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SOCIO-DEMOGRAPHIC VARIABLES AS CORRELATES OF OPERATING THEATRE ENVIRONMENTAL HAZARDS AMONG ANESTHESIA PRACTITIONERS AND PERIOPERATIVE NURSES IN TERTIARY HOSPITALS IN OGUN STATE NIGERIA

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ABSTRACT: *The operating theatre environment consists of various hazards. Exposure to these hazards has detrimental effects on the health and the professional practice of the operating theater personnel. This study investigated the correlation between the Socio-demographic variables of the operating theater personnel and the operating theater environmental hazards in the three tertiary hospitals in Ogun State Nigeria. Method: The descriptive correlational research design was adopted in this study. A total population of 108 operating theater personnel who worked in the operating theaters in the three tertiary hospitals in Ogun State at the time of this study was targeted for the study out of which a total number of 102 personnel positively responded and returned their questionnaires. Data were collected using an adapted structured questionnaire by Danjuma et al (2016). Descriptive statistics of frequency counts and percentages were used to analyze data for socio-demographic variables while inferential statistics of Pearson correlation was used to test the hypothesis at 0.05 level of significance. Results: The study revealed a significant correlation between the operating theater environmental hazards and the gender (p=0.00) and discipline (p=0.00) of the operating theater personnel while it shows no significant correlation with the age (p=0.544). Conclusion: The gender and discipline of the operating theater personnel significantly correlate with the operating theater environmental hazards while the age does not.*

KEYWORD: Anesthesia Practitioners, Correlates, Operating Theater Environmental Hazards, Operating Theater Personnel, Perioperative Nurses, Socio-Demographic Variables

INTRODUCTION

Basically, a hazard is the potential for harm or an adverse effect and sometimes the resulting harm is referred to as the hazard instead of the actual source of hazard (Canadian Centre for Occupational Health and Safety, 2018). Operating theater environmental hazards have been of great concern because of the negative effect on the health and productivity of the operating theater personnel. The work environment of the operating theatre involves a lot of risks to the practitioners. The role of the operating theatre personnel extends from the preoperative period till postoperative period when the patient is fully awake from the effect of anesthesia in the post anesthesia care unit (PACU) or at the intensive care unit where the patient may be transferred for further care.

Anesthesia practitioners and the perioperative nurses spend several hours within the operating theatre environment on daily basis while carrying out their professional responsibilities for

patient undergoing surgeries. Sen and Sen (2013) said that the operating theatre environment is charged with multiple inherent risks and inadequate safety measures thus can result in multiple ill-effects. In the early 20th century, the focus of operating theatre environmental hazard was on the physical environment. Later, problems related to chronic inhalation of anesthetic gases and contaminations of operating theater were highlighted. Currently, many occupational risk factors are under study, including biohazard, opiod abuse, occupational stress, burnout and working patterns. These factors result in health, safety and performance hazards to practitioners and affect their quality of life as well as threat to their families (Gustavo, 2013).

It is estimated that about 2.9 billion workers are exposed to hazardous risks at their respective workplaces, likewise the international labor organization statistics revealed that, every day, 6,300 people die as a result of occupational accidents or work-related diseases, which are more than 2.3 million deaths per year (Safety and Health at Work 2011). Saad, Hassan and Bassam (2017), in a study of 80 operating room nurses at Al- Amarah City Hospital, Iraq presented the highest prevalence rate of biological hazard (54.4%), followed by accidental (47.7%), physical (47.5%) and chemical hazards (45.3%). Danjuma et al, (2016) reported that 74% of perioperative nurses in the Nigeria frequently experience long working hours, 73% complained of low back pain while 67% frequently encountered fatigue.

Saad et al (2017) revealed a highly significant correlation between occupational hazard and socio-demographic characteristics among the operating room nurses at AL-Amarah City Hospitals. It was documented that age, years of experience and educational level play major roles in acquiring professional experience for prevention and avoidance of occupational hazard among nurses working in the operating theatre while non- significant relationship exist between occupational hazard and their gender. Danjuma et al (2016) established significant association between gender (p = 0.030), (p = 0.026), age group (p = 0.002), years of experience (p = 0.003),

