
HAZARDS OF PRACTICAL TRAINING AT OUTPATIENT CLINICS AS PERCEIVED BY SECONDARY TECHNICAL NURSING STUDENTS

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ABSTRACT

Background: Unpredictable nature of training environment can create some problems for nursing students .Lack of knowledge and skills in the clinical environment can lead to anxiety and make them more vulnerable to occupational hazards. **Aim:** Assess the hazards of practical training at outpatient clinics as perceived by secondary technical nursing students in Port Said City. **Subjects and method: Design:** A descriptive design used to conduct this study. **Setting:** This study was carried out at outpatient clinics in two hospitals namely Al-Amery and Al-Nasr hospital **Subjects:** convenience sample (522 student) , in two nursing school Al-Amery and Al-Nasr school in port said city. **Tools:** Data was collected using four tools, *Tool I:* Self-Administered Questionnaire divided into two parts: sociodemographic data, and knowledge assessment sheet, *Tool II:* Attitude scale, *Tool III:* Observation checklist, *Tool IV:* Environmental Assessment sheet, **Results:** The study results revealed that 58.1% of the students had unsatisfactory knowledges about hazards, 55.9% of them had negative attitude toward hazards, 51.7% of them had inadequate performance of safety standards and precaution procedures 57.1% of them perceived effective environmental assessment of safety measures in the setting **Conclusion:** more than half of studied students had unsatisfactory knowledge, negative attitudes toward hazards of practical training ,also more than half of them have inadequate performance of safety measures and standards precautions while more than half of them perceived effective environmental assessment of safety measures in study setting. **Recommendations:** Health education programs for nursing students about hazards of practical training and how to cope with this hazards.

Key Words: Hazards of practical training, Outpatient clinics , Secondary technical nursing students

INTRODUCTION

Nursing is a profession within the health setting that use clinical knowledges in providing of care to people to improve, maintain and restore health, which lead to manage health problems, and maintain better quality of life. There are many specialties in health field; One of these is provide nursing education as a teacher in nursing school. A nursing school is an institution that provides education and training to the students. The nature of nursing education varies around the world (American Nurses Association, 2018)

practical training is an education which provided in a setting in environment that includes the application of theoretical and practical knowledge. Clinical learning plays an important role in improving the nursing profession (Dadgaran, Parvizy & Peyrovi 2013). Clinical education climate can be divided into two environments called; the academic and applied places. During the practical training sessions, students will gain new knowledges, and apply to the clients what they have learned in class, and help them to make independent nursing decisions and have the chance to perform nursing role in clinical settings (Ali, & Ali 2017)

Practical training take place in a complex environment . This environment provides the opportunity for the students to learn experimentally and transform theoretical knowledges into a variety of skills important for clients. Preparing the students to enter the clinical environment is an important factor affecting the quality of clinical education . The unpredictable nature of practical training environment may create some problems for the students. (Joolae, Amiri, & Farahani, 2015)

Failure to identify the challenges and problems which the students face in the clinical environment prevents them to achieving learning. As a result, their skills will be affected . Nursing students are vulnerable in clinical environment and this decrease their satisfaction with the practical training . Nursing students' lack of knowledges and skills in the clinical setting may lead to anxiety. Nursing students are younger, inexperienced, unskilled, less aware of self-protection, and lack of professional knowledges about safety measures, this make them vulnerable to occupational hazards. (Jamshidi, Molazem, Sharif, Torabizadeh & Najafi Kalyani, 2016)

Occupational hazards refer to activities in work environment, material, substance, process or condition that have a risk of injuries or ill health. it also can be defined as a danger

to a person arising from his employment.(Elewa & El Banan, 2016).And It referred to any activity, substances, processes or situation that causes an accident or disease in the work place . Although occupational hazards for nurses and nursing students are mostly underreported due to insufficient research, it has revealed a lot of occupational diseases/ injuries.(Owie & Apanga, 2016). About 100,000 people die from occupational hazards, while about 400,000 new cases of occupational diseases are diagnosed each year(Dropkin, et al., 2013).

Hazards are categorized as Physical , biological, chemical , psychosocial and mechanical "ergonomic" hazards . physical hazards include noise ,lighting ,radiation and heat .biological hazards include abrasions, cuts, sharp related acute injuries, direct contact with an infected specimen, blood borne disease, infectious diseases/infections,. (Osungbemi, Adejumo, Akinbodewa, & Adelosoye, 2016).

chemical hazards may result from treating the patients and maintaining an appropriate environment in healthcare settings, and exposure to chemicals can result from sterilizers, cleaning compounds, dangerous drugs, disinfectants, mercury, anesthetic gases, latex etc. Psychological hazards such as negative self-perception, negative view on life in general, and change in mood such as; irritability , loss of self-confidence, loss of self- control, crying for no apparent reason, negative image of self and difficulty concentrating .social hazards as a difficulties in family relationships and feeling of isolation, social life difficulties, barriers in making friends, difficulty in making decision, and uncontrolled aggressiveness.while mechanical "ergonomic" injuries result from patient lifting and handling, lifting heavy equipment ,and static postures . (Ndejjo, et.al.,2015 , Elewa & El Banan , 2016).

One of the foundation of the quality nursing service is nursing education that includes the three domains of learning; knowledge, attitude, and practice. Attitude plays a major role in leading a person towards achieving desired goals. Students' attitude toward clinical training can be influenced by the clinical environment, student staff interaction, clinical preceptors, and the availability of equipment needed in a hospital environment . More than half of healthcare providers are Midwives and Nurses in the healthcare setting. Hence, if the attitude of Nursing and Midwifery professionals is unfavorable, the quality of health care may be compromised in a significant manner. There is a significant discrepancy between theory and clinical practice and one of the reasons of this discrepancy could be attitude. A positive attitude towards clinical practice promotes effective clinical learning.

