stressful situations managers should encourage employees

to reduce stress through engaging in healthy lifestyles,<sup>[35]</sup> including gym attendance. In addition, when methods of reducing stress are offered, an employer should ensure that these are communicated to all staff members in the organisation.<sup>[36]</sup>

Over half (53,5%) of the respondents acknowledged that there was an employee assistance programme (EAP) system available in their place of employment; 23.3% agreed that the EAP meets radiographer specific needs. This meant that the majority felt that EAP did not meet their specific needs, despite the fact that EAP is a systematically planned programme that seeks to assist employees in dealing with personal, family (home) and work challenges.<sup>[37]</sup> This finding is cause for concern; a mismatch between supportive structures and actual needs of employees may lead to gross (un) intentional neglect of employee needs. The perceived lack of the employer provided stress relieving resources was supported by 65,1% of respondents who disagreed with the statement that “my employer provides methods to alleviate stress”. Only seven percent (7%) agreed with this statement. This finding is interesting as it demonstrates that the majority of respondents felt that their occupational environments did not provide them with a secure space in which they can deal with stress. They also felt that where these were available they did not meet their needs. It is important to note though that when a Pearson’s correlation test was conducted 7% that agreed that their employer provides them with a supportive environment; there was a

strong positive correlation linking a sense of autonomy and the perceived reduction in stress. This finding is in keeping with the literature that a secure base (a supportive working environment) provides context for the development and enhancement of self-regulatory functions.<sup>[35]</sup>

In terms of personal coping strategies 48.8% of the respondents agreed that they maintain good physical health through the use of exercise. This finding is in keeping with the findings of the study on stress coping mechanisms used by radiographers in Ghana.<sup>[40]</sup> Research findings indicate that increased levels of physical activity and fitness are associated with reduction in stress.<sup>[41]</sup> Experts advise that a minimum 30 minutes of exercise three to five days per week can result in good health benefits.<sup>[41]</sup> The shortfall of the current study is that there were no probing questions regarding the intensity and frequency of the exercise that the respondents engaged in. Fourteen percent (14%) agreed that their occupational environment has functional gym facilities; they however did not have time to attend due to work demands. This indicates that despite the provision of the facilities and the willingness of the respondents to use these facilities here is a lack of employer supportive structures to ensure that employees use these facilities. Use is made of personal coping strategies to combat occupational stress because their working environments did not provide them with comprehensive supportive structures.

The findings of interpersonal coping strategies were that the respondents believed that fostering open and healthy

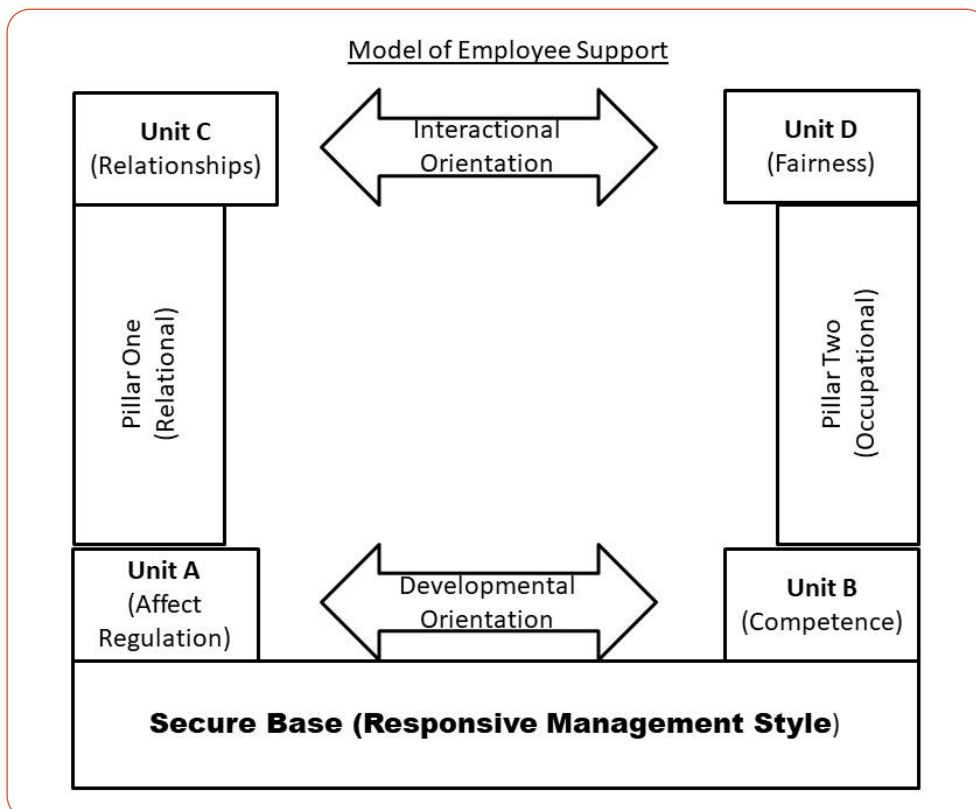


Figure 2. Model of employee support.

interpersonal relationships within the working environment would contribute to the reduction of occupational stress. For example, respondent 12 expressed that “team building activities” will help to “build peer relationships” which will ensure “openness about concerns and conflicts” as noted by respondent 13. Therefore, employers should consider personal relationships when attempting to improve worker productivity<sup>[42]</sup> and reduction of employee stress. The two pillars of interpersonal coping strategies, as generated from this study, are healthy interpersonal relationships with developing personal coping strategies and fairness with competency. The interaction between the two pillars was seen as fundamental within the context of a secure (supportive) working environment (see Figure 2).

