

Assessment of Nursing Staff's Knowledge, Practice and Attitude of Nursing Staff about Infection Prevention and Control Measures in Emergencies



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1.ABSTRACT

Sometimes nurses may be in a hurry to save a patient's life in an emergency condition. Application of normal procedure; standard precaution may not be performed. Therefore, they should have competencies in knowledge, attitudes and practice about infection prevention and control in health care setups. So this study aimed to assess nursing staff's knowledge, practice and attitude about infection prevention and control measures in emergencies. A cross sectional study design was carried out in all departments belonged to Mansoura Health Insurance Hospital affiliated to Ministry of Health, and Population, a convenient sample technique included all on job nursing staff (400), using four tools to assess nursing staff's socio-demographic and occupational characteristics, as well their knowledge, attitude and practice about infection prevention and control measures in emergencies. Results: illustrates that 94.5% and 100% of nursing staff had poor score level of knowledge and improper practice regarding infection prevention and control measures in emergencies respectively with total attitude score of 39.55 (5.54). It is concluded that; most of nursing staff have poor score level of knowledge and all of them had improper practice relating infection prevention and control measures in emergencies. Nursing staff illustrate negative attitude more than positive one towards infection prevention and control measures in emergencies. Finally; on job training program to nursing staff on infection prevention and control in emergencies, equip and supply health care settings with all requirements to apply and adhere to infection prevention and control in emergencies and emphasize on hand hygiene as a milestone in infection prevention and control in emergencies, were recommended.

Keywords: Attitudes, Knowledge, Infection prevention and control, Nursing Staff, Practices

2.Introduction:

Emergency medical conditions typically occur through a sudden insult to the body, often through injury, infection, or chemical imbalance; they may occur as the result of persistent neglect of chronic condition (Olive et al., 2014). Emergency medical care is the provision of medical care to

patients with life threatening conditions who require urgent treatment (European Health for All Database, 2015). Emergency medical services are one of the higher profile aspects of the health system as they are the first point of contact with the health system for many people (Okma, Cirivelli & Dutch, 2013).

Emergency care is the sum of all efforts to deliver effective health action in response to extreme risk under intense time pressure (International Federation for Emergency Medicine, 2013). Emergency care, which may be delivered in crisis situations with poor practice of infection control measures and ineffective use of resources, may be inefficient and can lead to transmission of infectious diseases, disability and death for both patients and health care providers (Olive et al., 2014).

The emergence of life-threatening infectious cases such as severe acute respiratory syndrome

and other infectious diseases like tuberculosis have highlighted the need for efficient infection control programs in all health care settings especially in emergency situations (World Health Organization [WHO], 2014). Standard precautions are required for health care workers that the blood and body substances of all patients are potential sources of infection (Weinstein, Hierholzer & Garner, 2014).

Hazardous situations of exposure to biological material and all body fluids related to medical services that applied in emergency situations due to lack of adherence to standard precautions are well defined for general hospitals as a big problem which should be solved (Figueiredo & Maroldi, 2013). Infection control should not be understood as its performance and followed waste time in emergency situations of hospital care, but rather as integrated and rapid response at all emergency situations (National Institute for Health and Clinical Excellence, 2014).

Sometimes nurses may be in a hurry to save a patient's life in an emergency condition. Application of normal procedures for standard precaution may not be performed. Most of the participants agreed that when there was an emergency condition they were unable to follow

the normal procedure. In addition, the emergency situations create shortage of time to perform appropriate standard precautions (WHO, 2016).

It is very important to protect all workers in the hospital and each relevant sector should provide the necessary financial resources for the implementation, maintenance and supervision of effective adherence to infection prevention and control in emergencies. This will be accomplished through increase awareness, educate, and provide guidance to emergency medical services providers who are at risk for occupational exposure to blood, other potentially infectious materials and infectious diseases (Merlin et al., 2016). As well, WHO, (2013) recommended continuous education and training of healthcare workers in order to improve their knowledge and practice resulting in controlling infection.

Aim of the study

The aim of this study was to assess nursing staff's knowledge, practice and attitude of about infection prevention and control measures in emergencies.

