Impact of Education on Health Team Knowledge of Essential Burn Care Post Course Training: An Intervention Study

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Abstract
Background: Burns are a large cause of injury world, serious complication that can lead to mortality in for patients. These complications could range from deformity and hospital length of stay and costs. Aim of the Study: The purpose of this study was to determine the impact of educational program on knowledge of doctor and nurses of essential burn care at south of west bank in Palestine. Design: A prospective educational intervention, using a pre-test and a post-test experimental design with the experimental and the control groups. Setting: This study was conducted in the south of west bank for nurse and doctors work in government sector in cities of Bethlehem and Hebron. Tools: the essential burn care test (these test from interburns organization the distribution about first total body surface area, the second for depth of burn, third fluid, fourth about surgical intervention, fifth about scar management, sixth about pain management and psychological support, and finally about nutrition for burn patient, and self-confidence. Finding A total of 205 participants for training in 2018. 27.3% from trainer doctor, and 72.7 % nurses, most of participants are age less than 40 years, 56.6% from participants work in hospitals, 43.4 % from participants work in primary health care. have poor knowledge at burn have improved after an educational intervention program (pre-intervention 52.6%versus post-intervention 90%. The self-confidence before training57%, and increase self Confidence post training to 88% about basic burn knowledge Conclusion and Recommendations: The current study shows that participant was having unsatisfactory total knowledge at the pre-program implementation, however, the score of total knowledge increased after the program. Therefore, further studies with different and large sample populations are recommended to add to these findings. Therefore, Hospital administrations in collaboration with continuous education committee should focus on establishing educational programs about burn patient.
Keywords: Burn Education, Knowledge

1. Introduction

The skin is the biggest and the main important defensive organ, as it curtains the body and acts as obstacles against the outside world. A human being's skin is the body's biggest organ, covering 3,000 square inches (about 2 square meters) and accounting for 15% of the person's total mass. Every 26–42 days, it undergoes a complete renewal as the organ grows, differentiates, and reorganizes itself (Wysocki, 2019). More severe burns require treatment, can leave scars, and increase the risk of complications like infection, scarring, and even sepsis (a life-threatening blood infection) (Mehta,2019). Dehydration: Burns make the body fluid lose, can lead to dehydration, and can change Hypothermia is a condition in which a person's body temperature dips suddenly to life-threateningly low levels. A person's skin helps control their body temperature. When a burn does a lot of damage to the skin, the heat loss can lead to hypothermia (Debra, 2018). Burn injuries are a serious public health concern around the world and are among the most destructive types of injury. After accidents, falls, and acts of violence against others, Burns are the fourth leading cause of injury in the globe. 90% of burn injuries occur in low- and middle-income countries, which generally lack the means to appropriately treat burns. (Murray, 2020). Burn-related deaths and disfigurement are on the rise throughout the WHO's Eastern Mediterranean Region, including the occupied Palestinian territory. The West Bank Ministry of Health (MoH) estimates that 7600 cases of burns occur annually in the West Bank. Among the admitted burn patients, 32.4 percent were between the ages of 11 and 20 years old, 15.4 percent were more than 21 years old, and 51.1 percent were children under the age of 10. 4 According to the same research, the bulk of burn injuries happen in the winter, and 62.3% of burn patients are female. Most nursing students may never have the opportunity to rotate through a burn's unit as part of their university or peripheral hospital internships due to the centralization of burn services in the West Bank, but may be responsible for burns management in their future careers working in emergency departments. A nurse who cares for a patient who has been burned should know what

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changes happen after a burn, be able to notice small changes in the condition of patients, and to know deal with patients. A nurse's job is very difficult and, in the end, very rewarding when it comes to caring for burn victims. There are many different skills that are neededinclude comprehensive clinical evaluation and monitoring, pain treatment, wound care, and social assistance (El-Sayed, et al., 2019).

