KUFA JOURNAL FOR NURSING SCIENCES Vol. 7 No. 2 July through December 2017

Assessment of Occupational Hazards on Nurses Who Working in the Operative Room at AL-Amarah City Hospitals

تقييم المخاطرالمهنية على الممرضين العاملين في صالات العمليات في مستشفيات مدينة العمارة

Saad Sabri Shamkh AL-Sarraji*
Hassan Jassim Hassan**
Bassam Mahdi Flaih***

الخلاصة

الهدف: تهدف الدراسة الى تقييم المخاطر المهنية على الممرضين العاملين في صالات العمليات في مستشفيات مدينة العمارة، وإيجاد العلاقة بين المخاطر المهنية على الممرضين والصفات الديموغرافية-الاجتماعية لهم.

المنهجية: أجريت دراسة وصفية في مدينة العمارة للفترة من كانون الثاني 2016 إلى أيار 2016. وتم إختيار عينة غيرعشوائية (غرضية) من (٨٠ ممرض وممرضة) يعملون في صالات العمليات. وجمعت البيانات عن طريق أسلوب المقابلة بعد تصميم إستمارة الاستبيان، والتي تتكون من جزأين الجزء الأول يحتوى على الصفات الديموغرافية - الإجتماعية: العمر، الجنس، المستوى التعليمي، سنوات الخبرة. والجزء الثاني يتألف من (5) محاور هي: المخاطر العرضية وتتكون من (٨ فقرات)، الفيزيائية (٣ فقرات)، الكيميائية (٤ فقرات)، البايولوجيه (فقرتان)، والنفسية (٥ فقرات)، مجموع الفقرات (٢٢ فقرة) تم وصف وتحليل البيانات بإستخدام برنامج (SPSS).

النتائج: أظهرت نتائج الدراسة بأن تأثير المخاطر المهنية على الممرضين كانت متوسطة الحدوث حيث أن المتوسط الحسابي كان (1.79) MS كما إن المخاطر البايولوجيه على الممرضين في داخل صالات العمليات هي الأكثر حدوثا تليها المخاطر العرضية. وعلاوة على ذلك، كان هنالك علاقات معنوية عالية ذات دلالة إحصائية بين المخاطر المهنية والصفات الديموغرافية-الاجتماعية (العمر، المستوى التعليمي، سنوات الخبره) (P <0.01)، بينما لا توجد علاقه معنويه ذات دلالة احصائية بين المخاطر المهنية و الجنس (P > 0.05).

الإستنتاج: بينت النتائج أن نسبة التعرض للمخاطر المهنية بين الممرضين (الذكور) هي أعلى من الممرضات (الاناث)، وكذلك أكدت الدراسة أن الممرضين اللذين ليس لديهم خبرة كبيرة في مجال العمل هم أكثر عرضة للمخاطر المهنية من غيرهم، كما بينت الدراسة أن أكثر من نصف عينة الدراسة (62.5 %) كانوا من خريجي المعاهد التقنية الطبية.

التوصيات: توصي الدراسة على ضرورة عمل برامج تعليمية مهنية خاصة لزيادة المستوى التعليمي والوعي الصحي للممرضين الذين يعملون في صالات العمليات حول تلك المخاطر، كما ينبغي تقديم المزيد من الإهتمام لممرضي صالات العمليات فيما يتعلق بالتدبير الوقائي والعلاجي والتأهيلي الذي يمكن من خلاله الحد من مخاطرها.

ABSTRACT

Objectives: The study objectives to assess the occupational hazards on nurses in the operational room at Al-Amarah city hospitals, and to find out the relationship between the occupational hazard for nurses and their socio-demographic characteristics

Methodology: descriptive study was conducted in Al- Amarah city during the period from January 2016 to May 2016. It was the use of non-probability sample (purposive) of (80 nurses) working in the operational room. The data are collected through the interview technique by using of constructed questionnaires, which consists of two parts, the first part contains the socio-demographic characteristics, and the second part consists of (5) domain: accidental (8 items), physical (3 items), chemical (4 items), biological (2 items), and psychological hazard (5 items), totally (22 items). The data are describe and analysis through the using of (SPSS program).