Research Questions:

1. What is nursing staff's knowledge level about infection prevention and control measures in emergencies?
2. What is nursing staff's practice level about infection prevention and control measures in emergencies?
3. What is nursing staff's attitude level about infection prevention and control measures in emergencies?

3. Method

Study Design:

A cross sectional study design used to conduct this study.

Setting:

This study conducted in Mansoura Health Insurance Hospital affiliated to Ministry of Health, and Population. All departments in the hospital will be included, which were; ICU, general wards, emergency room, and operative room.

Nurses patient's ratio in the hospital was (one nurse: two patients in ICU), (one nurse: eight patients in general wards), (one nurse: four patients in emergency room) and (two nurses: one patient in operative room).

Participants:

Nursing staff in Mansoura Health Insurance Hospital under the following criteria:

- Both genders
- Assigned to give direct care to patients
- Different qualification
- At least one-year experience

Sampling:

1. Sampling technique and sample size of the nursing staff:

A convenient sample technique included all on job nursing staff (400) to assess their knowledge, practice, and attitude about infection prevention and control measures in emergencies.

Study Tools:

After reviewing the relevant literatures four tools were developed by the researcher and used in this study for data collection.

Tool I: Nursing staff's sociodemographic and occupational characteristics self-administrated questionnaire:

This questionnaire was used to assess socio demographic and occupational characteristics of nursing staff such as; age, gender, residence, education level, year of experience, previous experience about emergency situations and policies implemented in emergency situations. and problems they face when adhering to the infection prevention and control measures in emergencies.

Tool II: Nursing staff's knowledge self-administrated questionnaire:

According to Bekele, Yimam and Akele, (2018); Marschall et al., (2016) and Vaz., (2013) this tool developed by the researcher to assess nursing staff's knowledge regarding infection prevention and control measures in emergencies as: types of hand washing, types of PPE, safe disposal of sharp waste and measures for prevent transmission of infection in different emergency procedures.

Scoring system: one mark awarded for each correct answer. Knowledge ranged from 0 to 40. Based on the researcher cut of point the knowledge levels were consisted of three categories as the following:

Poor < 60% of total scores (< 24)

Fair = 60% to 80% of total sores (24 - 32)

Good > 80% of total scores (> 32)

Tool III: Observation check list to measure nursing staff's practice:

Based on Bekele, Yimam and Akele, (2018); Pretoria, (2013) and Vaz et al., (2013) this checklist was developed by the researcher to assess nursing staff's practices related to infection

prevention and control measures in **emergencies**. It was consisted of 14 parts including practice for: hand washing, measuring blood pressure, cardiac monitoring, supplying oxygen inhalation, intravenous insertion and venipuncture, safe injection, needle sticks injury, suction, endotracheal tube, inserting a nasal-gastric tube, gastric lavage, chest tub insertion, central venous catheter insertion and urinary catheter insertion

Scoring system: one mark awarded for each proper step. The total scores of the practice ranged from 0 to 170. Based on the researcher cut of point the practice levels were categorized into two categories as: proper, and improper as the following:

Proper: 75% or more of total scores (≥ 127.5)

Improper: less than 75% of total scores (< 127.5)

Tool IV: Nursing staff's attitude self-administrated scale:

As for Bekele, Yimam and Akele, (2018); Marschall et al., (2016), and Parmeggiani, Abbate, Marinelli and Angelillo, (2013) this scale was developed by the researcher to assess nursing staff's attitudes toward infection prevention and control measures in emergencies including for examples; (perceived benefits, perceived barriers and preserved concept).

It was consisted of three parts including attitude regarding the perceived benefits of infection prevention and control measures (6 items), barriers (7 items) and concept (10 items). All 23 statements requiring a response on a 4-point Likert- rating scale with 4 continuum (Strongly Disagree=1, Disagree=2, Agree=3, Strongly Agree=4).

Scoring system. It was used to quantify the nursing staff's attitude which made up a total score of 23 mark. Based on the researcher cut of point the attitude levels were categorized into two categories as: negative, and positive as the following:

Negative: less than 60% of total score. (Less than 13.5)

Positive: 60% of total score and more. (13.5 or more)

Phases of the Study

This study was accomplished throughout two main stages

I- Preparation stage

Administrative process

An official letter from the Faculty of Nursing was submitted to the Director of Mansoura

Health Insurance Hospital affiliated to Ministry of Health, and Population to obtain their approval for conducting the study.