Whereas, a negative attitude reduce the acquisition of basis clinical skills. (Aragaw, Sinishaw, Daba & Mekie, 2019)

The community health nurse is skilled in primary prevention of injury or disease. The nurse may identify the need for assessment and planning of interventions, for example modifying work environments, work system or changing work practices in order to reduce the risk of exposure .The community health nurse often has close contact with the workers (students) and is aware of changes in the work environment. Community nurse is a well placed to participate in risk identification. Hazards may arise due to new processes or work practices or may arise from informal changes .(WHO,2019)

The community health nurse may be involved in the development of workplace health policy and strategy including workplace health promotion and environmental health management .she may provide advice and information for nursing students on appropriate control strategies, including health surveillance, risk communication, monitoring of control strategies .also she has a role in the education of nursing students. This may be within existing training programs or those programs that are developed by occupational health nurses for example, informing, educating and training students on how to protect themselves from practical training hazards .Community health nurses can fulfil an a counselling role by participating in, for example, health and safety committee meetings, health awareness consultations for nursing students.(WHO,2019)

Significance of the study:

The nursing students are exposed to occupational hazards .In addition to facing with exams, grades, long study hours , work, family and other personal obligations nursing students also face with the clinical practice challenges. Lack in practice such as lack of experience, fear of making mistakes, difficulty with patients, discomfort with teachers evaluations and worrying about giving patients the wrong information or medications (Blomberg, et al.,2014).

According to World Health Organization (2006) acute medical sharp injuries have been recognized as one of the occupational hazards among healthcare workers including nursing students . acute medical sharps injuries cause about 2 million hepatitis infection, 900,000 hepatitis C and 170, 000 HIV infections among health-care workers each year

globally. In Saudi Arabia , nursing students were the hardest hit of the occupational hazards category. (Elewa &ElBanan, 2016)

This study hasn't been done before on secondary technical nursing students in Port Said City. The nursing students may be exposed to a variety of hazards during their practical training in different hospital department. So the aim of this study is to assess the hazards of practical training at outpatient clinics as perceived by secondary technical nursing students in Port Said City

AIM OF THIS STUDY

This study aimed to assess the hazards of practical training at outpatient clinics as perceived by secondary technical nursing students in Port Said City.

Objectives of the study:

- 1- Identify the knowledge of secondary technical nursing students towards hazards in practical training at outpatient clinics.
- 2- Determine the attitudes of secondary technical nursing students towards hazards of practical training at outpatient clinics.
- 3- Determine the practice of secondary technical nursing students towards protection from hazards of practical training at outpatient clinics.
- 4- evaluate the environmental hazards that facing secondary technical nursing students during practical training at outpatient clinics as perceived by the students

SUBJECTS AND METHOD

Design:

A Descriptive study design was utilized in the current study.

Setting:

This study was carried out at outpatient clinics where the secondary technical nursing students were trained in Port-said City .There were two hospitals(outpatient clinics) namely Al-Amery hospital , Al-Nasr hospitals.

Subjects:

The subject of this study were consisted of all students (522 student) in only two governmental secondary technical nursing schools (AL-Amery school and AL-Nasr school) in port said city .

Sampling technique:

A convenience sample technique applied to recruit study subjects form two secondary nursing school located in Port Said City.

Methods for data collection:

The data was collected through **four** tools. This tools was developed by (AboAL-Maged, 2 013) and modified by researcher.

Tool 1: self-administer questionnaire: this tool developed by(AboAL-Maged,2 013)and modified by researcher. this tool was used to assess the knowledge of secondary technical nursing student related to hazard facing them during training .the questionnaire sheet consisted of the following two parts.

Part (1): personnel characteristics.

This part was Covered the sociodemographic characteristics of the students as age, , grade, sample setting.

Part (2):

This part consisted of 38 multiple choice questions assessed the students' knowledge about hazards facing them during practical training at outpatient clinics . These questions were classified into the following categories :General knowledge about occupational hazards Physical hazards, Biological hazards, chemical hazards Psychosocial hazards and Mechanical (ergonomic) hazards .

Scoring. For each category of knowledge, the score of the items will be summed-up and the total divides by the number of the items giving a mean score for the part. These score was converted into a percent score. Student's knowledge was considered satisfactory if the percent score 60% or more and was considered unsatisfactory if the percent score will be less than 60%. .

Tool II: Attitude scale,this tool developed by (Hassan,2004) and modified by researcher

This tool was used to assess students' attitude towards protection from the hazards facing them during training. It consisted of 12 positive and negative statements covering attitude

of students towards hazards in addition to the universal precautions. The response was on a 3-point Likert scale "agree", "sometime", or "disagree"

Scoring: the responses agree was scored(2), the responses sometime was scored (1) and the responses disagree was scored (zero). The score of the items were summed up and the total divided by the number of statements giving a mean score. These were converted into a percent score. The student's attitude was considered positive attitude if the percent score was 60% or higher and negative attitude if less than 60%.

Tool III: Observation checklist : this tool developed by (Abd El Aziz 2010) and modified by researcher,

this tool was used to assess the actual students' performance related to safety standards, precautions and to observe their compliance to use safety measures .the checklist include nine groups of performance categories with items checked as " done" and "not done". As follows Hand washing Gloving Eye protection , Masking ,Personal hygiene, Cleaning instruments, Autoclaving Sharps box use, Body mechanics.

Scoring: the item observed to be" done" was scored (1) , and the item that" not done" was scored (zero).For each part ,the scores of items was summed –up and the total divided by the number of items ,giving a mean score for the part ;then the scores was converted into a percent score .the practice was considered adequate if the percent score was 60% or more and considered inadequate if the percent scores less than 60% .

Tool (IV):Environmental Assessment Checklist: this tool developed by(AboAL-Maged,2 013)

This tool served to assess the presence or absence of safety measures according to standards in the training settings. The list included (38) items checked as present or absent ,categorized as follows :Lighting ,Ventilation Cleanliness , Stairs and floor, Exits, Training facilities, Toilets, Fire protection, Storage places , Hazardous material handling , Electrical safety .

