Radiographers’ experiences of stress and methods of coping: a content analytic phenomenologic study

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Abstract Stress has the potential to discourage radiographers from practice and to cause brain drain in the profession. The aim of this study was to consider stress, from a holistic perspective, of the radiographers’ experiences.

Qualitative research methods were employed. Using random sampling, 10 radiographers, two from each of the five states of southeastern Nigeria were interviewed. The interview questions aimed to explore the experience of radiographers with a focus on the causes of stress and the associated coping mechanisms. Data analysis involved identification, coding of key concepts and their relationships.

A conceptual framework was developed regarding the causes of stress among radiographers and their relationship with other concepts identified by radiographers. The greatest cause of stress was high workload while the most popular coping mechanism was booking modifications.

The conceptual framework and methods of coping with stress reported in this study have important implications for professional practice and future research in Nigeria and beyond. Changes in work practices such as employment of more radiographers, positive attitude of management towards radiographers will reduce stress among radiographers in Nigeria and beyond.

Key words: conceptual framework, experiences, Nigeria, radiography, stress

Introduction

Apart from phenomenology, there are three other qualitative research approaches in radiography: grounded theory, ethnography and historical approach. Phenomenology originates from the philosophy discipline. Its emergence is from the works of philosophers such as Husserl, Kierkegaard, Heidegger and Merleau-Ponty.¹ The philosophy of phenomenology relates to individuals only knowing what they experience through attention to perceptions and meanings which awaken their conscious awareness.²

The area of inquiry for this approach is the ‘lived experience’ of individuals by attending to their perception.² ¹ i.e. a phenomenon or event which is cognitively constructed by those involved.³ In Innes’⁴ phenomenologic study, thirteen radiography students, from varying courses, from BSC to MSC, were interviewed using a semi-structured approach. Data were analysed by Burnard’s thematic content analysis, to investigate their experiences on causes of stress and methods of coping. In a descriptive phenomenologic study by Keogh, et al.⁷ thirteen radiography students and five undergraduate nursing students completing a standard primary health care module were invited to complete a questionnaire comprising open-ended questions. Data were analysed by content analysis with quasi-statistics. Curtise and White maintain that a questionnaire is an inappropriate data collection method in phenomenology as it violates the nature of obtaining the richness of individuals’ experiences.⁴

Stress experienced in the practice of radiography has the potential to deter not only students from continuing with the training but also could cause brain drain. Stressors are those ‘demands, hardships or frustrations’ that cause stress in our life and our work environment.¹ Three major stressors have been reported on diagnostic sonography department: clinical correlation ambiguity, demanding work schedule and undertaking call back shifts.⁵ Some possible stress alleviators are to maintain full-staff capacity, distribute work equally among sonographers, alternate shifts, mandate lunches, allow personal leave days, and have flexible work schedules.⁶ Burnout is a reaction to chronic stress. It occurs when emotional fatigue and prolonged exposure to taxing experiences are united.⁷ In fact, burnout seems to be a major problem in areas where people deal specifically with the needs of other people.⁸

The concept of public service reform has become a current rhetoric in the Nigerian public service environment. This reform centres on service delivery to the people based on a service compact (servicom) between the government and the governed. This implies that the citizens have the right to be served right and the public servant (radiographer) is under obligation to discharge accurately this compact (contract) to the citizens. Downsizing of the work force, which is ongoing in this reform process, role extension of radiographers into ultrasound practice and increasing demand for service delivery on the very few radiographers in Nigeria are thought to be potential sources of stress to radiographers.

This study aimed to achieve a considered appraisal of radiographers’ experiences, identify key stressors and most popular and effective coping mechanisms.
Table 1 Statistics of methods of coping with stress among radiographers.

<table>
<thead>
<tr>
<th>Codes</th>
<th>Methods of coping with stress</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Taking few cases</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>2</td>
<td>Visiting clubs</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>3</td>
<td>Booking Modifications.</td>
<td>8</td>
<td>18.2</td>
</tr>
<tr>
<td>4</td>
<td>Allowing junior colleagues to do most of the work</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>5</td>
<td>Discussing with friends</td>
<td>4</td>
<td>9.1</td>
</tr>
<tr>
<td>6</td>
<td>Attending Christian Fellowship</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>7</td>
<td>Watching videos</td>
<td>4</td>
<td>9.1</td>
</tr>
<tr>
<td>8</td>
<td>Drinking minerals during working hours</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>9</td>
<td>Rotation of duties (Duty scheduling)</td>
<td>4</td>
<td>9.1</td>
</tr>
<tr>
<td>10</td>
<td>Relaxing in the room after attending to cases (Resting)</td>
<td>6</td>
<td>13.6</td>
</tr>
<tr>
<td>11</td>
<td>Reading novels</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>12</td>
<td>Playing with my children and wife after work</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>13</td>
<td>Making sure the air conditions are working in the offices</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>14</td>
<td>Making sure that the room is clean</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>44</td>
<td>100</td>
</tr>
</tbody>
</table>

Method
The sample was drawn from 10 out of 48 radiographers in the five states of southeastern Nigeria. Two radiographers were randomly selected in each state and interviewed. All subjects entered the study voluntarily and were interviewed face to face with the interviewer. The radiographers were asked a number of probe questions relating to their experiences during and after work, perceived causes of stress and their methods of coping with stress. In this way, aspects of the job, which had the potential to influence stress, were explored. Questions asked related to: age of respondents; perception of radiation hazards; role extension to ultrasound investigations and relationship with other staff of radiology department.