Results: The results showed that the occupational hazards are effect on the nurses was moderate level mean of score MS (1.79), also the maximal effect presented by the Biological hazard, followed by accidental hazard. Moreover, there was a high significant relationship between occupational hazard and their socio-demographic characteristics of age, level of education, and years of experience (P <0.01), while non- significant relationship between occupational hazard and their gender (P > 0.05).

Conclusions: The results showed that the majority of exposure to occupational hazards among male nurses (71.3%) more than female nurses, as well as the study confirmed that nurses who do not have more experience in the field of work are more exposed to occupational hazards than others, also the study showed that more than half of the study sample (62.5%) were graduates of medical technician institutes

***M.Sc. Assistant lecturer, Community Health Nursing Department - College of Nursing /University of Maysan E-mail: Saadsabri2012@yahoo.com**
**** B.Sc. in Nursing, College of Nursing / University of Maysan**
***** B.Sc. in Nursing, College of Nursing / University of Maysan**.

Recommendations: The study recommends that necessary to do special occupational education programs, to the nurses who are working in operating room in order to increase health awareness and knowledge about these hazards, more attention should be presented to operating room nurses with respect to preventive, curative, and rehabilitative measure by which the risk of these hazards can be reduced.
Key words: Occupational hazard; Nurses; Operational Room.

Introduction:

The complexity of surgical working environment is determined by deferent occupational hazards and risks, from accidental, physical, chemical, biological, accidental, psychosocial and organizational perspectives, all these factors could potentially affect and threaten intraoperative nurse's physical and psychological health and well-being in varying levels [(1)].

Operating room (OR) is a specialized field where unawareness or inadequate safety measures may cause many hazards that can affect the patient or surgical team. Recognition of these potential hazards through awareness and constant vigilance can control the accidental hazards and make it a safe haven [(2)].

The functioning of (OR) as a site of performing surgical therapy to patients is of great importance in the hospitals among other health care settings. The nature of surgeries makes characters of nursing job in the operating room to be fast paced, high-loaded, and changeful. With the rapid development of medical science, technology and model, operating room nurse, namely intraoperative nurse's work content becomes highly extensive today. Their responsibilities involve not only basic medical caring, but they have many other job such as scrubbing and circulating, and anesthetic skills, as well as engineering and technical skills [(1)].

There are multiple potential physical hazards to which medical and surgical nurses may be exposed. The nature of the job may pose ergonomic hazards, the potential for slips, trips and falls, exposure to work environment, driving hazards, hazards related to the storage and use of compressed gas cylinders, cuts, and electrical hazards [(3)].

Chemical hazards are a general term that includes substances, products and preparations composed of elements, compounds or mixtures. Chemicals may exist as solids, liquid or gases. It may be classed as hazardous or non-hazardous, or as dangerous goods depending on their potential to cause harm to health care workers, the environment or property for clarity and ease, the term chemical will be used here on to refer to all substances, whether they are hazardous, non-hazardous or a dangerous [(4)].

The impact of a hazardous working condition can range from injuries and occupational diseases such as musculoskeletal system disorders and respiratory diseases, or cancer, to even premature death [(5)].

All health care workers especially the nurses who lift and move patients are at high risk for musculoskeletal diseases. A work-related musculoskeletal disorder is an injury of the muscles, tendons, ligaments, nerves, joints, cartilage, bones, or blood vessels in the extremities or back that is caused or aggravated by job tasks such as lifting, pushing, and pulling. Symptoms of musculoskeletal disorders include pain, stiffness, swelling, numbness, and tingling [(6)].

Objective

1. To assess the occupational hazards for nurses who work in the operating room
2. To find out the relationship between occupational hazards for nurses who work in the operating room and their socio-demographic characteristics.