Scoring: The item observed to be "present" was scored(1) and the item "absent" scored (zero). The score of the items were summed-up and the total divided by the number of item giving a mean score for the part; then score were converted into a percent score representing the extent safety measures standards was fulfilled.

Validity of the study tools:

Content validity of the tools was achieved by a panel of five expertise in family and community health nursing from port said university who revised the tools for clarity, relevance ,applicability ,comprehensiveness, understanding and ease for implementation .modifications were applied according to their opinions

Reliability of the study tools:

The Cronbach α (coefficient was calculated to assess the reliability of the modified tool through their internal consistency). The Cronbach α for student knowledge assessment tool was 0.653 and for attitude scale was 0.768 and for observation checklist was 0.703 and for environmental assessment checklist 0.686 .The total reliability for all tools is 0.703

Pilot study:

A pilot study was conducted to assess the tools clarity and feasibility, and to identify the obstacles of applicability. The pilot sample included 10% of secondary nursing students (52) students selected randomly from the study subject of the total sample ,(30 student)from AL Amery school , (22 student) from AL Nasr school in Port Said City. It was conducted in the fourth week of May 2019 to the second week of June 2019 (summer training) to test clarity and feasibility of the tools, also to estimate the proper time to apply them and find out any problems that might interfere with the data collection. Based on the results of the pilot study, there was no need for modifying the tools. Therefore, the pilot study sample was included in the study.

Fieldwork:

Before beginning the collection of the data, agreements of manager of AL-Nasr nursing school ,AL-Amery nursing school and agreement of managers of AL-Nasr hospital and AL-Amery hospital at Port Said City were obtained, this step took the first and second week of May 2019.

All managers of each setting were informed about the purpose of the study and then their written consent to conduct the study was taken.

The study was conducted on all students (522) using an interview technique and taking their oral consent to conduct the study.

The data have been collected over a period of (five –six) months. The actual field of work was carried out from the third week of September (2019) to the second week of march (2020). Data were collected from the outpatient clinics in the two hospital (AL-Nasr and AL-Amery hospital).

Collecting data was from(8- 10) student per day. three days per week from 9 Am to 12 Pm for observation checklist to assess the students'actual performance to safety standards and precautions procedures by the researcher , this tool take about 15-20 minute for each students ,then after 12pm (after finishing the worke in outpatient clinics)for other tools (self –administer questionnaire ,attitude scale and environmental assessment checklist)by the students.The students were interviewed using the previously mentioned study tools for 20-30 minutes according to the suitable time.

For Al-Amery school (297student) collecting data was taken about 10 weeks from third week of September 2019 to fourth week of November 2019.

For Al- Nasr school(225 student) collecting data was taken about 8 weeks from first week of December 2019 to fourth week of January 2020.

Data were statistically analyzed from the beginning of February 2020 to the beginning of April 2020.

The present study consumed about 12 months; two month for obtaining official permission, pilot study, and test clarity and feasibility of the tools. The next five months were consumed for data collection, while two month for data entry, and three months for statistical analysis.

Administrative design: -

Before conducting the study ,an official permission will be obtained from the secondary nursing school ,health technical institute and hospitals managers. This will be obtained through official letters addressed from the faculty of nursing, Port Said University to explain the aim of the study and ensuring the confidentiality of any obtained information.

Ethical Consideration:

The ethical research considerations in this study include the following :

The research approval was obtained from Scientific Research Ethical Committee in Faculty of Nursing Port Said University before starting the study .

The researcher was clarify the objectives and aim of the study to the nursing students included in the study ,the researcher was assured maintaining anonymity and confidentiality of the subject data .

Students was informed that they are allowed to choose to participate or not in the study and that they have the right to withdraw from the study at any time.

Statistical Design:

After collecting the data of the study, they were coded and transferred into specially designed formats so as to be suitable for computer feeding following data entry checking and verification processes were carried out to avoid any errors during data entry process, frequency analysis, cross-tabulation, and manual reversion were used to detect any errors. The SPSS (statistical package of social sciences), version 23 was utilized for - data statistical analysis and presentation measures were used. Descriptive measures included: count, percentage, standard deviation, minimum, and maximum. The difference was considered significant at $P \leq 0.05$.

Data analysise

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 21, SPSS Inc. Chicago, IL, USA). For qualitative data, comparison between two groups and more was done using (Z) Mann-Whitney test. For comparison between more than two means of parametric data, Kruskal-Wallis tests (χ^2) was calculated. Correlation between variables was evaluated using Spearman's test for correlation coefficient (r). Significance was adopted at $p < 0.05$ for interpretation of results of tests of significance

RESULTS

It can be seen in **table (1)** sociodemographic data for secondary technical nursing students , it was revealed that the age of secondary technical nursing students ranged from 15-20 year.20.9 %of them were have 19 year .25.3%of the students in first grad while 39.3 %of them in the health technical institute.

Table (2): shows total knowledge of secondary technical nursing students about hazards of practical training according to their grade. It was noticed that first, second and third grade students have unsatisfactory knowledge about all dimensions of knowledge (general information, physical, chemical, biological, mechanical and psychosocial hazards) with 74.2%, 67.7% and 57.6% respectively. While fourth and fifth grade students have satisfactory knowledge about these dimensions with 50.9% and 63.2% respectively. There was a statistically significant difference between knowledge dimension of secondary technical nursing students (chemical hazards and psychosocial hazards) and their grades with p value (0.021 and 0.038) respectively.

Figure (1) shows total attitudes of secondary technical nursing students towards hazards facing them during practical training. It was found that 73.5%, 59.1%, 55.4% of the first, second and third year students respectively have negative attitudes toward hazards of practical training. On the other hand 55.5%, 57.9% of the fourth and fifth year students respectively have positive attitudes toward hazards of practical training. Totally 44.1% of all students have negative attitudes and 55.9% of them have positive attitudes.