Other questions include how equipment limitations and overall job satisfaction, workload, their ability to co-ordinate workload through booking procedure, stability of power supply and attitude of the management affect their levels of stress. The daily experiences are directly linked with causes of stress (e.g. job satisfaction and relationship with other radiology staff). Finally, radiographers were asked to mention methods they adopt as coping strategies for stress induced by their profession.

Demographic data
This study was carried out in the five states in south-east Nigeria: Ebonyi, Enugu, Abia, Imo and Anambra. Out of 58 radiographers in this zone, 10 are administrative cadre officers while 48 are actively involved in clinical practice. Forty-eight was used as the total sample size and 10 radiographers (>20% of 48) were selected and interviewed for this study. The ages of radiographers ranged from 29–47 years, with a male to female ratio of 4:1. All the radiographers (volunteers) have Bachelors degree in medical radiography, two work in general hospitals (small hospital), and four work in Federal medical centres (medium hospital) while four work in teaching hospital (large hospitals).

Data analysis
Data from combined states were analysed descriptively and by content analysis using a structured coding framework involving data reduction through the use of Epi info version 6.04d-2001, a software package for the management and analysis of qualitative data (Centers for Disease Control and Prevention, Atlanta, GA, USA). Data analysis of interview tapes, transcripts and interview notes was carried out using a four-step process.

This analysis together with results is described below.

Step 1: categorisation and coding
The interviews were transcribed from the tapes. The next was the categorisation of issues arising from tapes and coding of the methods of coping with stress among radiographers. All units of information as regards methods of coping with stress were coded according to descriptive terms derived from the data.

Step 2: description of concepts
The similarities and differences (constant comparative analysis) among the issues were examined allowing the clustering of related issues into conceptual groupings. These groupings were then named as 14 differentiated concepts related to the experience of radiographers (Table 1).

Step 3: key concepts
Employing constant comparative analysis, three key concepts were extracted from the 14 concepts. These were radiographers’ daily experiences; causes of stress and methods of coping (Fig. 1).

Step 4: Identifying the Relationships between Concepts.
Data were analysed to identify relationships between key concepts (Fig. 1).

Results
The conceptual framework of the perception of experiences among radiographers were developed from 14 concepts and three higher-level key concepts derived from the interview material as shown in Fig 1. These higher-level concepts describe the process by which: (1) radiographers’ daily experiences; (2) cause stress among radiographers which in turn influence; (3) the methods of coping with stress of the job. Change in any one these three concepts will alter the radiographers’ perception of experiences. The process by which radiographers construct the perception of experiences through these three concepts is sequential. This perception is then communicated and sustained by the concept ‘radiographers comment’ which feeds back into the process. These key concepts are presented below.
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Fig 1 Conceptual framework of radiographers’ experiences of stress and methods of coping.

Key concept findings

1 Key Concept: radiographers’ daily experiences
This key concept includes what radiographers’ encountered on daily basis. It is derived from the concepts of perception of radiation hazards, role extension to ultrasound investigations, relationship with other radiology staff, job satisfaction, and equipment limitations.

Concept: perception of radiation hazard
The radiographers were asked about their perception of radiation hazard to them with respect to radiation protection and monitoring measures in place.
All of the radiographers reported that there were poor radiation protection measures in their places of work. Some had not been monitored for more than four years.

Concept: role extension to ultrasonography
Some radiographers are involved in ultrasound practice while some are not involved. Those involved noted that though the job of combining the routine radiography practice and ultrasonography is multi-tasking, the satisfaction of role extension is equally encouraging.

Concept: relationship with others
Radiographers noted that they have cordial relationship with other members of staff of the department.

Concept: comfort in the use of the machines
Radiographers generally noted that the machines are bulky and demands much energy to manipulate, and recommended motorization of the equipments as an improvement.

Concept: job satisfaction
While some radiographers noted that they were satisfied with their job, more so with role extension to ultrasound, which is now a current trend among radiographers in Nigeria, others complained that the salary is small. They informed has a negative effect on their satisfaction rating.

2 Key concept: causes of stress
This key concept relates to causes of stress among radiographers. It derives from reduced manpower, ability to co-ordinate own workflow through a bookings procedure, instability of power supply and attitude of the management, relationship with other radiology staff and equipment limitations.

Concept: Adequacy of radiographers (reduced manpower in medical imaging or radiology)
Comments by radiographers show that there are very few radiographers in the country. Some young radiographers have also left for the western countries in search of greener pastures.

Concept: workload
‘The workload is very high’. This was a general comment made by radiographers that derives from the fact that there are very few radiographers in the country. ‘This constitutes a source of both musculoskeletal and possibly psychosocial stress’, a radiographer noted.