Methodology:

Design of the study: A descriptive design, which is using the assessment approach in order to assess the occupational hazards that nurse experienced in the operative room at Al-Amarah city hospitals. An official permission was obtained from Maysan Health Directorate / AL-Sadder Teaching Hospital, and Al-Zahrawy Surgical Hospital. Verbal consent also obtained from each nurse involving in the study. A non-probability (purposive) sample of (80) nurse who work in the operating room at AL-Sadder Teaching Hospital and Al-Zahrawy Surgical Hospital in Al-Amarah city. The data was collected through the use of developed questionnaires, which consist of two parts. Part one socio-demographic characteristic that consisted of (4) items, which included gender, age, level of education, and years of experience. The second part of the questionnaire was comprised of (5) items, which included Accidental which consist of (8 items), Physical (3 items), Chemical (4 items), Biological (2 items), and Psychological Hazards (5 items). The three point type likert scale was scored as (3) for always, (2) for sometimes, and (1) for never in all items, the present study was based on cutoff point (0.66) due to the three point's likert scales with three levels including: low (1-1.66), moderate (1.67-2.33), and high (2.34-3).

Statistical Analysis: The data of present study were analyzed through the application of two statistical approaches. (1) Descriptive statistical approach that includes Frequency, Percentage, Mean of Score. (2) Inferential statistical approach that includes Chi-Square. Results were determined as highly significant at ($P< 0.01$), Significant at ($P < 0.05$) and Non-Significant at ($P > 0.05$).

Results:

Table (1): Distribution of the Nurses by their Socio-demographic Characteristics

No.	Variables	(n=80)	F	%
1	Age (year)	20-25	14	17.5
		26-31	22	27.5
		32-37	19	23.7
		38-43	16	20.0
		44-49	6	7.5
		50 and more	3	3.8
		Total	80	100.0
2	Gender	Male	57	71.3
		Female	23	28.7
		Total	80	100.0
3	Level of education	School Nursing	5	6.3
		Nursing High School	25	31.2
		Technician Institute Graduate	50	62.5
		Total	80	100.0
4	Years of Experience	1-5	23	28.8
		6-10	18	22.5
		11-15	12	15.0
		16-20	17	21.2
		21 and more	10	12.5
		Total	80	100.0

No. = Number of Variable, n = Number of Sample, F=Frequencies, % = Percentages.

The results of this table show that the majority of age group to the study sample at age (26-31 years) (27.5%). The above table also shows that the majority of participants were male (71.3%). Also in regarding to the subjects level of education, the results show that more than half of study sample has medical technical institute graduate (62.5%). In addition, majority of years of experience has (1-5) years inside the surgical room (28.8%).

Table (2): Assessment of the Main Domains of Occupational Hazard that Facing the Nurses inside the Surgical Room

Main Domains	No. Items	Always F	Always %	Sometime F	Sometime %	Never F	Never %	M.S.	Ass.
Accidental HazardS	8	109	17.0	305	47.7	226	35.3	**1.82**	M
Physical HazardS	3	28	11.7	114	47.5	98	40.8	**1.71**	M
Chemical HazardS	4	37	11.6	145	45.3	138	43.1	**1.68**	M
Biological HazardS	2	30	18.8	87	54.4	43	26.8	**1.92**	M
Psychological HazardS	5	79	19.8	165	41.2	156	39	**1.81**	M
Total	22							1.79	M

No. = number of item, F=frequencies, % = Percentages, M.S. = mean of score. Ass. = assessment, Cut-off-point Interval: 1-1.66 = Low; 1.67-2.33 = Moderate; 2.34-3.00 = High

The finding of this table reveals that there are moderate exposures in overall domains for that facing the nurses inside the operational room, with average mean (1.79). In addition, the maximal effect presented by the Biological hazard when MS is (1.92), followed by Accidental hazard at MS (1.82).