The director was informed about the aim of the study and its process in order to gain their cooperation and support during data collection.

Literature review

Review of national and international literatures on the various aspects of the infection prevention and control measures in emergencies, using scientific published articles, internet search and textbooks. This review was a guide for developing the study tools.

Developing of the study tools

- Tools of data collection (I, II, III, and IV) were developed by the researcher based on reviewing the relevant literature.
- **Face and content validity.** According to Litwin, (1995); Maruish, (2011); Miller, (2010); Polit and Beck, (2006) and Tavakol and Dennick, (2011) face validity is established when an individual (and or researcher) who is an expert on the research subject reviewing the questionnaire (instrument) concludes that it measures the characteristic or trait of interest. Content validity pertains to the degree to which the instrument fully assesses or measures the construct of interest. Study tools tested for appropriateness and to have relevant items, by five experts in related fields of the study.
- The reliability of the study tools was measured by using the Cronbach's alpha test, its results as the following:
 - Reliability of knowledge questionnaire was 0.35.
 - Reliability of practice observation chick list was 0.83.
 - Reliability of attitude scale was 0.80.

Pilot study

A Pilot study was conducted on 10 % (40) of nursing staff they were selected conveniently from the same settings and excluded from the studied sample to evaluate the clarity, applicability, and reliability of the research tools and estimate the approximate time required for data collection. Accordingly, the necessary modification was done, some questions were added and others were clarified or omitted.

II- Operational stage:

Data collection

- The duration of data collection lasted approximately 6 months from June to

December 2020; 6 days per week, covering the two work shifts.

- The researcher introduced herself to the nursing staff and gave them a brief orientation about aim of the study in order to gain their data.
- The self-administrated questionnaires and scale (Tools I, II and IV) were distributed on nursing staff at their units and collected immediately after completion.
- Concerning nursing staff's practice related to infection prevention and control measures in emergencies the researcher observed them using tool III.

Ethical Consideration

- Ethical approval was obtained from Research Ethics Committee, Faculty of Nursing, Mansoura University.
- Another approval was obtained from the participants by using oral informed consent. They were assured that their participation in the study was voluntary and that collected data would be treated confidentially and only used to improve health services. Participants informed that they had the right to withdraw at any time from the study without any responsibility and without giving any reason.

4. Results

Table (1) shows that nursing staff's age's mean 29.57 ± 5.149 years. Related to gender, marital status, residency area and qualification 98.8% 80.5%, 78.5%, and 84.5% of nursing staff were female, married, resident at rural and had technical nursing diploma respectively.

Table (2) declares that nursing staff's years of experience in nursing carrier's mean 7.22 ± 5.177 years and 13.8 of them working in emergency department. Finally, 70.0% of nursing staff attended a training program about infection prevention and control and 60.3% of them attending these training programs since 3 months ago.

Table(3) reveals that, "never" response reported from 53.5% of nursing staff relates to there is no evidence of the importance of safe handling of blood and infectious items. Otherwise "sometimes" response reported from nursing staff about these procedures make their tasks more difficult, it is difficult for them to be the host of nosocomial infection transmission, it takes a long time to transmit the infection from one person to another, the guidelines for safe handling of blood make caring for the patient very difficult and there is no evidence of the importance of hand hygiene;

representing 70.3%, 34.5%, 43.8%, 34.5% and 39.8 respectively.

"Always" response reported by nursing staff in relation to hand hygiene makes their tasks more difficult, takes too much time, makes patient care very difficult, hands skin becomes alleged and not many people follow a hand hygiene policy; representing 56.0%, 60.0%, 51.0%, 31.0% and 32.0% respectively. Finally "sometimes" response reported from 46.8%, 40.3%, 47.3% and 54.8% of nursing staff concerning the instructions are vague, the evidence for the importance of infection prevention and control measures is unclear, nobody cares about it and it makes the tasks of caring for the patient very difficult respectively.

