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Original Research Article

Effectiveness of planned teaching programme on knowledge and practice regarding secondary survey of trauma patients among trauma nursing officers

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ABSTRACT

Background: Secondary survey is crucial for quickly and methodically evaluating damaged patients from head to toe, discovering any injuries that were underlooked in the first survey, and quickly and methodically evaluating polytrauma patients when it's unclear what's causing their symptoms. The study aimed to assess the knowledge and practice of secondary survey in nursing officers in AIIMS Rishikesh.
Methods: This pre-experimental (one group pre-test and post test research) study was conducted to assess the effectiveness of planned teaching programme. 30 minutes of secondary survey class followed by demonstration of same. Using non- probability convenient sampling technique, total of 133 nursing officers were selected from Trauma Center of AIIMS Rishikesh. Self structured questionnaire was given to participants and practice was assessed using practice checklist.
Results: The pre-test and post-test mean knowledge was found 14.08 and 18.40 and mean practice was 12.51 and 31.11 indicating the enhancement of knowledge and practice (t_{cal} 130.28 >t_{table}1.98 at p <0.05). Difference between pre-test knowledge (14.08±2.455) and Pre-test practice (12.51±5.188) indicate adequate knowledge with inadequate practice.
Conclusions: The study concluded that the secondary survey knowledge and practice improves with adequate guidance and information. So, there is need for regular training session for trauma nursing officers to sustain this information and practice enhancement can be done by regularly implementing practice checklist in documentation.

Keywords: Knowledge, Nursing officers, Practice, Trauma-care, Trauma-patients, Secondary survey

INTRODUCTION

Worldwide more than 5 million people die each year from trauma, and about 1 billion people need medical attention for injuries. For comparison, the global burden of injury causes 32% more fatalities than HIV/AIDS, TB, and malaria. Trauma is also the top cause of disability-adjusted life years among people aged 5 to 45. Premature deaths and ongoing disabilities brought on by trauma injuries have a significant financial impact.[1]

Important steps are missed during the resuscitation of trauma patients, which can cause a delay in diagnosis or an error in diagnosis, which can increase the length of stay in the intensive care unit, morbidity, and death. More precisely, it has been shown that mistakes made in the

initial evaluation of trauma patients account for up to 91% of all preventable trauma deaths.[2]

The primary cause of death worldwide is trauma. In the US, it accounts for 10% of all fatalities, both male and female. When evaluating trauma sufferers, a methodical and structured approach is required. When giving them care, nurses, medical experts, and support staff must work together and communicate effectively. Examining trauma victims has two basic goals: stabilising the patient and identifying any immediate threats to their lives.[3]

A trauma patient's assessment is broken down into a primary and a secondary survey. Life-threatening and fatal injuries are identified and treated at the same time in the primary survey. All other injuries are assessed in the secondary survey.[4]

The primary survey should begin with the patient's arrival, a quiet room, and a brief presentation of the patient's condition and results by the HCW. The American College of Surgeons created Advanced Trauma Life Support (ATLS), which advocates ABCDE-airway, breathing, circulation, disability, and exposure-as the core survey sequence.[3]

After the patient condition is stabilized and there is no immediate surgical intervention required, a secondary survey is done. [3] The client is thoroughly examined from head to toe during the secondary examination, and further radiographs of the thoracic and lumbar spine and of the extremities are taken.[4]

The four most commonly overlooked diagnoses during primary survey are penetrating thoracic trauma, blunt abdominal trauma with internal organ injury, penetrating abdominal trauma, and trauma to the extremities such as fractures and compartment syndrome. The additional history should include the patient's past medical and surgical history, medications, and allergies. If at all possible, enquire about the particulars of the traumatic incident and the damage mechanism; allow this information guide the remainder of the secondary assessment.[3]

According to a recent study, only 22% of level 1 pediatric trauma primary surveys at pediatric trauma centers were done. Carter et al also demonstrated that only 13% of resuscitations successfully completed all primary and secondary objectives. These studies show a gap in the ATLS care's first stages.[5]

The approach for the injured patient has included primary survey and resuscitation, secondary survey, and definitive treatment. In the secondary survey, a complete physical examination is performed for the patient from head to toe and front to back. It has historically considered fundamental trauma radiology (chest, pelvic, and C-spine X-rays), and is anticipated to identify the majority of common injuries.[6]