Table (3): Distribution of the Participants' level of Risks through the Mean Score of questions related to Hazard that facing the nurses inside the surgical room

Level of The Hazard	Frequency	Percent
Low	30	37.5 %
Moderate	43	53.7 %
High	7	8.8 %
Total	80	100.0

Cut-off-Point Interval: 1-1.66 = Low; 1.67-2.33 = Moderate; 2.34-3.00 = High

This table reveals that the majority of participants have moderate level of the risks that facing the nurses inside the surgical room (n=80; 53.7%).

Table (4): Association between the Occupational Hazard and age

Age (year)		The Risks			Total
		Always	Sometime	Never	
20-25	F	122	48	138	308
	%	6.9%	2.8%	7.8%	17.5%
26-31	F	175	82	227	484
	%	9.9%	4.7%	12.9%	27.5%
32-37	F	203	50	165	418
	%	11.5%	2.8%	9.5%	23.8%
38-43	F	107	62	183	352
	%	6.1%	3.5%	10.4%	20.0%
44-49	F	33	29	70	132
	%	1.9%	1.6%	4.0%	7.5%
≥ 50	F	21	12	33	66
	%	1.2%	0.7%	1.9%	3.8%
Total	F	661	283	816	1760
	%	37.5%	16.1%	46.4%	100.0%
χ^2obs. = 41.559	χ^2crit. = 18.31		df=10	P < 0.05	p value=0. 000

χ^2obs. = chi-square observed, χ^2crit = chi-square critical, df= degree of freedom, p = probability value, P< 0.05= significant,

Table (4) indicates that there was a highly significant relationship between the occupational hazard that facing the nurses inside the operational room and their age at (P < 0.01), when analyzed by chi-square test.

Table (5): Association between the Occupational Hazard and gender

Gender		The Risks			Total
		Always	Sometime	Never	
Male	F	196	596	462	1254
	%	11.1%	33.9%	26.2%	71.2%
Female	F	87	220	199	506
	%	4.9%	12.5%	11.3%	28.8%
Total	F	283	816	661	1760
	%	16.1%	46.4%	37.6%	100.0%
χ^2obs. = 2.417	χ^2crit. = 5.99		df=2	P > 0.05	p-value=0. 299

χ^2obs. = chi-square observed, χ^2crit = chi-square critical, df= degree of freedom, p = probability value, P > 0.05= non-significant

The data analysis presented in table (5) shows that there was non-significant relationship between the occupational hazard that facing the nurses inside the operational room and their gender at (P > 0.05), when analyzed by chi-square test.

Table (6): Association between the Occupational Hazard and Educational level

Level of educational		The Risks			Total
		Always	Sometime	Never	
School Nursing	F	17	40	53	110
	%	1.0%	2.3%	3.0%	6.2%
Nursing High School	F	102	231	217	550
	%	5.8%	13.1%	12.3%	31.2%
Technician Institute	F	164	545	391	1100
Graduate	%	9.3%	31.0%	22.2%	62.5%
Total	F	283	816	661	1760
	%	16.1%	46.4%	37.6%	100.0%
χ^2obs. = 15.096	χ^2crit. =9.49		df=4	P < 0.05	p value=0.005

χ^2obs. = chi-square observed, χ^2crit = chi-square critical, df= degree of freedom, p = probability value, P < 0.05= Significant

The findings in table (6) revealed that there was a high significant relationship between the occupational hazard that facing the nurses inside the operational room and their level of education at (P < 0.01), when analyzed by chi-square test.

Table (7): Association between the Occupational Hazard and Years of Experience

Years of Experience		The Risks			Total
		Always	Sometime	Never	
1-5	F	72	213	221	506
	%	4.1%	12.1%	12.6%	28.8%
6-10	F	56	190	150	396
	%	3.2%	10.8%	8.5%	22.5%
11-15	F	69	109	86	264
	%	3.9%	6.2%	4.9%	15.0%
16-20	F	43	197	134	374
	%	2.4%	11.2%	7.6%	21.2%
≥ 21	F	43	107	70	220
	%	2.4%	6.1%	4.0%	12.5%
Total	F	283	816	661	1760
	%	16.1%	46.4%	37.6%	100.0%
χ^2obs. = 41.297	χ^2crit. =15.51		df=8 P< 0.05	p value=0.000	