Table (4) illustrates; poor knowledge represented 86.5%, 89.8%, 85.0%, 70.8%, 98.5% and 73.3% of nursing staff related to type of hand washing used in specific situations, personal protective equipment that must be worn in specific situations, the most effective method to prevent infection for health care providers and patients, infection prevention and control measures during the insertion of an endotracheal tube, infection prevention and control measures during insertion of the nasal- gastric tube in emergency cases and infection prevention and control measures during insertion of urinary catheter in emergency cases; respectively. Finally 94.5% of nursing staff had poor total knowledge score.

Table (5) presents that, the mean score of levels of practice regarding infection prevention and control measures in emergencies was 97.03 (7.074) this revealed that 100% of the nursing staff had improper practice

The mean of nursing staff's positive attitude toward infection prevention and control measures in emergencies was 8.69 ± 2.31 and the mean of positive attitude toward medical wastes disposal in emergencies was 6.24 ± 2.06 (Table 6).

The mean of nursing staff's negative attitude toward infection prevention and control measures in emergencies was 14.50 ± 3.75 and the mean of nursing staff's negative attitude toward medical wastes disposal in emergencies was 10.11 ± 2.39 (Table 7).

Table (8) shows that, the mean score of nursing staff's attitude toward infection prevention and control measures in emergencies was 23.19 (3.60), while their attitude toward medical wastes disposal in emergencies was 39.55 (5.54), with total attitude score of 39.55 (5.54).

Table1 Nursing staff's socio-demographic characteristics

Items	N = (400)	(%)
Age		
20 - > 30 Years	240	60.0
30- > 40 Years	142	35.5
40 years and more	18	4.5
Mean (SD) 29.57 (5.149) years		
Gender		
Female	395	98.8
Male	5	1.3
Marital status		
Married	322	80.5
Single	78	19.5
Residence		
Rural	413	78.5
Urban	86	21.5
Qualification		
Technical Nursing Diploma	338	84.5
Bachelor's degree (BSc)	53	13.3
Postgraduate degree (MSc, Ph.D., Diploma)	9	2.3

Table 2 Nursing staff's occupational characteristic

Items	N = (400)	(%)
Department		
Emergency	55	13.8
ICU	51	12.8
Operating room	51	12.8
Renal dialysis unit	51	12.8
Medical	50	12.5
Obstetrics	36	9
Surgery	30	7.5
Urology	27	6.8
Orthopedic	25	6.3
Pediatric	24	6.0
Years of experience		
5 – less than 10 years	160	40.0
1- less than 5 years	131	32.8
10 – less than 15 years	85	21.3
15 years and more	24	6.0
$\bar{X} \pm S.D (7.22 \pm 5.177)$ years		
Training courses about infection prevention and control		
One	280	70.0
Two	57	14.3
None	38	9.5
More than two	25	6.3
The last training courses about infection prevention and control		
Less than 3 months ago	241	60.3
More than 3 months ago	106	26.5
3 months ago	48	12.0
Others	5	1.3

Table3 Nursing staff's problems they face when adhering to the infection prevention and control measures in emergencie

Items	Never		Rarely		Sometimes		Always	
	N (400)	%	N (400)	%	N (400)	%	N (400)	%
Precautions against communicable diseases								
There is no evidence of the importance of safe handling of blood and infectious items	214	53.5	85	21.3	84	21.0	17	4.3
These procedures make my tasks more difficult	14	3.5	45	11.3	381	70.3	60	15.0
It is difficult for me to be the host of nosocomial infection transmission	112	28.0	126	31.5	138	34.5	24	6.0
It takes a long time to transmit the infection from one person to another	21	5.3	204	51.0	175	43.8	0	0.0
The guidelines for safe handling of blood make caring for the patient very difficult	100	25.0	118	29.5	138	34.5	44	11.0
Hand hygiene								
There is no evidence of the importance of hand hygiene	65	16.3	72	18.0	159	39.8	104	26.0
It makes my tasks more difficult	75	18.8	22	5.5	79	19.8	224	56.0
It takes too much time	65	16.3	39	9.8	56	14.0	240	60.0
It makes patient care very difficult	66	16.5	49	12.3	81	20.3	204	51.0
My hands skin becomes alleged	68	17.0	94	23.5	114	28.5	124	31.0
Not many people follow a hand hygiene policy	98	24.5	73	18.3	101	25.3	128	32.0