The findings pertaining to occupational context as a secure base for self-regulation were that the respondents acknowledged the lack of supportive structures to reduce stress from their employer and they mentioned the use of own stress management strategies. It was clear that when it comes to occupational stress, self-regulation alone is limited if the working environment does not provide supportive resources. The secure base (employer support) is fundamental for exploration, creativity, discovery and novelty seeking behaviors:<sup>[35, 43]</sup> all necessary constructs for self-development and growth. There is an important relationship between personal coping strategies by employees and a secure occupational environment provided by their employer. Coincidentally, the absence of a secure base negatively affects the development of a sense of autonomy of employees. Research suggests that this lack of autonomy results from rigid systems that prevent employees from organising their labour agenda leading to a negative impact on the welfare of the workers.<sup>[44]</sup> The respondents in this study expressed the need for management to provide a clear structure, a sense of predictability, responsiveness and a degree of flexibility that would help them in the managing their occupational stress. Such an occupational context would support the reduction of radiographer occupational stress whilst encouraging their sense of autonomy that fosters creativity, novelty, exploration, discovery and expansion. This is consistent with the attachment theory underscoring the need for a secure environment that would allow a child (an employee in this case) to feel safe enough to explore, discovery and be innovative.<sup>[43]</sup> This does not mean an absence of stress, but confidence that the environment provides protection against and support during stressful situations.

### LIMITATIONS OF THE STUDY

There were limitations in this study. For example, the data collection instrument and the sampling methods. The instrument was developed in the United Kingdom, a developed country, with different needs to those of South Africa. Accordingly, whilst the instrument covered coping strategies used by radiographers these were limited to choices aligned to the needs of the country in which the instrument was developed. This may have made it difficult for the respondents

in this study to describe their own coping strategies in view of the limited options. It may therefore have resulted in a restricted view of the South African respondents’ experiences. The second limitation of the study was the sampling method used. Random stratified sampling methods are standard for grouping respondents, in accordance with shared characteristics, but its shortfall is poor representation of certain strata. In other words, while the selected sites within this study were evenly stratified, the respondents within them may not have been, leading to a potentially skewed view of the respondents’ experience in the area. For example, in this study we noted limited participation of radiographers who have been in the industry for over twenty years. This may have had an impact on the results. The disadvantage of using purposive sampling method is the possibility of researcher bias and lack of result generalisability. Thus, the combination of the two sampling methods used may have impacted the results in terms of representation and generalisability. Finally, the results of this study are only applicable to diagnostic radiographers working in public health institutions within the selected district.

### SUGGESTIONS FOR FURTHER RESEARCH

It would be beneficial to have research studies that focus on individual strata; for example, the PHC system. This may demonstrate significant individualised nuances that impact each stratum; this may have been overshadowed by grouping different strata. The second area of interest would be to develop a model of occupational stress-coping mechanisms that is aligned to South African radiography needs. Lastly, it would be interesting to get a sense of occupational stress related experiences of the private sector diagnostic radiographers.

### CONCLUSION

Whilst there seem to be facilities, like EAP programmes and gyms, in some occupational environments the respondents did not use them due to occupational competing factors. They expressed their personal coping strategies centered around physical activities. This is aligned with previous research on radiographers and also with studies where physical activity has been pegged as a significant coping strategy. Thematic reading and analysis of the open-ended questions revealed that employer support and interpersonal based stress reducing strategies are essential to mitigate occupational stress. This suggests that there is a need for comprehensive supportive systems within occupational spaces that respond to the needs of employees. These supportive systems should be particularly centered on responsive, structured, predictable and flexible management styles providing employees with contexts to develop healthy coping strategies. Consequently, the intersection between employer role, employee personal and interpersonal coping strategies provides a context for stress reduction.

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## CONFLICT OF INTEREST

No conflict of interest.

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## Themes | SORSA

- Artificial Intelligence (AI) in Imaging
- Diagnostic Reference Levels (DRLs)
- Ethics and Medico-legal Implications in Radiography
- Education and Training - environmental sustainability
- Research
- Advances in Nuclear Medicine and Combination Therapy in Oncology
- Radiation Protection

## Themes | IAFR

- Back to Basics in Forensic Imaging
- Paediatric Forensics
- Forensic Radiology of Inflicted Trauma
- Role of Forensic Imaging in Human Rights Investigations
- Unexpected Applications of Forensic Imaging
- Emerging & Future Technologies in Forensic Imaging

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