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Effect of an Educational Program on Knowledge and Practices about Environmental Health among 2nd Year Students, General Department

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ABSTRACT

Background: Environmental health (EH) has various effects on man such as chemical, physical, biological, social, and psychological problems. Also, it is the theory and practice of assessing, correcting, controlling and preventing harm to human health today and in future generations. Nurses are in primary position in dealing with patients and public health. Nursing knowledge is key to advocacy and care in environmental health. Inclusion of an environmental focus in a public health simulation scenario provides nursing students with knowledge and understanding of environmental health and its impact on clients and communities**.** This **study aims to** assess the effect of an educational program on knowledge and practices about environmental health among 2nd year nursing institute students, general department . **Research design:** A quasi experimental pre- posttest was used. **Subjects:** all nursing students who are enrolled in the 2nd year at Technical Health Institute, Zawet Ghazal area, general department and accepted to participate (n=180). **Data collection:** by two tools, 2 self-administered questionnaires were designed. Tool one was used to assess the students` knowledge regarding environmental health. Tool two ,the modified environmental health risk appraisal, was used to assess environmental health teaching points, which students taught clients during home visits after the EH educational intervention. An environmental intervention program was introduced to participants. The study was performed in three phases pretest, posttest and follow up. **Results**: the student nurses need to get more knowledge regarding environmental health aspects to improve their knowledge and health teaching practices. After the environmental intervention program the students' knowledge and health teaching practices were improved . **Conclusion:** significant positive changes in the level of knowledge of the participants after implementation of the environmental educational program. **Recommendations**: Implement comprehensive environmental educational program in the curriculum of technical health institute..

Key words: Environmental health (EH); knowledge; health teaching practices; environmental educational program.

Introduction

Environmental health (EH) has various effects on man. Its impact on human can't be denied such as chemical, physical, biological, social, and psychological problems. Environmental health is also the theory and practice of assessing, correcting, controlling and preventing harm to human health today and in future generations (Olson ,Stedman-Smith &Fredrickson, 2005).

Its quiet clear that, man can be threatened by environmental impendences every day and in each place he may step-in. Moreover, some factors rise the hazards of environmental risks such as poorness. Florence Nightingale is one of the leaders in such fields as she introduced more meaningful definitions of environmental and public health. Since the nineteenth century her work has been the main reference for any work regarding environmental health. She put health, person, nursing and the environment as bases for her work (Sattler&Lipscomb, 2003). Nurses are considered in excellent position to introduce environmental health concepts in addition to advocacy for community health issues as they are in primary position in dealing with patients and public health. In addition , as man affect environmental health, it has dramatic effect on him (Sweeney&De Peyster,2005). Also, human leaving on the planet of Earth are affected by its health biological diversity. The body of knowledge regarding such issues is increasing so the nurses' education regarding environmental health should be improving. Moreover, there is a raising need for inclusion of environmental health issues and trends in nursing curricula (Sattler&Lipscomb, 2003;Sweeney &De Peyster,2005. Nowadays health promotion, maintenance, and restoration of the planet earth environment should be of the main concerns of nursing educators and students (Hays, Davis &Miranda, 2006).

Environmental Legal aspects and risk communication must be included in nursing schools curricula. In addition to, environmental health assessments and referral systems should be clearly explained to nurse students (Larsson& Butterfield,2002).

In addition to, surveillance and infrastructure that should be covered in health problems prevention should be taught to nursing students. Other environmental health issues e.g. Home visits and community health, outdoor air and water quality, toxic substances and waste nursing students should be acquainted with them (Healthy People 2010).

The scope of environmental health is more than diseases process and physical determinants of health. It's considered important component of public health (Harnish, Butterfield& Hill, 2006). Although it's not valued appropriately in nursing curriculum yet it is listed as one of the Standards of Professional Nursing Practice (Cezar-Vaz et al, 2013). It's quite clear that environmental heath impact on family heath is not well appreciated in the community or even among community health nurses themselves (Butterfield, Hill, Postma, Butterfield& Maryon, 2011).