Ninety-three suitable patients were included in a retrospective study on the management of major trauma patients in line with secondary survey requirements. Poor compliance may be explained by doctors' unfamiliarity with the secondary survey's detailed components and their lack of accountability for recording the survey's items in their documentation.[2]

By deploying organised trauma teams for management of major trauma, efforts are made to improve trauma care. For the group to be effective all members of the team should be knowledgeable in trauma treatment and use the same language. It is believed that by recognising our knowledge and practice gaps, we will be more equipped to handle the upcoming difficulties. An essential component of hospital practise is trauma treatment. For patients with multiple injuries, many neighbourhood hospitals have a coordinated team approach. A hospital-based education programme helps staff members learn more about trauma care while also fostering teamwork among them by educating them to communicate in a similar language.[7]

A missed injury is more common in patients with serious injuries sustained in auto accidents, particularly in those with multiple trauma injuries and head traumas. Missed injuries are those clinically significant injuries that was not identified on admission to emergency and also not documented in emergency records, but discovered when patient is transferred to the trauma ward. Among one of the international published literature it focused that the incidence of missed injuries ranges from 1.3% to 13%.[8]

Therefore, the secondary survey is crucial for quickly and methodically evaluating damaged patients from head to toe, discovering any injuries that were overlooked in the first survey, and quickly and methodically evaluating critically ill patients when it's unclear what's causing their symptoms. After the secondary examination is finished, interventions for illnesses or injuries found there should be given priority and started.

Secondary survey helps to obtain past historical data about the patient and about his injury and also help to evaluate and treat injuries that was missed during primary survey. So overall it is helpful for proper treatment and management according to priority and severity of injury.

This study aimed to assess the pre-test knowledge and practice regarding secondary survey of trauma patients among nursing officers, to assess the post-test knowledge and practice regarding secondary survey of trauma patients among nursing officers. Also, to find-out the association between pre-test and post-test knowledge and practice score and to find out the association between pre-test knowledge and practice score with their selected socio-demographic variables.

METHODS

Study area

A pre-experimental (one group pre-test and post test research design) study conducted in the AIIMS, Rishikesh, Uttarakhand.

Study period

Study was conducted for the period of five months i.e. March 2023 to June 2023 were included in the study.

Study subjects

Nursing officers posted in trauma center of AIIMS Rishikesh were included in to the study. Data collection started after getting ethical permission from ethical committee of AIIMS Rishikesh.

Inclusion criteria

Nursing officers who are willing to participate in study and available during data collection were included.

Exclusion criteria

Nursing officers who are on leave during study, not willing to participate and not available at the time of data collection were excluded.

Development and description of the tool

Included, Part 1-: Socio-demographic data sheet, Part 2- Questionnaire regarding secondary survey of trauma patients and Part 3- Practice checklist regarding secondary survey of trauma patients.

Method of data collection

Includes, Phase 1:- After obtaining an informed consent from ethical committee and sample, baseline socio-demographic data will be collected. Phase 2: Pre-test knowledge and practice score will be collected to study subjects. Phase 3-Distribute pamphlet and teach regarding steps of secondary survey to study subjects. Phase-4: Post-test knowledge and practice score will be collected to study subjects.

Sample and sampling technique

Non-probability convenient sampling technique were used.

Sample size

According to Yamane formula:

$$n = \frac{N}{1 + N(e)^2}$$

Here, n=sample size, N= population size, e= margin of error, n= 200/1+200(.05)2, n=133, Sample size= 133.

Data analyses

The data will be analyzed using appropriate descriptive and inferential statistics to get the result.

RESULTS

Description of demographic variable of the sample

Table 2 shows the mean pre-test and mean post-test knowledge is 14.08 and18.40, with standard deviation of 2.455 and 1.279.

Table 1: Frequency and percentage distribution of sample according to demographic variable (n=133).