Table (3): explains the students' actual performance of safety standards and precaution procedures according to their grade. It was demonstrated that first and second grade students have inadequate performance for safety measures with 62.9% and 61.3% respectively. While third, fourth and fifth grade students have adequate performance with 52.2%, 74.3% and 79.3% respectively. There was a statistically significant difference between their grades regarding to observation checklist as wearing gloves, eye protection, personal hygiene cleaning process, safety box use and mechanism of body of the students with their grade with p value (0.008, 0.002, 0.000, 0.000, 0.001, 0.000 and 0.000) respectively.

From **table (4)** it was noticed that first and fifth grade students perceived effective 'good' environment assessment with 77.3% and 86.3% respectively. While second, third and fourth grade students perceived ineffective environment with 76.3%, 55.4% and 53.6% respectively. There was a statistically significant difference between the students' grades regarding to environment assessment for (exit, training facilities, storage place and hazardous substance) with p value (0.041, 0.000, 0.000 and 0.000).

in table (5) shows relationship between sociodemographic data of secondary technical nursing students and their total knowledges about hazards that facing them during practical training. It was revealed that there was a statistically significant relation between age

,grade ,setting of training for the students and total knowledges about hazards with p value(0.000).

Table (6): shows relationship between sociodemographic data of secondary technical nursing students and their total attitude response toward hazards facing them during practical training .it was revealed that there was a statistically significant relation between age ,grad, of the students and their total attitude response toward hazard facing them during practical training with p value (0.000,0.000) respectively .

Table (1): Distribution of secondary technical nursing students according to sociodemographic data (n =522)

Socio demographic data	No= 522	%
Age (years)		
15-	32	6.1
16-	101	19.3
17-	94	18.0
18-	95	18.2
19-	109	20.9
20	91	17.4
Min. – Max.	15 – 20	
Grade		
First	132	25.3
Second	93	17.8
Third	92	17.6
Fourth	110	21.1
Fifth	95	18.2
Study samples setting		
Al-Amery school	297	56.9
Al -Nasr school	225	43.1

Table (2): Distribution of secondary technical nursing students according to their total knowledge about hazards of practical training according to their grade (n =522)

Knowledge dimensions	First grade		Second grade		Third grade		Fourth grade		Fifth grade		$\chi^2=$	P value
	no	%	No	%	no	%	no	%	No	%		
General information.												
Unsatisfactory	111	84.1	65	69.8	58	63.1	66	60.0	41	43.2	6.391	0.053
Satisfactory	21	15.9	28	30.2	34	36.9	44	40.0	54	56.8		
Physical hazard												
Unsatisfactory	98	74.2	56	60.2	48	52.2	56	50.9	40	42.1	4.027	0.076
Satisfactory	34	25.8	37	39.8	44	47.8	54	49.1	55	57.9		
Chemical hazard												
Unsatisfactory	86	65.2	63	67.7	53	57.6	51	46.3	28	29.5	14.048	0.021*
Satisfactory	46	24.8	30	32.3	39	42.4	59	53.7	67	70.5		
Biological hazard												
Unsatisfactory	95	71.9	64	68.8	56	60.9	57	51.8	36	37.9	5.504	0.058
Satisfactory	37	28.1	29	31.2	36	39.1	53	48.2	59	62.1		
Mechanical hazard												
Unsatisfactory	103	78.1	70	75.3	49	53.3	47	42.7	35	36.8	5.117	0.062
Satisfactory	29	21.9	23	24.7	43	46.7	63	57.3	60	63.2		
Psychological, social hazard												
Unsatisfactory	99	75.0	59	63.4	52	56.5	48	43.6	31	32.6	11.063	0.038*
Satisfactory	33	25.0	34	36.6	40	43.5	62	56.4	64	67.4		
Total												
Unsatisfactory	98	74.2	63	67.7	53	57.6	54	49.1	35	36.8	10.626	0.045*
Satisfactory	34	25.8	30	32.3	39	42.4	56	50.9	60	63.2		

 χ^2 Kruskal-Wallis tests

p: p value for associating between different categories

*: Statistically significant at $p \leq 0.05$

Figure (1):