Concept: Procedure of booking or not co-ordination of workflow through books procedures
In some places, cases are done as they come and when they come, while in some places cases are booked. Some radiogra-
phers reported that the pattern of not booking cases but taking them as they come is stressful.

**Concept: stability of power supply**

It was revealed that power supply is generally erratic and sometimes patients would be putting pressures on the radiographers in the event of intermittent power outages, without understanding the situations in the hospital.

This is worsened in situations where the hospital generators are not regularly put on in the event of power outage.

**Concept: attitude of the management**

Radiographers reported that the attitude of the management towards them is not so encouraging while some noted that sometimes materials in the department get out of stock, others noted that the management in some places collide with the radiologists to prevent radiographers from providing ‘best patient care’ by using their own professional judgments. Some radiographers mentioned the struggle between radiologists and radiographers over who should carryout ultrasound investigations as a typical case in point.

**3 Key Concept: methods of coping with stress**

The key concept of the methods of coping with stress relates to the mechanisms adopted by the radiographers to reduce stress.

Duty scheduling, stopping routine work at a given time, having a time out in the relaxation room among others were reported as stress coping mechanisms by radiographers (Table 1).

**Concept: radiographers comment**

The interview data suggest that radiographers readily discuss their experiences as professionals.

‘… Imagine, some of our chiefs do not show interest in us but allow very few of us to do the work instead of protesting to the management as regards the very few number of qualified radiographers’. This is the feeling of younger radiographers who believe they are not supported at higher level.

‘… For some years now, we have not been monitored to enable us have an idea of the quantity of radiation dose we have received…’

The concept of ‘radiographers comment’ notes the different ways in which information about radiographers’ experiences is communicated among them.

Furthermore, content analysis (though not a new concept) using EPI info showed that the predominant method of coping with stress among radiographers is by booking patients (Table 1).

**Discussion**

The conceptual framework of the experiences of radiographers represents an innovative approach to understanding the link between radiographers’ experiences, causes of stress and methods of coping with stress. The application of this framework is considered particularly related to causes of stress among radiographers and their methods of coping with stress. The methods of coping with stress as reported by radiographers in this study is similar to that suggested by Bee.

The three key concepts of the conceptual framework underscore the essence of being a radiographer in Nigeria. The issues that comprise these key concepts offer a potential for change that can influence the practice of radiography in Nigeria. This provides a clear direction for the government, hospital management, the professional associations (radiographers) and the registration board responsible for promotion and regulation of the radiography profession in Nigeria. We suggest that moderating stress has the potential to influence ‘radiographers comment’ and in turn motivate the interest, which the upcoming radiographers (students) have in the profession. It is important that radiographers are able to control their own workflow and prioritisation of cases. This will provide a sense of ‘respect’ and a more effective workflow. Other findings which are most valid and are of merit to workplace change are:

1. Introducing booking procedure coordinated by radiographers;
2. Direct lines of communication with interdisciplinary team (e.g. Hospital manager with head radiologist and head radiographer (director of medical imaging)); and
3. Need for improved radiation protection services in line with extant regulations.

The conceptual framework developed in this study has created a new approach to improve our understanding of radiographers’ experiences. This approach is both professionally useful and theoretically promising. By being theoretically promising, the framework sets future research on a new pathway. This pathway suggests new areas of inquiry, new relationships to be explored and new methodologies to be used. Exploration of each of the concepts within the framework and its relationship to radiographers’ experiences would expand the current knowledge and inform or introduce current radiography practice.

Given the small sample in this exploratory study, a larger sample survey of radiographers in the south east and other regions of the country would indicate the relative importance of these concepts to the experiences of radiographers, causes of stress and methods of coping with stress.

Another limitation of this survey is that each radiographer was interviewed once, whereas multiple interviews could have offered a more credible insight into their lived experiences. Similar surveys on student radiographers are advised. Surveys on radiographers who left Nigeria to practice in the USA and UK would allow comparisons to be made regarding the importance of each concept to practice of radiography in a given environment.

Research focusing on educational influences on the concepts and the relationships between them is urgently required to underpin attempts at more educationally (academically) sensitive radiography practice. An analysis of individual differences and their relationship to each concept could determine the influence of these psychosocial variables on the practice of radiography. These future research directions could usefully employ new combinations of quantitative and qualitative methodologies using the conceptual framework as a starting point. The conceptual framework developed has suggested these new directions and methodologies by considering radiography work experience from a holistic perspective and by being derived from practicing radiographers.

**Key concepts and associated concepts**

**Radiographers’ daily experiences:**

- Perception of radiation hazards;
- Role extension to ultrasonography;
- Relationship with others (interdisciplinary relationships);
- Comfort in the use of machines;
- Job satisfaction;

**Causes of stress:**

- Adequacy of radiographers (Reduced workforce);
- Workload (High workload air radiographer);
- Procedure of booking or not (inability to control workflow; bookings required);
- Instability of power supply;
Attitude of the management;
Methods of coping with stress:
Duty scheduling;
Stopping routine work at a given time;
Resting in the relaxation room; and
Others (see Table 1).

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References