Demographic variable		Frequency (f)	Percentage (%)
Age in years	20-25	11	12.8
	26-30	89	66.9
	31-35	25	18.8
	>35	2	1.5
Gender	Male	74	55.6
	Female	59	44.4
	Other	0	0
Educational status	G.N.M	23	17.3
	B.Sc. Nursing	103	77.4
	M.Sc. Nursing	5	3.8
	Others	2	1.6
Trauma ward working experience (in year)	1-2 Year	91	68.4
	3-4 year	29	21.8
	5-6 year	8	6.0
	>6 year	5	3.8
Previous information	Yes	72	54.1
	No	61	45.9
Source of information	Clinical teaching	65	48.9
	Through research	01	0.8
	TV/News	02	1.5
	Others	04	3.0

Data presented in Table 3 shows the majority of nursing officers are having moderate knowledge in pre-test and 100% nursing officers score ranging between 15-21 (71.4% - 100%) had adequate level of knowledge in post-test.

Data presented in Table 4 shows majority of the nursing officers are having inadequate practice score in pre-test and majority (89.5%) of nursing officers score adequate level of practice in post-test.

Table 2: Knowledge and practice level of nursing officers before and after implementing planned teaching programme (n=133).

	Pre-test			Post-test		
	Mean	Percentage	SD	Mean	Percentage	SD
Overall knowledge	14.08	59.38	2.455	18.40	83	1.279
Overall practice	12.51	67.5	5.188	31.11	97.5	3.141

Table 3: Frequency and percentage distribution of pre-test and post-test knowledge score of Nursing officers (N=133).

Level of knowledge	Score range	Pre test		Post test	
		Frequency, n=133	Percentage	Frequency, n=133	Percentage
Inadequate knowledge	0-7 (0% - 33.3%)	3	2.3	00	00
Moderate knowledge	8-14 (38% -66.6%)	74	55.6	00	00
Adequate knowledge	15 -21 (71.4%-100%)	56	42.1	133	100

Table 4: Frequency and percentage distribution of the pre-test and post-test practice score of nursing officers (n=133).

Level of practice	Score range	Pre-test		Post test	
		Frequency n=133	Percentage	Frequency n=133	Percentage
Inadequate practice	00-13 (00% - 35.1%)	81	60.9	00	00
Moderate practice	14-26 (37.8% - 70.2%)	52	39.1	14	10.5
Adequate practice	27-37 (72.9% - 100%)	00	00	119	89.5

Table 5: Comparison of pre-test and post-test mean knowledge score (n=133).

Knowledge score value	Mean	SD	t-value	Df	Level of significance
Pre-test	14.08	2.455	25.902	132	0.000
Post test	18.40	1.279			
Significant at p<0.05					

Table 6: Comparison of pre-test and post-test mean practice score (n=133).

Practice score value	Mean	SD	t-value	Df	Level of significance
Pre-test	12.51	5.188	36.653	133	0.000
Post test	31.11	3.141			

Significant at p<0.05

Table 7: Association between pre-test knowledge score of nursing officers and their socio-demographic variable through chi-square (n=133).

Demographic variables	N	Knowledge score			Df	t value	P value
		Inadequate	Moderate	Adequate			
Age (in year)							
20-25	17	6	11	0	6	12.59	0.001
26-30	89	39	48	2			
31-35	25	10	15	0			
>35	2	1	0	1			
Gender							
Male	74	30	42	2	2	5.99	0.868
female	59	26	32	1			

Continued.

Demographic variables	N	Knowledge score			Df	t value	P value
		Inadequate	Moderate	Adequate			
Others	00	00	00	00			
Educational status							
G.N.M	23	10	12	1	8	15.50	0.832
B.Sc. Nursing	103	41	60	2			
M.Sc. Nursing	5	3	2	0			
Others	2	2	0	0			
Trauma ward working experience							
1-2 years	91	37	53	1	6	3.84	0.066
3-4 years	29	11	17	1			
5-6 years	8	6	2	0			
> 6 years	5	2	2	1			
Previous information							
Yes	72	35	35	2	2	5.99	0.471
No	61	21	39	1			
Source of information							
Clinical teaching	65	31	32	2	8	15.50	0.807
Research	01	0	1	0			
TV/News	02	0	2	0			
Others	04	1	3	0			

Table 8: Association between the pre-test practice score of nursing officers and their socio-demographic variable through chi-square (N=133).