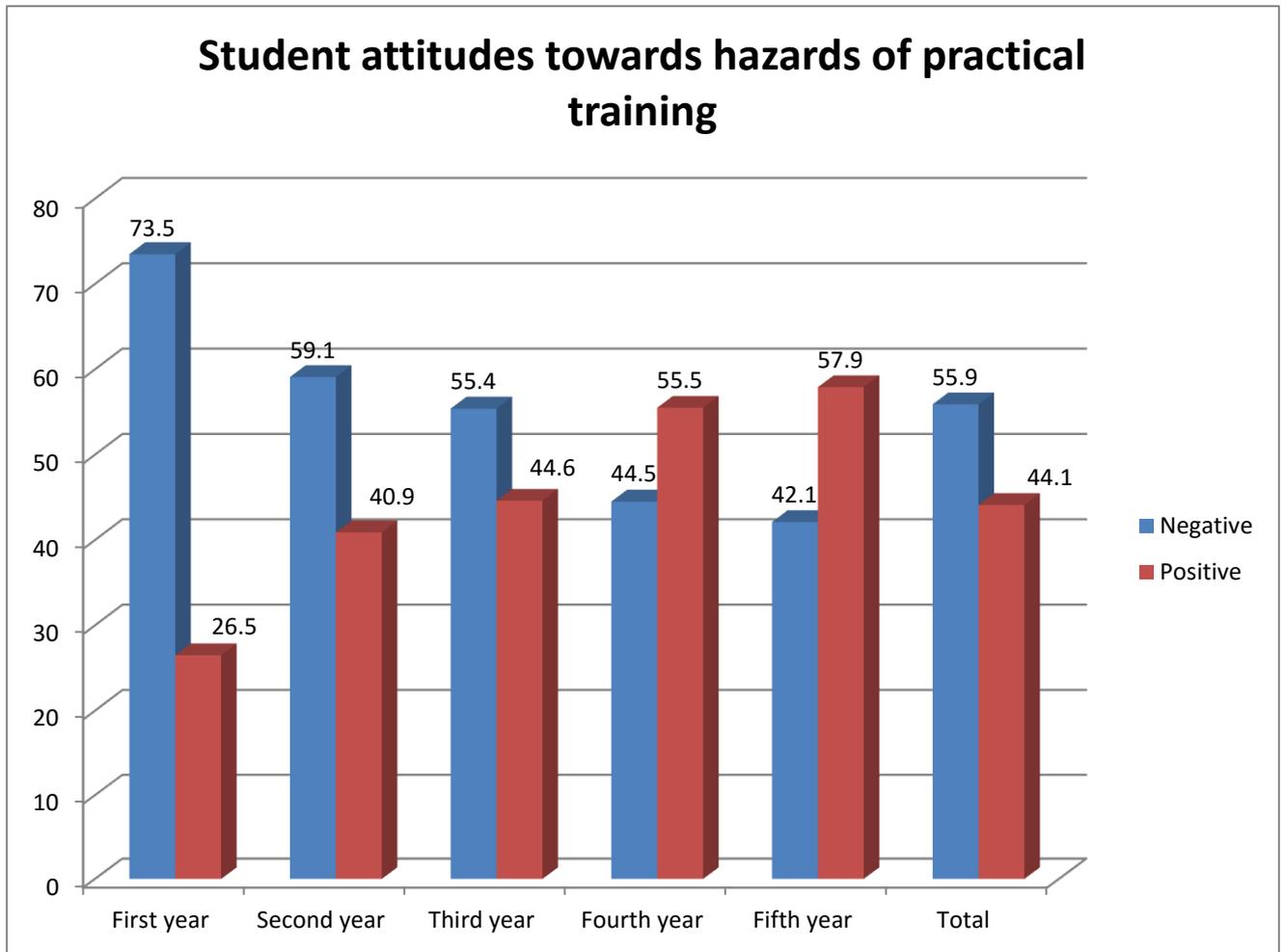


Table (3): Distribution of secondary technical nursing students according to their actual performance of safety standards and precaution procedures during practical training according to their grade .(n =522)

Observation checklist	First grade		Second grade		Third grade		Fourth grade		Fifth grade		P value	$\chi^2 =$
	No	%	no	%	No	%	No	%	No	%		
Hand washing.												
Inadequate	73	55.3	52	55.9	60	65.2	29	26.4	23	24.2	4.547	0.311
Adequate	59	44.7	41	44.1	32	34.8	81	73.6	72	75.8		
Wearing gloves												
Inadequate	111	84.1	71	76.3	4	4.3	17	15.5	16	16.8	13.721	0.008 *
Adequate	21	15.9	22	23.7	88	95.7	93	84.5	79	83.2		
Eye protection												
Inadequate	102	77.3	54	58.1	51	55.4	32	29.1	25	26.3	18.273	0.002 *
Adequate	30	22.7	39	41.9	41	44.6	78	70.9	70	73.7		
Wearing Mask												
Inadequate	84	63.6	51	54.8	60	65.2	36	32.7	28	29.5	5.717	0.221
Adequate	48	36.4	42	45.2	32	34.8	74	67.3	67	70.5		
Personal hygiene												
Inadequate	96	72.7	55	59.1	42	45.7	30	27.3	6	6.3	120.280	0.000 *
Adequate	36	27.3	38	40.9	50	54.3	80	72.7	89	93.7		
Cleaning process												
Inadequate	61	46.2	69	74.2	42	45.7	19	17.3	21	22.1	84.503	0.000 *
Adequate	71	53.8	24	25.8	50	54.3	91	82.7	74	77.9		
Autoclave procedure												
Inadequate	74	56.1	58	62.4	42	45.7	42	38.2	36	37.9	7.424	0.081
Adequate	58	43.9	35	37.6	50	54.3	68	61.8	59	62.1		
Safety box use												
Inadequate	79	59.8	51	54.8	45	48.9	26	23.6	10	10.5	19.414	0.001 *
Adequate	53	40.2	42	45.2	47	51.1	84	76.4	85	89.5		
Mechanism of body												
Inadequate	81	61.4	57	61.3	69	75.0	23	20.9	10	10.5	50.858	0.000 *
Adequate	51	38.6	36	38.7	23	25.0	87	79.1	85	89.5		
Total												
Inadequate	83	62.9	57	61.3	44	47.8	29	26.7	20	20.7	64.075	0.000 *
Adequate	49	37.1	36	38.7	48	52.2	81	74.3	75	79.3		

χ^2 Kruskal-Wallis tests

p: p value for associating between different categories

***:** Statistically significant at $p \leq 0.05$

Table(4): Distribution of secondary technical nursing students according to their environmental assessment for safety measures and according to their grade (n =522)