THEORETICAL UNDERPINNING

Professionals working in surgical environments put themselves at risk every day in their careers (Timmons, 2019). Jingke (2011) categorized the operating theater environmental hazards into accidental hazards, physical hazards, chemical hazards, biological hazards, ergonomic/psychosocial and organizational hazards. Socio-demographic attributes of the operating theater personnel influences the level of occurrence of these operating theatres environmental hazard among the professionals (Saa et el 2017). Al-Khatib, Ansari, Areqat, Darkhaja, Mansour, Tucktuck and Khatib, (2015) observed that female nurses with large families, thinking about or being pre-occupied with the family issues during the absence of the nurse from home whilst being at work, might predispose nurses to accidental injury during work. Epidemiological research on work-related injury has generally documented that the risk of injury decreases with age, in particular among men (Smith & Berecki-Gisolf, 2014). Similarly, self-reported injury data show an increased risk of injury associated with younger age (Safe Work Australia 2012). The study at Quena University hospitals revealed that physical and psychological hazards occur more among nurses who had their age below 25 years while social hazard occur more among nurses with age above 30 years. A more recent study from France reported that the impact of self-reported physical job demands on

self-reported injury was greatest among workers aged 45 and older and lowest among workers aged under 30, suggesting an interplay between physical demands and age on the risk of injury (Chau, Bhattacherjee & Kumar, 2009). Emodi (2015) said that workers are exposed to a wide variety of health hazards on the job and exposure differs from trade to trade and from job to job, by the day, even by the hour. The severity of each hazard depends on the concentration and duration of exposure for that particular job. Senthi, Anandh, Javachandran, Thangavel, Yamini and Kalpana (2015) reported a high prevalence of occupational hazards among nurses compare to doctors and other health care workers in Southern India.

METHODOLOGY

Design: The research design adopted for the study was the descriptive correlational research design. A total population of all the 108 anesthesia practitioners and perioperative nurses in the operating theater of the three tertiary hospitals in Ogun State was included in the study, out of which a total number of 102 personnel voluntarily agreed to participate and returned their questionnaire. Descriptive statistics of frequency counts and percentages were used to analyze data for socio-demographic variables while inferential statistics of Pearson correlation was used to test the hypothesis at 0.05 level of significance.

Study Area and sample size

The study took place in the three tertiary hospitals in Ogun State, Nigeria. Ogun State is located in the South West Nigeria. There are three tertiary hospitals in the State, these are Federal Medical Centre Abeokuta, Olabisi Onabanjo University Teaching Hospital Sagamu and Babcock University Teaching Hospital Ilisha Remo. A total enumeration of all the anesthesia practitioners and perioperative nurses in the operating theater of the three tertiary hospitals in Ogun State was included in the study. Out of the total population of 108 personnel, a total of 102 personnel positively responded and returned the questionnaire. This includes, 20(19.6%) nurse anesthetists, 31(30.4%) doctor anesthetists and 51(50%) perioperative nurses.

Method of Data Collection

A structured questionnaire by Danjuma et al (2016) titled Rates and patterns of operating room hazards among Nigerian perioperative nurses was adapted and used to collect data from the participants. The questionnaire was administered to the respondents by the researcher and some trained assistants. The whole process of distribution and collection took about five weeks.

RESULTS

Table 1 presents the socio-demographic characteristics of the respondents. Majority of the respondents 77(75.5%) were females while males were 25(24.5%). Respondents with the age range of 26 to 35 were 34(33.3%) while those above 55 years were 9(8.8%). The sum of the

perioeprative nurses who participated in the study was 51(50%), the nurse anesthetists were 20(19.6%) while the doctor anesthetists were 31(30.4%).

Table 1: Frequency and percentage showing socio-demographic data of respondents

	Category n=102	Frequency	(%)
Gender:	Male	25	24.5
	Female	77	75.5
Age:	> 25years	4	3.9
	26-35years	34	33.3
	36-45years	33	32.4
	46-55years	22	21.6
	>55years	9	8.8
Discipline	Nurse Anesthetists	20	19.6
	Doctor Anesthetists	31	30.4
	Peri-operative Nurses	51	50

Testing the Hypotheses

Hypothesis One

$H_0$1: There is no significant correlation between gender and operating theatre environmental hazards among the respondents

Table 2: shows that there is significant correlation between gender and operating theatre environmental hazards among respondents (p=0.000). The null hypothesis was rejected and research hypothesis accepted which states that there is significant corrolation between gender and operating theatre environmental hazard among respondents.

Table 2: Inferential statistics on gender and operating theatre environmental hazards among respondents

		Operating Theatre Environmental Hazards	Gender
Operating theatre environmental hazards	Pearson Correlation		471
	Sig. (2-tailed)		.000
	N	102	102
Gender	Pearson Correlation	471	
	Sig. (2-tailed)	.000	
	N	102	102

Hypothesis Two

$H_0$2: There is no significant correlation between age and operating theatre environmental hazards among respondents

Table 3 shows that there is no significant correlation between age and operating theatre environmental hazards among respondents (p=0.544). The null hypothesis was accepted which states that there is no significant relationship between age and operating theatre environmental hazard among respondents.