There must be a fundamental shift in the way burn patients are managed if we are to see improved outcomes. An individual's level of knowledge of a subject can be measured in two ways: by their level of theoretical and practical understanding, and by their level of awareness or familiarity (The Concise Oxford Dictionary, 1990). It was noted that insufficient education was a factor in the non-use of evidence-based practice [2]. Patients with burns are most commonly seen at district hospitals and rural health facilities,[1] so a training program should focus on individuals who have little experience with burn care. The training of nursing and implementing the concept of burn care can accelerate burn healing and shorten the length of hospitalization and the rehabilitation process (Subrata, 2021). According {Lam, 2018} study indicates limitations and insufficiencies in physicians' knowledge of emergency burn management and mass burn injury response, especially among those working in primary healthcare facilities. Training courses significantly contribute to improving their knowledge. It is necessary to conduct continuing medical education for all grades of doctors, regardless of their working experience. Burn wounds have come to exceptional levels within the West Bank and Gaza Strip. While there have been endeavors to advance avoidance through mindfulness focusing on primarily moms and children, there remains a noteworthy issue and proceeded disturbance of control supplies, alternative cooking, lighting and warming together with damaged/inadequate framework (counting living settlement) all contribute to the tall frequency of burn wounds, particularly among children. In the West Bank, there are around 76,000 burn wounds yearly. Among those, more than 65% are children (report - MoH, 2020). Most burn wounds, almost 72%, are a result of singe burns from hot water, and almost 21% are flame-related (MoH, 2013). Ordinarily, the sort of injury is related to the age of the persistent, as children are more likely to induce burn wounds, and flame-related wounds are more likely to happen in grown-ups (MoH, 2013).

Research to classify the epidemiology and effects of burn victims between 2016 and 2017 in a large burn center in the south of the west bank. Our results found that children under the age of 14, women, winter activities, and scald burns could get more care in the future to avoid burn injuries. In addition, it is important to follow individualized burn prevention and recovery methods focused on risk factors such as full-thickness burns, burns with greater TBSA, older age, higher number of operations and better performance. Since the majority of burn accidents are household, prevention and awareness services should concentrate on mothers and stress the value of protection and treatment, (Qtait and Alekel 2018). Training in basic burning treatment for individuals who access burns patients and visit patients not sent to specialty facilities for emergency work. The goal of this study is, therefore, to evaluate the efficiency of the organized education program in West Bank hospitals to deal with the burn of knowledge of nurses in the emergency department.

2. Study Setting

The setting for this study was conducted in this study was conducted in the south of west bank for nurse and doctors work in government sector in cities of Bethlehem and Hebron. This occurred for, 2018. Whereas the post intervention assessment was conducted in during 2018.

Study Design: A prospective educational intervention, using a pre-test, a post-test with the experimental, and the control groups. A total of 205 participants were randomly assigned to the control group (n= 205) and the intervention group (n = 205).

Sample and Sampling Method: The non-probability sample (purposive sample) of all nurses and doctors working in ministry of health Southern West Bank Hospitals and primary health care and internship. The participated in the study through completion of a questionnaire. The sample was randomized to either intervention or control group before distributing the questionnaire on pre-test.

Tools: The essential burn care test (these test from interburns organization the distribution about first total body surface area, the second for depth of burn, third fluid, fourth about surgical intervention, fifth about scar management, sixth about pain management and psychological support, and finally about nutrition for burn patient, and self-confidence.

Procedure: Initially, permissions from selected hospitals administration (MOH) were obtained to introduce their total approval to conduct this study. The researcher distributed the questionnaires by himself. The questionnaire sheet was filled individually and completed by the study participants while they were on duty. The data were collected pre and post intervention of multimodal intervention, starting 2018 (pre-Intervention phase). The essential burn care test (these test from interburns organization the distribution about first total body surface area, the second for depth of burn, third fluid, fourth about surgical intervention, fifth about scar management, sixth about pain management and psychological support, and finally about nutrition for burn patient, and self-confidence.

Statistical analysis: Data analyses were performed by using version 22 of the Statistical Package for Social Sciences (SPSS). The purpose of this analysis was to answer the research questions. Descriptive

statistics were computed to answer the first question, "what are the levels of the mean scores knowledge on prevention of essential burn care among health team in both the intervention and control groups at pre-intervention in South West Bank Hospitals?" Percentages of correct and incorrect answers were computed to determine participants' level of knowledge regarding essential burn care. Mean and standard deviation (SD) scores of health team knowledge as related to their gender, place of work, and years of experience were calculated. Multifactorial ANOVA was utilized to answer the second question.