The need for nurses to be aware of common environmental health hazards, as public health nurses are on the forefront to provide education, screening, and referral services (McCurdy, Roberts, Rogers& Love,2010) As public awareness of environmental issues increases, nursing knowledge regarding home environmental safety is essential. Public health nurses are uniquely positioned to intercede on behalf of their clients. Nursing knowledge is key to advocacy and care in environmental health. Inclusion of an environmental focus in a public health simulation scenario provides nursing students with knowledge and understanding of environmental health and its impact on clients and communities Barnes, Fisher, Postma, Harnish, Butterfield, & Hill, 2010).

Schools of nursing are challenged to find clinical placement in public health settings; space and competition for these limited clinical sites adds to the conundrum in providing quality public health experiences. Although simulation has been used extensively in schools of nursing to augment clinical time in medical–surgical, pediatric, and obstetric settings, it has been used sparingly in public health. Simulation

can provide a public health perspective with objectives and learning outcomes specific to this setting and inclusive of an environmental health focus. As public health clinical experiences can vary, simulation can augment these settings, introducing concepts such as environmental health while providing a safe and controlled environment in which learning can take place(Hewitt, Candek& Engel,2006).

Regarding the role of the nurse, nurses are in a perfect position to provide leadership in implementing the principles of reduce, reuse, recycle, recover and re-educate in the workplace. Nurses have a responsibility to learn how they can minimize the negative ecological effects of their work. At the practice level, nurses should serve as catalysts for change by becoming involved in activities in the community, such as advocating that decision-makers review the environmental impact of a proposed project before approving it. As nurses, it is our responsibility to raise the flag when people's health is at stake (Guenther&Hall, 2007; Registered Nurses Association of Ontario, 2007).

According to American Nurses Association (2007) nurses can also begin to teach people about the small changes they can make in their homes that will have a huge impact on the environment. To advocate for global human health and to ensure that every person has access to clean water, air and food, nurses must work to educate their clients their community and legislators on the issues of clean air food and water and address the health impacts so that the government will see the need for change globally and locally. Nurses can work with legislators at any level to create and implement policies that will lead to clean air, water, food and environment.

Nurses must assess and communicate risks of environmental hazards to individuals, families and communities. advocate for policies that protect health by preventing exposure to those hazards and promoting sustainability; and produce nursing science, including interdisciplinary research, related to environmental health issues. (Guenther& Hall, 2007).

Significance of the study:

Technical nursing institute introduces diploma degree in different nursing specialties including general department. In this department nursing students are taught community health nursing in the second year and unfortunately, the level of environmental education introduced to the nursing student in their training is very limit because they study all nursing sciences in two years only. The lack of environmental education in the training of nurses is a serious shortcoming in the protection of population. Numerous associations of health professionals have indicated strong support for better training of nurses in environmental health issues and solutions. Understanding and applying environmental health principles should be a part of every nurse's practice. Still, many nurses do not feel adequately prepared to engage in policy issues related to environmental health.

Nursing education and practice need to evolve in order to adequately deal with the increase in environmental health issues. Nurses should be well prepared to identify , assess potential environmental health issues related to workplace, neighborhoods, houses and schools also, prepared to investigate and act when they see patterns of environmental health issues.

Aim of the study

The present study aims to determine the pretest and posttest level of knowledge and health teaching practices on clients during home visits clinical area by 2nd year nursing students at Technical Health Institute, general department, concerning

environmental health after educational intervention program .

Study questions

1- What is the pretest level of knowledge regarding environmental health of 2nd year nursing students?

2- What is the posttest level of knowledge, regarding EH, of 2nd year nursing students?

3- What is the impact of the intervention program on knowledge and health teaching practices of these students?

Materials &Methods

Research design

A quasi experimental pretest-posttest research design was used to conduct the study.

Setting

The present study was conducted at Technical Health Institute, Zawet Ghazal area. It's located in Damanhour city which is the capital of El-bohira governorate.

Subjects

The study subject included all nursing students who are enrolled in the 2nd year at Technical Heath Institute, Zawet Ghazal area, general department and accepted to participate (n=180) . No inclusion or exclusion criteria were set. Only 123 students from the study sample accepted to complete the Environmental Health Risk Appraisal Questionnaire.