χ^2obs. = chi-square observed, χ^2crit = chi-square critical, df= degree of freedom, p = probability value, P < 0.05= Significant,

The table (7) indicates that there was high a significant relationship between the occupational hazard that facing the nurses inside the operational room and their years of experience at (P < 0.01), when analyzed by chi-square test

Discussion:

Present study describes an occupational hazard that nurses facing in the operational room. The findings revealed that the majority of the study sample (26-31) years old (27.5 %), as well as the level of education, the study showed that the technician institute graduate is highest percentage (62.5%), this result was agreement with [7], that the majority (44.2%) of the study sample's ages were under 30 years, and indicate that the majority (87.9%) have nursing school diploma. Regarding to gender the study showed that (71.3%) was male nurses, this result was disagreeing with [8], the results showed that over half of the respondents were registered nurses female. Finally, with regard to years of experience was (28.8%) of the study participants are between (1-5 years) see (table 1), this result agree with **[8]**, that the majority of study sample with 5 years median work experience (70.3 %). Also agree with **[9]**, almost (58.9%) had ≤5 years of work experience as nurses at hospitals. Because the nurses at the beginning of their employment have little experience so they are exposed to occupational hazards more than others. The operating theaters are very fatigued area and it needs a great effort so we see that female nurses do not wish to work in it.

Relative to the effect of the occupational hazard on nurses the maximal effect presented by the biological hazard, followed by accidental, while the lowest was the chemical hazards

followed by physical hazard, see (table 2). this result disagree with [10], they studies occupational hazards as perceived by nursing interns and protective measures in Cairo University in Egypt, most of nursing interns exposed to physical hazards (65.35 %) followed by chemical hazards (56.40%), while biological hazards ranked as the lowest occurrences (45.73%), and agree with the study of [11], which indicate that the majority of study sample, (39.5%) experienced biological hazards. Also comes along with [12], in Faculty of Nursing, Islamic University of Gaza, Palestine exposure to psychological hazards was the highest (56.6%) followed by accidental hazards (44%), chemical hazards (43.9%), and biological hazards (39.8%), while the lowest was the physical hazards (39.3%). In the present study, the biological hazard appeared at the first risk followed by physical risk because the little experience in how to deal with those risks, and how to avoid it,

Regarding the aim of the study's assessment of occupational hazard for nurses who work in the operating rooms, our study showed that the majority of study participants have a moderate level of assessment (n=80; 53.7%) see (table 3). This result was agreed with research results of [11] that study Occupational Health Hazards among Healthcare Workers in Kampala, Uganda. (50.0%) of respondents reported experiencing an occupational health hazard.

Finally, the result of the data analysis there was found a high significant association between the socio-demographic characteristics of (age, level of education, and years of experience) and occupational hazard ($P < 0.01$), while non- significant relationship between occupational hazard and their gender, see (tables 4, 5, 6, and 7). This study agrees with [13], the relationship between occupational health and age, work experience, were statistically significant at ($p < 0.05$). Also this result disagree with [14], the finding of present study illustrated that there was no significance difference between age or years of experience and three types of hazards. In the present study, there is a highly significant correlation between occupational hazard and socio-demographic characteristics because the age, years of experience and educational level play a major role in the industry acquired of professional experience for prevention and avoidance of occupational hazard, Whenever level of education was high the occupational hazards low, while the gender does not affect whether male or female.

Conclusions

The majority of participants have moderate level of the risks that facing the nurses inside the operational room. The majority of exposure to occupational hazards in male nurses more than female nurses, as well as the study confirmed that nurses who do not have more experience in the field of work are more exposed to occupational hazards than others, also the study showed that more than half of the study sample were graduates of medical technician institutes. Also, showed there were high significant correlations between socio-demographic characteristics of (age, level of education, and years of experience) and occupational hazard, while non- significant relationship between occupational hazard and their gender.