Validity and Reliability: The researcher was checked the reliability through two ways. First: Pilot testing an instrument (questionnaires) of the study was done. The researcher was taken a purposive sample of 15 nurses and doctor working in private hospital in Al-ahli Hospital. Results of the analysis were positive because the questions were clear and understandable.

Second: to evaluate the reliability of the knowledge questionnaire, cronbach's alpha coefficient was used. Stability and consistency of the tool: reliability coefficient was calculated for the whole tool; results are shown in Table (4.3).

Table 1: Reliability Statistics of the to		
Tool	Cranach's Alpha	Number of Items
Knowledge of burn	0.824	26

3. Ethical considerations

Ethical considerations of the study have been addressed by implementing the following measures:

1. Ethical approval was obtained from ministry of health continues education and this program of teaching follow to continues education in ministry of health.
2. Informed consent of participants has been obtained before involving them in the study, Informed consent is intended to protect the participants' autonomy, integrity, and prevent any harm.
3. Each participant was informed about the purpose, and the nature of the study.

The participants were informed that their participation is totally voluntarily and they can withdraw from the study at any time, and confidentiality and anonymity of the subjects was assured.

4. Validity of the Study

The researcher was used content validity taken from interburns and the course of essential burn care is international.

5. Result

Table 2: Socio-demographic characteristics of the respondents (n = 205)				
Characteristics	Pre-Test (n=205)		Post Test (n = 205)	
	No. of participant (n)	(%)	No. of participant (n)	(%)
Gender				
Male	68	66.8	137	66.8
Female	137	33.2	68	33.2
Previous Training				
Yes	0	0		
No	205	100%		
Special				
Doctor	56	27.3	56	27.3
Nurse	149	72.7	149	72.7
Place of work				
Hospital	116	56.6	116	56.6
Primary health care	89	43.4	89	43.4

6. Study Population

The population included all participant (N=205) working in as health team doctor and nurses in hospital and primary health care for the intervention group, with 66.8% from participant male. 33.2% female. 100 % from participant ant take previous training special in burn, 27.3 % from participant's doctors, and 72.7% nurses, 56.6% from participants work hospitals. 43.6% work in primary health care

Table 3: result of pretest and post test					
	N	Mean	Percent	Std. Deviation	Confidence
Pre-Test	205	13.6927	52.6%	1.85456	57%
Post Test	205	23.3707	90%	1.42083	88%
Total	205				

The general result of pre -test 52.6% its low, post-test result 90% is high, self-confidence before

training 57%, and post training is high 88%

Table 4: the result of pretest and posttest for male and female, specialty, and occupation					
	SEX	N	Mean	Std. Deviation	Std. Error Mean
PRETEST	Male	68	13.1912	1.73856	.21083
	Female	137	13.9416	1.86597	.15942
Post test	Male	68	23.5147	.98485	.11943
	Female	137	23.2993	1.59210	.13602
	specialty	N	Mean	Std. Deviation	Std. Error Mean
PRETEST	Doctors	56	12.9464	1.80323	.24097
	Nurse	149	13.9732	1.80070	.14752
TEST	Doctors	56	23.3393	1.21021	.16172
	Nurse	149	23.3826	1.49593	.12255
	occupation				
Pre-Test	Hospital	116	13.2118	1.75319	.19016
	community health	89	14.1685	1.86618	.19781
	Total	205	13.6927	1.85456	.12953

The result of pretest between male and female, the same no different, and result between doctor and nurses and between occupation place.