Table 3: Inferential statistics on age and operating theatre environmental hazards among respondents

		Operating Theatre Environmental Hazards	Age
Operating theatre environmental hazards	Pearson Correlation		061
	Sig. (2-tailed)		.544
	N	102	102
Age	Pearson Correlation	.061	
	Sig. (2-tailed)	.544	
	N	102	102

Hypothesis Three

$H_0$3: There is no significant correlation between the discipline and operating theatre environmental hazards among respondents

Table 4 shows that there is significant correlation between discipline and operating theatre environmental hazards among respondents (p=0.000). The null hypothesis was rejected and the research hypothesis accepted which states that there is significant relationship between discipline and operating theatre environmental hazard among respondents.

Table 4: Inferential statistics on discipline and operating theatre environmental hazards among respondents

		Operating theatre environmental hazards	Discipline
Operating theatre environmental hazards	Pearson Correlation		.354
	Sig. (2-tailed)		.000
	N	102	102
Discipline	Pearson Correlation	.354	
	Sig. (2-tailed)	.000	
	N	102	102

DISCUSSION

The study was conducted to explore the contributions of socio-demographic variables to the development of operating theatre environmental hazards among anesthesia practitioners and perioperative nurses in tertiary hospitals in Ogun State Nigeria.

The study revealed that there is significant correlation between gender and operating theater environmental hazards among the respondents (p=0.000). This is in line with Sri and Puguh (2017) who emphasized that compared to women, men are more vulnerable to experiencing repeated injury over the years. Males were found to be of higher odds of getting injured and a higher incidence of injury. However, Campos, Ronda, Artazcoz, Moen and Benavides (2013) said that although men experienced more physically demanding work than women, women experienced more musculoskeletal symptoms. This might be related to differences between women and men in the exposure to work-related hazards even when working under the same job title. For instance, the exposure to awkward working positions and repetitive movement with low loads is more common among women than men.

The results of this study also show that there is no correlation between age and the various categories of operating theater environmental hazards (p=0.544). This finding confirms the study of Hanaa and Sahar (2016) that there is no significance difference between age and occupational health hazards among nurses at Quena university hospital. However, Sri and Puguh (2017) documented that an increase in age was observed to be related to both injury risk and injury frequency where higher age correspond to lower injury and injury frequency. Also, Saad, Hassan and Bassam (2017), reported a highly significant relationship between the occupational hazard among the operating theater nurses and their age at ($P < 0.01$). According to Smith & Berecki-Gisolf (2014), epidemiological research on work-related injury has generally documented that the risk of injury decreases with age, in particular among men. Similarly, self-reported injury by Safe Work Australia (2012) data show an increased risk of injury associated with younger age. This relationship probably exists because younger people are very vibrant, take risks and tend to be more careless than older ones.

Findings from the study show that there is significant correlation between discipline and operating theatre environmental hazards among respondents (p=0.000). This finding revealed that accidental hazards occur more often among the nurse anesthetists, chemical hazards occur more among doctor anesthetists while physical hazards occur more among the perioperative nurses. This corroborates the findings of Emodi (2015) that workers are exposed to a wide variety of health hazards on the job and exposure differs from trade to trade from job to job, by the day, even by the hour. The severity of each hazard depends on the concentration and duration of exposure for that particular job. Anjuma, Zahid, Atif and Faryal (2016) reported a high occurrence of noise-induced hearing loss among the orthopaedic operating theater personnel. This is due to the use of electric and air-powered drills and saws used in routine orthopaedic procedures when it exceeds the recommended daily personal exposure levels (85dB). The mean value of noise generated by saws was 95dBA, whereas drills produced 90dBA, K-wire drivers 85dBA and hammers 65dBA. Hanaa and Sahar (2010) found out that nurses at Quena University Hospital were more exposed to physical hazard than other forms of hazards. Senthi, Anandh, Javachandran, Thangavel, Yamini and Kalpana (2015) also reported a high prevalence of occupational hazards among nurses compare to doctors and other health care workers in Southern India. This can be linked to the role of nursing in patient's care. Nurses are at the center of patients care. Nurses spent

more time with the patient as they rotate round the shift than any other member of the health care system.

Implication to Research and Practice

The findings from this study will help the operating theater professionals to be conscious of the existing hazards within the operating theater and the hospital at large and therefore take all the necessary precautions to protect themselves as they discharge their professional responsibilities. It will further assist the operating theater professionals to understand the role of gender, age and discipline in the occurrence of operating theater environmental hazards and to be more conscious of personal protection while trying to safe life. The study will serve as guide to other researchers for further researches on the subject.

CONCLUSION

The study established the correlation between the socio-demographic variable of the operating theater personnel and operating theater environmental hazards. The gender and discipline of the respondents significantly correlated with the occurrence of operating theater environmental hazards while the age did not. It is therefore important for the operating theater professionals of different specialties and gender to be mindful of their peculiarities and play safe.