Tools of the study

After a thorough review of literature the researchers had adapted (Reid,2007; ANA's, 2007; WHO,2013). tool to measure the level of knowledge regarding environmental health.

Two tools were designed to perform the study:

Tool One: Students` knowledge regarding environmental health. It consisted of 2 parts.

Part one:

It included **socio-demographic data as** name, sex, age, residence, mother and father education, family income, family size and crowding index (Q 1-8). Data were scored according to the total socioeconomic score modified after the model developed by El-Gilany & El-Wehady (2012). Crowding index was calculated by Number of persons/Number of rooms by computer. A Question was asked on attending special education training on environmental health (Q9).

Part two:

This part include items concerning students` knowledge regarding environmental health. It was developed by researchers based on the review of related literature [(1-3)], was evaluated in the second section of the questionnaire by 10-questions **(Q 9-19)** consisted of definition regarding best description of EH and environmental justice, some environmental factors that have a major impact on human health, the role of nursing on EH, the nurses role of advocacy in EH and environmental justice, and principles of risk perception and risk communication. A special scoring system was prepared and applied to assess knowledge of students.

The total knowledge score:

The correct answer for any knowledge item was given a score of 1, and the incorrect given zero.

The scores of each area of knowledge were added and converted into a percent score. Subjects who had 50% or lower score their knowledge was considered unsatisfactory , while those with higher than 50% was considered satisfactory. A repeated measure was used by testing posttest knowledge on the day of the educational intervention and again one month after the intervention utilizing the same 10-item questionnaire.

Tool two:

This tool developed by the researchers based related literature review. The modified environmental health risk appraisal was used to assess what environmental health teaching points students taught clients during home visits after the EH educational intervention. This tool consists of 16 items composed of :

- 3 items related to; if this tool was used before., easy to be used or not and helpful in identifying environmental health risks in the home.

- 13 items related to the areas that the student provided health education in it. As peeling paint (indoors, outdoors), house not appropriately childproofed, children not protected from cold, evidence of bugs, rodents, mold, evidence of pesticides, medications unsecured, smoking in the home , too many domestic animals, domestic animals food in reach of children, most meals from fast food restaurants, drinking water unsafe, inadequate lighting and inoperative telephone.

Methods

(1) An official permission was obtained from the Manager of the Technical Health Institute, Zawet Ghazal area.

(2) The study instrument was designed by the researchers after extensive review of related literature and its content validity was tested by seven experts in the field of the study. Accordingly, the necessary modifications were done.

(3) Reliability of the tool was done using Cronbach' s Alpha(0.856).

(4) A pilot study was carried out on 10% of the subjects (n = 18students). They were conveniently selected and were not included in the study subjects. It was used to ensure the clarity of the questionnaires, identify the obstacles and the problems that may be encountered in data collection and estimate the time needed to fill the questionnaires.

(5) Pretest was performed consequently the interactive lecture was planned and 180 nursing students participate.

(6) **The intervention** (steps of application of the interactive lecture):

a- Selection of Intended Learning Outcomes for the interactive lecture based on the participants' needs and aim of the study.

I - Knowledge and Understanding:

6-a-I-1- Define environmental Health.

6-a-I-2- Describe the role of the environmental nurse in advocacy in environmental Health.

II-Intellectual skills:

6-a-II-1- Analyze the importance of Environmental Justice.

6-a-II-2- Evaluate basic mechanisms of exposure to environmental hazards.

6-a-II-3- Judge the impact of exposure to chemical exposure on growing children.

III-Professional and Practical skills

6-a-III-1- Design methods of application of Environmental Justice.

(7) Choosing the relevant active teaching strategies according to the information presented.

7-a-The teaching strategies carried out during the interactive lecture were: brainstorming, Think-Pair-Share, One-minute write , Question of the day, Concept Test and role play.

7-b-The outlines of the interactive lecture were:

7-b-I- Ice breaking and introduction

7-b-II- Definition of environmental health

7-b-III- Definition of environmental justice.

7-b-IV-Importance of Environmental Justice.