Observation checklist	First grade		Second grade		Third grade		Fourth grade		Fifth grade		P value	$\chi^2 =$
	no	%	No	%	No	%	No	%	No	%		
Lightning.												
Ineffective-bad	86	65.2	53	57.0	79	85.9	68	61.8	82	86.3	4.441	0.741
Effective-good	46	34.8	40	43.0	13	14.1	42	38.2	13	13.7		
Ventilation												
Ineffective-bad	69	52.3	73	78.5	82	89.1	61	55.5	36	37.9	7.636	0.591
Effective-good	63	47.7	20	21.5	10	10.9	49	44.5	59	62.1		
Toilets												
Ineffective-bad	90	68.2	63	67.7	72	78.3	77	70.0	73	76.8	8.301	0.423
Effective-good	42	31.8	30	32.3	20	21.7	33	30.0	22	23.2		
Electrical safety												
Ineffective-bad	32	24.2	10	10.8	19	20.7	11	10.0	16	16.8	5.154	0.681
Effective-good	100	75.8	83	89.2	73	79.3	99	90.0	79	83.2		
Cleaning assessment												
Ineffective-bad	48	36.4	61	65.6	12	13.0	59	53.6	13	13.7	6.532	0.621
Effective-good	84	63.6	32	34.4	80	87.0	51	46.4	82	86.3		
Stairs and floor												
Ineffective-bad	81	61.4	83	89.2	41	44.6	59	53.6	59	53.7	5.133	0.693
Effective-good	51	38.6	10	10.8	51	55.4	51	46.4	51	46.3		
Exits												
Ineffective-bad	51	38.6	72	77.4	41	44.6	59	53.6	25	26.3	14.157	0.041*
Effective-good	81	61.4	21	22.6	51	55.4	51	46.4	70	73.7		
Training facilities												
Ineffective-bad	81	61.4	86	92.5	51	55.4	59	11.3	44	46.3	43.968	0.000*
Effective-good	51	38.6	7	7.5	41	44.6	51	9.8	51	53.7		
Fire protection												
Ineffective-bad	33	25.0	32	34.4	36	39.1	10	9.1	17	17.9	5.532	0.643
Effective-good	99	75.0	61	65.6	56	60.9	100	90.9	78	82.1		
Storage place												
Ineffective-bad	81	61.4	20	21.5	25	27.2	56	50.9	57	60.0	64.892	0.000*
Effective-good	51	38.6	73	78.5	67	72.8	54	49.1	38	40.0		
Hazardous substance												
Ineffective-bad	48	36.4	61	65.6	34	37.0	59	53.6	13	13.7	61.516	0.000*
Effective-good	84	63.6	32	34.4	58	63.0	51	46.4	82	86.3		
Total												
Ineffective-bad	30	22.7	71	76.3	51	55.4	59	53.6	13	13.7	51.566	0.000*
Effective-good	102	77.3	22	23.7	41	44.6	51	46.4	82	86.3		

 χ^2 Kruskal-Wallis tests**p: p value for associating between different categories*****: Statistically significant at $p \leq 0.0$**

Table (5): Relationship between sociodemographic data of secondary technical nursing students and total knowledge about hazard of practical training (n=522).

Student characteristics	knowledge scores				Significance test	P
	Unsatisfactory		Satisfactory			
	No	%	No	%		
Age						
15 year	25	4.8	7	1.3	$\chi^2=57.38$	0.000*
16 year	68	13.0	33	6.3		
17 year	52	10.0	42	8.0		
18 year	47	9.0	48	9.1		
19 year	40	7.8	59	11.3		
20 year	33	6.3	58	11.2		
Grade						
First	92	17.6	40	7.7	$\chi^2=41.28$	0.000*
Second	63	12.0	30	5.7		
Third	46	8.8	46	8.8		
Fourth	42	8.0	68	13.0		
Fifth	34	6.5	61	11.6		
setting						
AL-Amery hospital	148	28.4	159	30.5	Z=49.73	0.000*
Al-Nasr hospital	39	7.5	176	33.7		

*Significant (P<0.05).

χ^2 Kruskal-Wallis tests

Z Mann-Whitney test.

Table (6): Relation between sociodemographic data of secondary technical nursing student and total attitude response toward hazards of practical training (n=522).

Student characteristics	Attitude response				Significance test	P
	Negative		Positive			
	No	%	No	%		
Age						
15 year	22	4.2	10	1.9	$\chi^2=$ 85.84	0.000*
16 year	63	12.0	38	7.2		
17 year	49	9.3	45	8.6		
18 year	51	9.8	44	8.4		
19 year	19	3.6	90	17.2		
20 year	16	3.1	75	14.4		
Grade						
First	97	73.5	35	26.5	$\chi^2=$ 74.94	0.000*
Second	55	59.1	38	40.9		
Third	51	55.4	41	44.6		
Fourth	49	44.5	61	55.5		
Fifth	40	42.1	55	57.9		
Setting						
Al-Amery hospital	121	23.2	186	35.6	Z= 2.01	0.156
Al-Nasr hospital	99	19.0	116	22.2		

*Significant (P<0.05).

χ^2 Kruskal-Wallis tests

Z Mann-Whitney test.

DISCUSSION

Occupational hazards are conditions around the work environment that increase the probability of worker's death, disability or illness. Occupational safety in the workplace improves the employee health and increases productivity. In the medical profession, Nurses and nursing students constitute the largest groups of healthcare workers, and experience a higher rate of workplace hazards exposure than other health care workers (Awan, Afzal, Majeed, Waqas, & Gilani, 2017). Clinical environments in hospitals consist

of work intensive hazards and risky environments, So the World Health Organization (WHO) emphasizes that hospitals are the primary priority in preventing workplace hazards (WHO, 2021).

Concerning to total knowledge of secondary technical nursing students about occupational hazards, this result proved that more than half of students had unsatisfactory knowledge about occupational hazards, and the knowledges of them gradually increased from first to fifth grade .This result disagreed with Sabita, Mandira, Bharati, & Sulata, (2018) who carried out a study in Nepal entitled" Knowledge and Preventive Practice of Occupational Health Hazards among Nurses in different Teaching Hospitals" and reported that more than half of nursing students had satisfactory knowledge about hazards of practical training .From the researcher point of view, this result may be due to a round half of the study sample from first and second grade of nursing education and they still didn't have any experience and knowledge regarding hazards in clinical setting.