Future Research

Future researches should be conducted in other health care facilities with larger population to further confirm the findings of this study. Other operating theater workers like the surgeons, general nurses, anesthetic assistants, technicians, porters and others that are also exposed to the operating theater environmental hazards should be included in future studies. Likewise, the specific factors responsible for the differences in the level of occurrence of the operating theater environmental hazard based on the gender and discipline of personnel should be explored. Years of work experience and the working environment should be considered in future studies.

REFERENCES

Al-Khatib, I. A., Ansari, W. E. I. ,Areqat, T. A.,Darkhaja, R. A., Mansour, S. H.,Tucktuck, M. A. and Khatib (2015).Occupational Safety Precautions among Nurses at Four Hospitals, Nablus District, Palestine.*International journal of occupational and environmental medicine* 6(4).http://www.ncbi.nim.nih.gov/pubmed/2649805

Anjuma, G. M., Zahid, N., Atif, Z. & Faryal, Z. (2016) Occupational Health Related Concerns among Surgeons *International Journal of Health Sciences 10*(2), 279-291

Campos, S. J., Ronda, P. E., Artazcoz, L., Moen B. E. and Benavides, F. G. (2013) International *Journal for Equity in Health* doi: 10.1186/1475-9276-12-57

Canadian Centre for Occupational Health and Safety (2018). Hazard and Risk, OSH Answer and Safety Fact Sheet.

Chau, N., Bhattacherjee, A. and Kumar, B. M. (2009) Lorhandicap Group Relationship between Job, Lifestyle, Age and Occupational Injuries. Occupational Medicine. 59:114-119

Danjuma, A., Babatunde, A. A. L., Taiwo, O. A., Micheal, S. N. (2016). Rates and Patterns of Operating Room Hazards among Nigerian Perioperative Nurses. *Journal of Perioperioperative and Critical Intensive Care Nursing* 1:106.doi:10.4172/2471-9870.1000106.

Daniel, V., Airton, B., Gabriela, M., Carneiro, M., Juliana, R. and Giovani, D. (2013). Occupational Hazards and Diseases related to the Practice of Anesthesiology**.** *Brazilian Journal of Anesthesiology* (English Edition) 63(2) 227-232pp. https://dx.doi.org/10.1590/S0034-70942013000200013.

Emodi, E. (2015). Analysis of Occupational Hazards and Safety of Workers in Selected Working Environment within Enugu Metropolis, *Journal of environmental and Analytical toxicology* Vol 5(6): 337DOI: 10.4172/2161-0525.1000337.

Gustavo, C. T. (2013). Evaluation of Anesthesiologists' Occupational Well-Being Around The World, Occupational Well-being in Anesthesiologists *Brazilian Society of Anesthesiology* 1:15-36.ISBN 978-85-98632-24-7

Hanaa, E. and Sahar, M. (2016): Occupational Health Hazards among Nurses at QuenaUniversity Hospital, *IOSR Journal of Nursing and Health Science* Volume 5(3) 28-34 www.iosrjournals.org

Jingke, G. (2011). An Investigation of the Impact of Operating Room Occupational Hazards on Intraoperative Nurses. JAMK University of Allied Sciences 22-25,31pp

Saad, S. S. A., Hassan, J. H. and Bassam, M. F. (2017). Assessment of Occupational Hazards on Nurses Who are Working in theOperative Room at AL-Amarah City Hospitals.*Kufa Journal for Nursing Sciences* 7(2) 55-64.

Safe Work Australia (2012), *Australian Work-Related Injury Experience by Sex and Age*, Canberra, Australia. Safeworkaustralia.gov.au

Senthil, A,.Anandh, B., Javachandran, P., Thangavel., Josephin, D., Yamini, R. and Kalpana (2015)Perception and prevalence of work-related health hazards among health care workers in public health facilities in southern India. International *Journal of Occupational and Environmental Health.* 21(1).

Sen, J. and Sen, B. (2013). Control of Hazards in Operating Theatre. *Anesthesiology: India Journal of Clinical Practice* 24(7) 615-619.

Smith, P. M and Berecki-Gisolf, J. (2014) Age, occupational demands and the risk of serious work injury, *Occupational Medicine* 64(8) 571-576 https://doi.org/10.1093/occmed/kqu125

Sri, I. and Puguh, P. (2017) Environmental, Spatial and Socio-demographic Factors Associated with Nonfatal Injuries in Indonisia. *Journal of Environmental and Public Health* Article ID 5612378, https://doi.10.1155/2017/5612378.

Timmons, B. (2019) List of Occupational Hazards in the Operating Room. *Work - Chron.com*, http://work.chron.com.