Demographic variables	N	Knowledge score			Df	t value	P value
		Inadequate	Moderate	Adequate			
Age (in year)							
20-25	17	7	10	00	3	7.81	0.312
26-30	89	58	31	00			
31-35	25	15	10	00			
>35	2	1	1	00			
Gender							
Male	74	46	28	00	2	5.99	0.739
Female	59	35	24	00			
Others	00	00	00	00			
Educational status							
G.N.M	23	17	6	0	4	9.49	0.213
B.Sc. Nursing	103	60	43	0			
M.Sc. Nursing	5	4	1	0			
Others	2	0	2	0			
Trauma ward work experience							
1-2 years	91	56	35	00	3	7.81	0.645
3-4 years	29	17	12	00			
5-6 years	8	6	2	0			
>6 years	5	2	3	00			
Previous information							
Yes	72	44	28	00	1	3.84	0.482
No	61	37	24	00			
Source of information							
Clinical teaching	65	41	24	2	4	9.49	0.515
Research	01	0	1	0			
TV/News	02	2	0	0			
Others	04	2	2	0			

Data shows that the calculated t value (25.902) is more than the table value at 0.05 level of significance. Therefore the planned teaching programme was effective in increasing the knowledge level among nursing officers regarding secondary survey. Hence the H_1 is accepted (Table 5).

Data shows that the calculated t value (36.653) is more than the table value at 0.05 level of significance. Therefore structured teaching programme was effective in increasing practice level among nursing officers regarding secondary survey. Hence H2 is accepted (Table 6).

Table 8 shows, there was no association between practice score with their demographic variable. Hence the research hypothesis (H4) not accepted.

DISCUSSION

To decrease morbidity and mortality one should be familiar with the process of trauma assessment. Health care workers should be trained in the efficient and thorough assessment process, as traumatic injuries are seen in daily emergency department. India accounts for more than 20% of all trauma deaths worldwide, where it has been determined that injuries are a significant public health issue. In addition, a Delphi analysis of injury-related fatalities in India found that more than half of the cases might have been avoided.[1]

Missed injuries have a negative impact on patient outcomes, increasing hospital stays and costs as well as rates of death and morbidity. One way to reduce the number of missing injuries is by optimal secondary survey, and treating patients with numerous traumas is the gold standard of treatment that can save a patient's life and decrease mortality. Rapid assessment and management performed by ED staff include doctors and nurses using primary and secondary surveys as described in the Advanced Trauma Life Support Manual (ATLS).[8,9]

The demographic data of study participants shows, majority of nursing officers between age group 26-30 years, with more male nursing officers with basic educational qualification is BSc Nursing. The trauma working experience is 1-2 years and majority of them have source of information as clinical teaching. Furthermore, the finding of the above study is that the pre-test and post-test mean knowledge was found to be 14.08 and 18.40 and mean practice was found to be 12.51 and 31.11, indicating the enhancement of knowledge and practice. In this study, it was found that there was a significant increase in knowledge among nursing officers after administrating planned teaching programme regarding secondary survey.

The study shows majority of nursing officers have moderate knowledge and inadequate practice score in pre-test. The calculated knowledge t-value (25.902) and practice t-value (36.65) is much more than the table t-value at 0.05 level, so it is said that the study is highly significant in enhancement of knowledge and practice.

A study on missing injuries in a level I trauma centre was to ascertain the number, causes, and consequences of these injuries. Advanced Trauma Life Support guidelines are followed when doing resuscitation, and specifics are recorded in both the patient's diary and a dedicated trauma journal. The findings indicate that 86 overlooked injuries occurred in 64 out of 786 individuals (incidence: 8.1%). The median ISS was 17 (range, 4-50); 14%, 38%, and 48% of the injuries were missed in primary, secondary, and tertiary surveys, respectively.[9]

The data indicate that more comprehensive and effective intervention should be implemented within the scope of nursing practice. In order to eliminate wrong practice, it may be recommended to provide training to the nursing staff regularly. Especially trauma nurses, who spend the most time with trauma patients in the trauma department, can take an active role in identify missed injuries.

This study has few limitations. One of the limitations of the study is that the samples were selected from the population using the non-probability convenient sampling method. Thus, the results of the study are applicable only to the trauma nursing officers and they cannot be generalized to all nursing officers.

CONCLUSION

Study concluded that missed injuries can occur at any stage of the management of patients with major trauma. Repeated assessments, both clinical and radiologic, are mandatory to diminish the problem.

Recommendations

On the basis of the present study the following recommendation are formed for future study: 1) This study can be manifold with a large number of sample for better generalization, 2) A similar study could be manifold on sample with different demographic characteristics and different tactics.

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