Recommendations:

1. Necessary to do special occupational education programs, constructed and presented to the nurses who are working in operating room in order to increase health awareness and knowledge about these hazard.

2. More attention should be presented to operating room nurses with respect to preventive, curative, and rehabilitative measure by which the risk of these hazards can be reduced.

References:

- Aliyu, D.; Adeyeni, A.; Otufale, A.; and Shiaka, N.: Rates and Patterns of Operating Room Hazards among Nigerian Perioperative Nurses, *Journal of Perioperative and Critical Intensive Care Nursing*, 2016, Vol (2), No (1), p.p.: 2. Available online http://dx.doi.org/10.4172/jpcic.1000106
- Sen, J.; Sen, B.: Control of Hazards in Operation Theater, *Indian Journal of Clinical Practice*, 2013, Vol. (24), No. (7), p.p.:615.
- Government of Alberta: Handbook of Occupational Hazards and Controls for Medical and Surgical Staff, 2011, p.p.:38.
- Queensland Government, Organizational Health, Department of Education, Training and Employment: Guideline for Managing Risks with Chemicals in DETE Workplaces, 2013, p.p.:4.
- Jingke G.: An Investigation of the Impact of Operating Room Occupational Hazards on Intraoperative Nurses, 2011, P.P.: 8.
- Centers for Disease Control and Prevention CDC, Department of Health and Human Services, National Institute for Occupational Safety and Health: Occupational Hazards
- in Home Healthcare, 2010, P.P: 3.
- Magda, A.: Relationship among nurses' safety compliance, organizational safety climate, worker's variables and job satisfaction at Zagazig University hospitals, *Life Science Journal*, 2013, Vol. (10), No. (12), p.p.: 1047. Available online http://www.lifesciencesite.com
- Olufemi, O.; Ayobami, E.; Titilayo, F.; Mathew, K.; Abiodun, T.; and Bukola, F.: Knowledge, attitudes and perceptions of occupational hazards and safety practices in Nigerian healthcare workers, *BMC Research Notes*, 2016, Vol (9), No (71), p.p.: 6. Available online www.biomedcentral.com/submit
- Al-Khatib; Ansari; Areqat; Darkhawaja; Mansour; Tucktuck; and Khatib,: Occupational Safety Precautions among Nurses at Four Hospitals, Nablus District, Palestine, *Int J Occup Environ Med*, 2015, Vol (6), No (4), p.p.: 244-246. Available online www.theijoem.com
- Amal, H.; and Sahar, H.: Occupational Hazards as Perceived by Nursing Interns and Protective Measures, *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 2016, Vol (5), No (6), p.p.: 107. Available online www.iosrjournals.org
- Rawlance, N.; Geofrey, M.; Xiaozhong, Y.; Esther, B.; David, M.; Jia-Sheng, W.; Abdullah, A.; Christopher, W.; William, B.; Phillip, W.; and John, S.: Occupational Health Hazards among Healthcare Workers in Kampala, Uganda, *Journal of Environmental and Public*

Health, 2015, Vol (10), No (1155), p.p.: 1, 3-5. Available online http://dx.doi.org/10.1155/2015/913741

- Ashraf, E.: Prevalence and Response to Occupational Hazards among Nursing Students in Gaza Strip, Palestine: The Role of Personal Protective Equipment and Safety Regulations, *Public Health Research*, 2015, Vol (5), No (1), p.p.: 32, 34-37.
- Leila, J.; Akram, S.; and Nafiseh F.: The relationship between knowledge of ergonomic science and the occupational health among nursing staff affiliated to Golestan University of Medical Sciences, *Iranian Journal of Nursing and Midwifery Research*, 2010, Vol(15), No(4) p.p.: 5-7.
- Hanaa, E.; and Sahar, M.: Occupational Health Hazards among Nurses at Quena University Hospital, *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 2016, Vol (5), No (3), p.p.: 28, 30-32. Available online www.iosrjournals.org