Table 5: according to the question distribution			
Health area	Pre-test Score (%)	Post-test Score (%)	P value
total body surface area **(3)**	51	96	<0.001
depth of burn **(4)**	50	92.0	<0.001
fluid **(6)**	54	92	<0.001
surgical intervention **(6)**	38	90	<0.001
scar management **(2)**	38	92	<0.001
pain management **(2)**	52	94	<0.001
psychological support **(1)**	51	93	<0.001
Nutrition **(2)**	50	93	<0.001
Self confidence	5/10	8.5/10	

The essential burn care test (these test from Interburns organization the distribution about first total body surface area, the second for depth of burn, third fluid, fourth about surgical intervention, fifth about scar management, sixth about pain management and psychological support, and finally about nutrition for burn patient, and self-confidence. The result in general low, but very low in surgical intervention 38%, and scar management38%

Table 6: One-way according to place of work									
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Pre-Test	Hospital	116	13.2118	1.75319	.19016	12.8336	13.5899	6.00	16.00
	community health	89	14.1685	1.86618	.19781	13.7754	14.5617	9.00	18.00
	Total	205	13.6927	1.85456	.12953	13.4373	13.9481	6.00	18.00
Post Test	hospital	116	23.4824	1.01901	.11053	23.2626	23.7021	20.00	25.00
	community health	89	23.2472	1.79824	.19061	22.8684	23.6260	18.00	26.00
	Total	205	23.3707	1.42083	.09923	23.1751	23.5664	18.00	26.00

		Sum of Squares	df	Mean Square	F	Sig.
Pre-Test	Between Groups	41.786	3	13.929	4.243	.006
	Within Groups	659.853	201	3.283		
	Total	701.639	204			
Post Test	Between Groups	7.333	3	2.444	1.215	.306
	Within Groups	404.491	201	2.012		
	Total	411.824	204			

The result according place work hospital or community no difference according place of work

7. Discussion

General knowledge

The present study confirms that the general knowledge regarding burn in pre-test is unsatisfactory. At pre-test, nurse and doctor in both, the pre- test and post- test, took that same test at

baseline and both groups displayed almost similar results. Health team nursing and doctors (n=205) answered 52.3% of the 26 items correctly for the general knowledge regarding burn, while the posttest answer correctly 89.6% .

Those results indicate that nurses and doctor in both intervention groups at Southern West have poor general knowledge regarding burn at baseline, which shows that there is a need of educational intervention programs in order to improve their knowledge level, which is in line with previous many studies, (Potokar, et al, 2010).

Regarding the assistance of burn patients, the correct administration of initial care is extremely important to prevent the progression of burns and their associated squeal in both the short and long terms. For that, general knowledge of the appropriate initial care procedures in this area is universally poor, especially among health workers in emergency units (Tay, et,al, 2013).

The training program for team increase knowledge and improve care for patient and that accept of study (Ahuja, et,al, 2004).

Knowledge in pretest in general low but very low in surgery, and scar management that's related 72% nurses and doctors not specialist in burn, in the post test knowledge high in all sector, for low result regarding the burn unite not available in every hospital it central in south and north of west bank, that's most of student not take training in burn, accept with study of (MEGO, et,al, 2022). The results of study, (MEGO, et,al, 2022). highlighted that participant who had completed training showed a better theoretical knowledge of treatment protocols in several areas (such as burn depth estimation, and referral criteria), and performed better in several aspects (e.g., mentioning hypothermia as a focus of attention, correct use of hand size to estimate total body surface area (TBSA) when treating the simulated burn victim, as compared to those without training. However, both groups for example, over-estimated the TBSA and lacked knowledge of the correct/specific formulae for fluid resuscitation. The authors concluded that both groups of participants demonstrated a need for additional training in burns resuscitation, or EMSB related principles. That accept with study of (Oh, D., & Choi, Y. J. (2022), 5the nurses' knowledge of burn and nursing care were moderately adequate at Azady hospital in compare to adequate knowledge at western hospital knowledge regarding treatment showed adequate knowledge at both hospitals and their knowledge of complication of burn were moderately adequate at both hospitals.

And according to place work hospital or primary health care no difference according place of work.

Although the results of this investigation indicate no statistically significant association between the extent of nursing and doctors' knowledge and the demographic variables, important differences were found for the variables concerning income and employment. That accept with study (Atuhaire, et,al, 2022).

8. Conclusion and Recommendations

The current study shows that participant was having unsatisfactory total knowledge at the pre-program implementation, however, the score of total knowledge increased after the program. Therefore, further studies with different and large sample populations are recommended to add to these findings. Therefore, Hospital administrations in collaboration with continuous education committee should focus on establishing educational programs about burn patient, and increase training in special course that related to burn for nursing and doctor work in hospital and primary health care .

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