Regards to attitude of secondary technical nursing students towards occupational hazards, this study finding showed that the attitude of nursing students gradually improved from first grade education to fifth grade . This result disagreed with Faris, et. al.,(2018) who carried out a study in Iraq entitled" Knowledge, attitude and practice of occupational hazard among nursing staff at teaching hospitals in Kerbala City, South-Central Iraq" and reported that the majority of nurses had positive attitude regarding occupational hazards. Also this result disagreed with Aluko, et.al.,(2016) who carried out a study in Nigeria entitled" Knowledge, attitudes and perceptions of occupational hazards and safety practice in Nigerian healthcare workers" and reported that most of nurses had positive attitude towards occupational hazards.From the researcher point of view, this may be due to increase awareness of nursing students and their perception towards occupational hazards, while the total attitude of them showed that more than half of students had negative attitude towards occupational hazards.

In relation to the performance of safety standards and precaution procedures, this result revealed that more than half of technical nursing students had inadequate practices regarding hand washing, wearing gloves, eye protection and wearing mask . This result disagreed with Eyi, & Eyi (2020) who reported that "When asked nursing students what kind of Personnel Protective Equipment (PPE) they used in clinical practice, most reported

using gloves (100%), masks (90%), and bone (36.4%). On the other hand this result disagreed with Abukhleif (2019) who carried out a study in Saudi Arabia entitled "Personal Protective Equipment Knowledge and Practices among Nurses Working at Al-Baha King Fahad Hospital, Saudi Arabia" and claimed that most of nurses always wore gloves before patient examination. From the researcher point of view, it may be related to lack of protective equipment as gloves, eye shield and face mask, also lack of sinks, soap, paper towels and alcohol-based hand rub in the place of clinical training.

Regarding to personnel hygiene, this result clarified that more than half of technical nursing students had adequate performance regarding personal hygiene. This study result was in contrast with Allo, Mayouf, & AL-Fattah (2020), who carried out a study in Iraq entitled "Personal Hygiene and Safety among governmental Hospitals Nurses Staff in Mosul City" and reported that there was negligence in some personal hygiene practices among nurses. From the researcher view this result may be due to most students knew importance of personnel hygiene in preventing occupational hazards. Also good personal hygiene is a significant barrier to many infectious diseases, and it promotes better health and well-being of an individual and community.

In relation to using safety box, this study result showed that most of technical nursing students didn't use safety box correctly. This result agreed with Alshammari, et al., (2018) who carried out a study in Saudi Arabia entitled "Compliance with standard precautions during clinical training of nursing students in Saudi Arabia: A multi-university study" and reported that most nursing students had the lowest compliance with using safety box. From the researcher point of view this result may be due to inadequate knowledges about infection control and its role in preventing occupational hazards, and also may be due to lack of training about how to use the safety box.

This result shows that more than two thirds of technical nursing students had inadequate performance regarding correct body mechanics. This result agreed with Sabita et al., (2018) who reported that more than half of nursing didn't perform correct body mechanics. From the researcher point of view this may be due to inadequate knowledges about body mechanics and its importance in preventing occupational hazards, also may be due to increase the work assignment that lead to lack of time to apply correct body mechanics.

Ensuring strict compliance with standard precautions by all healthcare workers, including nursing students, considered very importance in preventing occurrences of health care associated infections and upholding patients' safety. This study result clarified that more than half of technical nursing students had inadequate performance of safety standards and precaution procedures. This result was in the same line with Hassan (2018) who carried out a study in Jordan entitled " Improving knowledge and compliance with infection control Standard Precautions among undergraduate nursing students in Jordan" and stated that most nursing students had low compliance with Standard Precaution practices. From the researcher point of view, it may be related to lack of supervision from their tutors, lack of resources and safety equipment, lack knowledge of nursing students about importance of applying safety standards.

Ventilation moves outdoor air into a building or a room, and distributes the air within the building or room. The general purpose of ventilation in buildings is to provide healthy air for breathing by both diluting the pollutants originating in the building and removing the pollutants from it. Natural ventilation of buildings depends on climate, building design and human behavior. This study result clarified that more than two thirds of the studied nursing students reported that the ventilation was ineffective. This result was in the same line with King , et.al.(2020) who carried a study in United State entitled "An Assessment of Outpatient Clinic Room Ventilation Systems and Possible Relationship to Disease Transmission" and reported that the outpatient clinics are not meeting the ventilation standard.

Regarding to assessment of fire protection, this result showed that most of technical nursing students stated that the fire protection was effective. This result disagreed with Mohammed, Mahfouz, Morsy, & Abd El-Rahman (2011) who carried out a study at Minia entitled "Assessment of Nurse's Knowledge About Safety Measures at Minia University Hospital for Gynecology and Pediatric" and reported that almost of nurses stated that the fire protection basis was not applied.

Adequate water, sanitation and hygiene (WASH) are essential components of providing basic health services. The provision of WASH in health care facilities serves to prevent infections and spread of disease, protect staff and patients, and uphold the dignity of vulnerable populations including pregnant women and the disabled. in this study nearly

two thirds of technical nursing students stated that the cleaning assessment of outpatient clinics was effective. This result disagreed with Hefzy, Wegdan, & Abdel Wahed (2015) who carried out a study in Saudi Arabia entitled "Hospital outpatient clinics as a potential hazard for healthcare associated infections" and reported that primary screening of outpatient clinics found poor environmental cleaning and equipment disinfection.

Electricity is used on a daily basis. However, if uncontrolled or misused it can severely burn, injure or kill you or cause fires with devastating results. Medical electrical equipment can present a range of hazards to the patient, the user, or to service personnel, so electrical safety is very important to protect employees and patients from electrical hazards and to minimize the possibility of electrical shock, electrocution, or fire from the use of inadequate current-bearing wiring. This study result showed that, nearly two thirds of technical nursing students reported that the electrical safety was effective.

Safe sanitation is a human right. Sanitation services in health care facilities are essential to deliver high quality care that improves the health, welfare and dignity of patients and staff and improves health outcomes. Location and number of toilets is very important in outpatient clinics with at least one toilet dedicated for staff, at least one sex-separated toilet with menstrual hygiene facilities, and at least one toilet accessible for people with limited mobility.