7-b-VI- Impact of environmental health on public health

7-b-VII – Role of nurse in promoting environmental health

7-b-VIII- Role of advocacy in environmental health and environmental justice

7-b-IX -Basic mechanisms in dealing with environmental health hazards

7-b-X -Impact of chemical exposure on growing children

(8) After completion of the interactive lecture, participants were given the posttest n= 180 to answer it. Only 123 students from the study sample completed the Environmental Health Risk Appraisal Questionnaire.

(9) After one month of the environmental educational intervention program and application of home visit (students were allowed to practice health education to their clients at home according to the client needs . In addition to implementation of Environmental Health Risk Appraisal Questionnaire the follow up phase was performed n=180.

Administrative design and ethical considerations

- Approval from administrator of the Manager of the Technical Health Institute, Zawet Ghazal area, was obtained to carry out the study
- Meetings were held with the head of general nursing Department to clarify the purpose of the study and to gain the cooperation and support during data collection.
- Tool development Tool (I) and (II) were developed by the researcher after reviewing the recent relevant literature.
- All students were informed about the purpose of the study and given brief explanation; consequently oral informed consent was obtained from each of them.
- The right to refuse to participate or withdraw from the study was emphasized after reassuring students that their response would have no impact on their grades.
- Data Anonymity and confidentiality were considered.

Statistical Analysis:

Analysis of quantitative data:

1. The collected data were coded and analyzed by using the Statistical Package for Social Sciences (SPSS) software version 20.0.

2. Data was tabulated and presented using various of tests: frequency, calculation of the mean, standard deviation, Pearson chi square, t tests were used in the analysis, chi-square, One way ANOVA, McNemar Tests of Marginal Homogeneity and Cochran's Q **test** was used to study the significance of the difference between proportions.

3. The cutoff point for statistical significance was $P \leq 0.05$.

Results

As shown in Table (1) The highest percentage (61.7%) of participants was in the age group of 22 years while the lower percentage (13.7%) was aged 23years.The majority of students (88.9%) were living in rural area.

As regards the level of parental education, the table shows that nearly half of the fathers (49.4%) were secondary educated and only 5.0% were Illiterate or read and write. While more than one third of mothers (37.2%) were secondary educated and only 10.6% were Illiterate or read and write. The table also demonstrates that more than three fifths of the study sample (62.2 %) had a crowding index of one person / room. While 3.3 % had a crowding index >3 persons / room. The table also shows that nearly three thirds (73.9%)of the study sample reported that their families had enough income, and 26.1% were always in debt.

Less than half (43.3%) of students reported prior formal education in environmental health, while (56.7 %) reported no prior environmental health education.

Table (1): Distribution of the studied sample according to socio-demographic characteristics and previous education in environmental health. (n=180)

Socio-demographic data		No N=180	% 100%
Age in years	21-	41	22.8%
	22-	111	61.7%
	23	28	15.6%
Residence	Rural	160	88.9%
	Suburban	20	11.1%
Father's education	Illiterate or read write	9	5.0%
	Primary	15	8.3%
	Preparatory	42	23.3%
	Secondary	89	49.4%
	University and more	25	13.9%
Mother's education	Illiterate or read write	19	10.6%
	Primary	34	18.9%
	Preparatory	36	20.0%
	Secondary	67	37.2%
	University and more	24	13.3%
+Crowding index(person / room)	1-	112	62.2%
	2-	62	34.4%
	3+	6	3.3%
Income	Not enough and in debt	47	26.1%
	Enough	133	73.9%
Received previous course in environmental health	Yes	78	43.3%
	No	102	56.7%

+Crowding index (No. of persons/ No. of room) calculated by computer

Table (2)displays the changes in students' knowledge about environmental health throughout study phases. At the pre-program phase, most of the items showed deficient knowledge. This was particularly evident regarding knowledge about Examples of National Legislative Initiatives for environmental health (43.9%). The highest knowledge was related to most common sources of lead poisoning in children and reached 91.7%. At the post-program phase, there were statistically significant improvements in the student's knowledge in all items (p=0.001). This ranged from 77.8%for Examples for National Legislative Initiatives for environmental health to 96.1%for statement best describes environmental health . These improvements continued throughout the follow-up phase, reaching from 82.8% for examples for National Legislative Initiatives for environmental health to97.8% statement best defines environmental health justice (p=0.001).

Table (2)Test of significance of changes in students' Knowledge about environmental health throughout study phases(n=180).

Knowledge items	Phase						P Cochrane Q test
	Pre intervention n=180		Post intervention n=180		Follow up+ n=180		
	No	%	No	%	No	%	
Statement best describes environmental health	77	42.8%	173	96.1%	171	95.0%	0.001*
Statement best defines environmental health justice	85	47.2%	147	81.7%	176	97.8%	0.001*
Chemicals as dioxins, polychlorinated biphenyls ,DDT are dangerous do not break down &stay in environment for many years.	111	61.7%	156	86.7%	170	94.4%	0.001*
Impact of environmental exposure to human health	138	76.7%	146	81.1%	162	90.0%	0.003*
Most common sources of lead poisoning in children	165	91.7%	151	83.9%	167	92.8%	0.011*
Habits of children that place them in high risk for environmental health exposure	92	51.1%	159	88.3%	166	92.2%	0.001*
Nurses role in the environmental health	109	60.6%	156	86.7%	160	88.9%	0.001*
Routs commonly associated with exposure to pesticides	94	52.2%	166	92.2%	159	88.3%	0.001*
Statement best describes nursing advocacy for environmental health	92	51.1%	166	92.2%	160	88.9%	0.001*
Examples for National Legislative Initiatives for environmental health	79	43.9%	140	77.8%	149	82.8%	0.001*

P: Cochrane Q test * $P < 0.05$ (significant)

Follow up+: after one month of the intervention and the application of home visit (students were allowed to practice health education to their clients at home according to the client needs.

Table 3 shows Test of significance of the total knowledge score regarding environmental health in the pre-test, post-test and follow up, post-test and follow up. At the

pre-program phase, 43.3 % of the students had unsatisfactory level of knowledge. This improved at the post-program phase, and at the follow up phase (p=0.001).The difference was found to be significant among the three study phases , the pretest , the posttest test and the follow-up (p = .001)

Table (3):Test of significance of the total knowledge score regarding environmental health in the pre-test, post-test and follow up.(n=180)

Knowledge Level	Phase						P
	Pre n=180		Post on the day of intervention n=180		FU after one month of intervention n=180		
	No	%	No	%	No	%	
Unsatisfactory	78	43.3%	0	0.0%	0	0.0%	0.001*
Satisfactory	102	56.7%	180	100.0%	180	100.0%	
Mean ± SD	5.8 ± 2.9		8.7 ± 1.5		9.1 ± 1.1		

P: McNemar Tests of Marginal Homogeneity * P < 0.05 (significant)
Unsatisfactory: Score ≤50% Satisfactory: Score > 50%

Table (4) illustrates Environmental Health Risks Identified during Home Visit

All of the students who used the Environmental Health Risks tool stated that it was easy to use and indicated that it was helpful in identifying environmental health risks at home during their clinical home visit.. The table represents the topics that students observed and discussed with families during home visit. The table showed that more than one third of the study sample (34.1%) introduced health education to their clients regarding smoking in home followed by 32.5% regarding too many domestic animals &its food in reach of children, while only 1.6% of them on inoperative telephone.

Table (4)Distribution of the studied sample by items of Environmental Health Risk appraisal identified during Home Visit (n=123).

Environmental health risk appraisal		No n= 123	% 100.0%
I used this tool during home visit		123	100.0%
Tool was easy to use		123	100.0%
Tool was helpful in identifying environmental health risks at home		123	100.0%
Teaching areas provided in home visit	peeling paint in &outdoor	3	2.4%
	house not appropriately childproofed	11	8.9%
	children not protected from cold	33	26.8%
	evidence of bugs, rodent	29	23.6%
	evidence of pesticides, medications unsecured	31	25.2%
	smoking in home	42	34.1%
	too many domestic animals, its food in reach of children	40	32.5%
	most meals from fast food restaurants	22	17.9%
	drinking water unsafe	22	17.9%
	inadequate lighting	12	9.8%
	inoperative telephone	2	1.6%

Table 5 shows multivariate analyses of factors affecting participants knowledge about environmental health throughout study phases. The table illustrates that father`s and mother`s education recorded a significant relation with knowledge level and in addition to the receiving of formal education in environmental health.($P < 0.05$)

Table (5) multivariate analyses of factors affecting participants knowledge about environmental health throughout study phases .