Regarding to toilet services, almost of technical nursing students reported that the toilet services was ineffective. This result was in contrast with Elewa, Abu ElNaga, Elhewala, & Mohamed (2020) who carried out a study in Egypt entitled "Quality of Health Medical Services at Pediatric Cardiology Unit, Zagazig University Inpatient" and reported that the toilet services were satisfied and within expected level.

The presence of hazardous materials or toxic chemicals at an incident location or other emergency situation adds a new dimension of risk to those handling. The improper handling of hazardous substances in healthcare settings leads to increase rates of infection for patients, healthcare facility contractors and all healthcare employees. Hospital emergency departments must protect their personnel and other people within the hospital, while providing the best care for the chemically contaminated patient. In this study result,

more than half of technical nursing students stated that dealing with hazardous substances were effective.

Regarding to the relationship between socio-demographic data of secondary technical nursing students and total knowledge about hazard of practical training, this study result showed that there was statistically significant relation between age of nursing students and their total knowledge about hazards. This result was in the same line with Dhahir, & Al Mayahi (2021) who conducted a study in entitled " Assessment of Health Workers Knowledge toward Occupational Health and Safety Program in Alkut City's Primary Health Care Centers" and reported that there was a significance relation among health worker's knowledge about occupational health and safety program with their age. In contrast, this result disagreed with Faris et al., (2018) who reported that there was no statistically significant relation between age of nursing students and their total knowledge about hazards. From the researcher point of view, it may be related to difference of age of nursing students associated with improving and updating their knowledge about occupational hazards. Also increasing age of nursing students leads to increasing their awareness regarding occupational hazards.

In addition to this study result indicated that, there was statically significant difference between technical nursing students grade and their total knowledge about occupational hazards. This result agreed with Dhahir et al., (2021) who reported that there was a relation between the knowledge level of nursing students and their level of education. It may be related to increase grade of education leads to increase awareness of students and increase their information about occupational hazards and become more oriented with clinical area.

CONCLUSION

Based on the results of the present study:

It was concluded that, more than half of nursing students have unsatisfactory knowledges about hazards of practical training. Also, the present study results concluded that more than half of the studied sample had inadequate performance to safety standard and precaution procedure during practical training . Furthermore, more than half of them have negative attitudes toward hazards of practical training. Also, the present study results

concluded that there was a statistically significant relation between age ,grade ,setting of training and total knowledges about hazards .furthermore .Also the study result revealed that there was a statistically significant relation between age ,grade and total attitude response and their actual performance to safety standards and precaution procedures .

RECOMMENDATIONS

In the light of the present study results, the following recommendations are:

- 1- Starting the practical training with orientation for the students at the outpatients clinics.
- 2-Conducted a seminars periodically by nursing instructors and receptors for the students to refresh their knowledges ,practice ,and change their attitudes regarding the of practical training .
- 3-Encourage the nurse preceptors to direct supervise the students during work and ensure that they follow safety precautions.
- 4-Designe a pamphlets for safety measure and universal precautions and keep it available for each student.

Further study

Health education programs for the nursing students about hazards of practical training and how to coping with this hazards to save themselves before the training.

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مخاطر التدريب العملي في العيادات الخارجية من وجهة نظر طلاب التمريض الفني الثانوي في مدينة

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الخلاصة

الخلفية: الطبيعة غير المتوقعة لبيئة التدريب العملي من الممكن أن تخلق بعض المشاكل لطلاب التمريض. كما ان نقص المعلومات والمهارات العملية يؤدي الى القلق ويعرضهم الى المخاطر المهنية **الهدف:** تقييم مخاطر التدريب العملي في العيادات الخارجية من وجهة نظر طلاب التمريض الفني الثانوي في مدينة بورسعيد. **تصميم البحث:** تم استخدام التصميم الوصفي لإجراء هذه الدراسة. **الاجراءات:** أجريت هذه الدراسة في العيادات الخارجية ، في مستشفيان حكوميان هما مستشفى الاميري ومستشفى النصر. **العينة:** جميع طلاب مدرستي التمريض الفني الثانوي وهما مدرسة الاميري و مدرسة النصر بمدينة بورسعيد وعددهم 522 طالبة . **اجراءات البحث:** تم جمع البيانات باستخدام أربع أدوات ، الأداة الأولى: استبيان ذاتي مقسمًا إلى جزأين هما: البيانات الديموغرافية ، واستمارة تقييم المعلومات عن المخاطر ، الاداة الثانية: مقياس الاتجاهات نحو مخاطر التدريب العملي ، والأداة الثالثة: قائمة الملاحظة للأداء، والأداة الرابعة: قائمة التقييم البيئي لبيئة التدريب العملي. **النتائج :** اسفرت نتائج هذه الدراسة ان 58.1% من الطلاب لديهم معلومات غير مرضية عن مخاطر التدريب العملي ، 55.9% منهم لديهم اتجاهات سلبية نحو مخاطر التدريب العملي 51.7% منهم لديهم أداء غير كافي لمعايير السلامة والإجراءات الاحترازية 57.1% من الطلاب يقرون بكفاءة بيئة التدريب العملي من حيث احتياطات السلامة البيئية وذلك من وجهة نظرهم. **الاستنتاج:** كان لدى معظم الطلاب الذين تمت دراستهم معلومات غير مرضية عن مخاطر التدريب العملي ، واتجاهات سلبية تجاه المخاطر ، كما أن معظمهم لديهم أداء غير مرضي لإجراءات واحتياطات السلامة والامان بينما أدرك معظمهم التقييم البيئي الفعال لتدابير السلامة البيئية . **التوصيات:** برامج التثقيف لطلاب التمريض حول مخاطر التدريب العملي وكيفية التعامل مع هذه المخاطر لحماية أنفسهم .

الكلمات المرشدة : المخاطر /طلاب التمريض /التدريب العملي