Socio-demographic data		Pre		Post		FU	
		Knowledge total score					
		Mean	SD	Mean	SD	Mean	SD
Age	21-	5.29	2.69	8.61	1.48	8.83	1.34
	22-	5.85	2.86	8.67	1.49	9.18	1.11
	23	6.29	3.22	8.75	1.48	9.25	1.00
P		0.354		0.929		0.197	
Father`s education	Illiterate or read write	3.56	3.05	7.33	1.80	8.22	1.39
	Primary	4.87	2.29	8.07	1.62	8.53	1.41
	Preparatory	5.33	2.94	8.43	1.45	8.90	1.14
	Secondary	5.98	2.88	8.82	1.43	9.20	1.12
	University and more	7.24	2.39	9.36	1.04	9.80	.41
P		0.005*		0.001*		0.001*	
Mother`s education	Illiterate or read write	5.42	3.83	8.53	1.81	9.00	1.29
	Primary	5.82	2.67	8.56	1.46	8.94	1.23
	Preparatory	5.44	3.06	8.44	1.50	8.94	1.15
	Secondary	5.48	2.66	8.60	1.49	9.06	1.19
	University and more	7.42	2.26	9.46	.93	9.83	.38
P		0.050*		0.083		0.022*	
Crowding Index	1-	5.75	2.91	8.67	1.51	9.13	1.16
	2-	5.76	2.91	8.65	1.45	9.08	1.16
	3+	6.83	2.40	8.83	1.47	9.17	1.17
P		0.668		0.957		0.964	
Income	Not enough and borrow	8.79	1.00	9.68	.56	9.64	.87
	Enough	4.73	2.57	8.31	1.54	8.92	1.18
P#		0.001*		0.185		0.162	
Had formal education in environmental health	Yes	8.73	.99	9.71	.54	9.79	.63
	No	3.54	1.48	7.87	1.48	8.59	1.19
P#		0.001*		0.028*		0.096	

P#: independent samples t-test P: One Way ANOVA * $P < 0.05$ (significant)

Discussion

Nurses may be the only contact that a patient has with a health care professional, placing them in a unique position to impart considerable support and teaching related to current EH issues. The current study was performed on an exploratory basis to assist future nurses` understanding of basic environmental health . The overall results of this study demonstrate that most of the students lacked basic knowledge about environmental health. This could be related to environmental health nursing as a specialty is not valued among Egyptian nursing students as other clinical nursing specialties. Nursing personnel prefer to work in clinical settings rather than in preventive setting. These results are in agreements with that obtained in another studies which revealed that most of the participants had

unsatisfactory level of knowledge on environmental issues and there was a large knowledge gap on almost every aspect from environmental tools Ratnapradipa, Brown, Middleton& Wodika 2011; Azapagic, Perdan & Shallcross, 2005). This can be explained as nursing programs do not prepare nurses adequately to understand the impact of the environment on health or to implement environmental interventions. In the contrary in a study performed among students from 16 higher learning institutions in Malaysia(2015) indicated that all students surveyed were knowledgeable in environmental health (Ahmad, Noor&Ismail 2015). This may be due to media , educational institutions and family have crucial roles to disseminate environmental information and encourage good practice in Malaysia

Parents are powerful role models, as well as teachers for their children's behavior(Pedro, Leo, Oliva, Amado&Calvo 2013). The results of the present study pointed out that there was a significant relation between fathers', mothers' education and the students' knowledge. This could be supported by another survey conducted in Egypt by Abd El-Salam, EI-Naggar& Hussein ,2009) whose results showed that secondary school students had favorable attitudes toward the environment but lacked environmental knowledge, and that such poor environmental knowledge was significantly related to parental education level.

On studying the different knowledge items in the pretest, the majority of students knew the most common sources of lead poisoning in children .This can be explained as, This information could be introduces to them in pediatrics nursing specialty. It was also found that about three quarters of them ,their knowledge regarding issues which have impact of environmental exposure to human health. In addition, chemicals which are dangerous and stay many years in the environment represented about sixty percent. However, in the posttest and follow up phases their knowledge improved .This may be due to sufficient background from prior formal education in environmental health as in table. On the contrary, a study in South Western Nigeria by (Adebamowo, Agbede &Sridhar 2006). it was found that there was limited awareness regarding these items and participants had little knowledge of the health effects of chronic low-dose lead exposure.

Regarding routes associated with exposure to pesticides more than half of students stated the correct answer and this was improved in the posttest and on follow-up phase. In the contrary in a study performed among farmers in Tanzania reported that the majority of them had reasonably good knowledge about routes of exposure to pesticides and hazards but had poor safety practice (Lekei, Ngowi& London 2014). This difference may related to the nature of occupation, age and level of education. Several studies conducted on the effectiveness of hand washing in preventing illness (Centers for Disease Control and prevention,2016; Rosner 2015; Orak& Oksay, 2008). As a result of these researches, reminders to help prevent the spread of disease by washing hands can be seen almost everywhere, as television commercials and the internet. These public awareness campaigns and sufficient background from the nursing curriculum may contribute to most students knowing that before handling food frequent hand washing by children and the elderly remove chemicals. Nurses have a big role and recently advocated for environmental health issue, some populations “are more vulnerable to environmental risks as a result of physical differences, behaviors, location and/or control over their environment,” nurses must be particularly strong advocates for these populations (Canadian Nurses Association,2008) .The results of this study showed that about half of the students did not state the correct answer regarding the nurses role and the statement best describes nursing advocacy for environmental health. This can be explained as the nurses as advocator needs special

preparation regarding critical thinking and problem solving in addition to communication skills.

Nurses are uniquely to teach parents and children about the potential for environmental problems causing disease and injury. They may be working on one to one basis and therefore can have a more positive effect on the family's and resolve to correct serious environmental hazards (American Nurses Association ,2007).

Concerning the environmental health risk appraisal tool therefore, in this study all the students who used the tool stated that it is easy to use . Moreover, its considered helpful in identifying health environmental risks at home. The findings are congruent with who clarified that the majority of students were unable to practice using the modified EH risk appraisal tool or provide EH teaching to patients as they had not gone on a home visit during their public heath clinical rotation (Reid, 2007).

After implementation of the educational program, statistically significant improvements were shown in students' knowledge regarding all aspects of environmental health included in the program. It was shown that the attendance of the program was a positive independent predictor of both knowledge and practice to use EH risk appraisal tool. Furthermore, the improvement was gradual and further increased during the follow-up, which indicates the importance of continuity of such interventions. The findings are in congruence with other studies who demonstrated a similar success of an intervention program in improving environmental health knowledge of nursing students (Larsson& Butterfield, 2002 ; Hewitt, Candek& Engel, 2006).

Conclusion:

The current study findings concluded significant positive changes in the level of knowledge of the participants after implementation of the environmental educational program . participants introduced health education to clients on different topics such as smoking at home , domestic animals at home , too many domestic animals, its food in reach of children, children not protected from cold and evidence of pesticides, medications unsecured.

Based on findings, the study recommended:

1. Implement comprehensive environmental educational program in the curriculum of technical health institute. Students will be better prepared as nurses to assess the patients they encounter for EH risks in order to practice in most areas of nursing today

2. Further studies to knowledge and practice of nursing students regarding environmental health.

Limitations

There are several limitations in this research. Students may share answers while completing follow up. The researchers could not locate an EH questionnaire that could be duplicated for this study, therefore questions were developed and reviewed by the researchers another limitation was the time allotted for the educational intervention. It would be beneficial to allow more EH interventions during the course of a semester and to incorporate EH into the entire nursing curriculum. A total of 123 students accepted to complete the EH risk appraisal tool during a home visit during their public health clinical because.

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