Table 3 Nursing staff's problems they face when adhering to the infection prevention and control measures in emergencies, Cont

Items	Never		Rarely		Sometimes		Always	
	N (400)	%	N (400)	%	N (400)	%	N (400)	%
Personal protective equipment								
The evidence for the importance of the guidelines is unclear	69	17.3	192	48.0	127	31.8	12	3.0
The instructions are vague	119	29.8	49	12.3	187	46.8	45	11.3
It makes my tasks more difficult	95	23.8	86	21.5	119	29.8	100	25.0
It takes a lot of time	75	18.8	118	29.5	95	23.8	112	28.0
Nobody cares about it	76	19.0	44	11.0	155	38.8	125	31.3
Preventive precautions and infection control during nursing procedures								
The evidence for the importance of infection prevention and control measures is unclear	79	19.8	42	10.5	161	40.3	118	29.5
Make my tasks more difficult	68	17	65	16.3	153	38.3	114	28.5
Nobody cares about it	66	16.5	78	19.5	189	47.3	67	16.8
It makes the tasks of caring for the patient very difficult	64	16.0	57	14.3	219	54.8	60	15.0
Others do not follow infection prevention and control procedures	22	5.5	40	10.0	132	33.0	206	51.5

Table 4 Nursing staff's scores levels of knowledge regarding infection prevention and control measures in emergencie

Knowledge categories	Score level					
	Poor		Fair		Good	
	N (400)	%	N (400)	%	N (400)	%
Type of hand washing used in specific situations score = (9)	346	86.5	54	13.5	0	0.0
B ± SD	3.57±1.69					
Personal protective equipment that must be worn in specific situations score = (9)	359	89.8	41	10.3	0	0.0
B ± SD	3.62±1.29					
The best method of needle and syringes disposal in emergency situations score = (1)	189	47.3	0	0.0	211	52.8

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B ± SD	0.52±0.49					
The most effective method to prevent infection for health care providers and patients score = (2)	340	85.0	0	0.0	60	15.0
B ± SD	0.92±0.60					
Infection prevention and control measures during blood pressure measurement in emergencies score = (1)	177	44.3	0	0.0	223	55.8
B ± SD	0.55±0.49					
Infection prevention and control measures during oxygen therapy in emergencies score= (4)	165	41.3	170	42.5	65	16.3
B ± SD	2.49±1.04					

Table 4 Nursing staff's scores levels of knowledge regarding infection prevention and control measures in emergency

Knowledge categories	Score level					
	Poor		Fair		Good	
	N (400)	%	N (400)	%	N (400)	%
Infection prevention and control measures during insertion of a peripheral and central catheter and the withdrawal of blood samples score = (4)	191	47.8	57	14.3	152	38.0
B ± SD	2.38±1.55					
Infection prevention and control measures during the insertion of an endotracheal tube score (3)	283	70.8	79	19.8	38	9.5
B ± SD	1.27±0.78					
Infection prevention and control measures during connecting the patient to the monitor in emergency cases score = (1)	208	52.0	0	0.0	192	48.0
B ± SD	0.48±0.50					
Infection prevention and control measures during insertion of the nasal- gastric tube in emergency cases score=(2)	394	98.5	0	0.0	6	1.5
B ± SD	0.72±0.48					
Infection prevention and control measures during insertion of urinary catheter in emergency cases score= (4)	293	73.3	107	26.8	0	0.0
B ± SD	1.7±0.95					
Total knowledge score = (40)	378	94.5	22	5.5	0	0.0
B ± SD	18.26±4.39					

Good= scores 80% or more of total scores (32 or more)

Fair= scores 60% to less than 80% of total scores (24- Less than 32)

Poor= scores less than 60% of total scores (0 – less than 24)

Table 5 Nursing staff's scores levels of practice regarding infection prevention and control measures in emergencies

Practice	Improper		Proper	
	N=(400)	%	N=(400)	%
Hand washing practice score = (5)	139	34.8	261	65.3
B ± SD	3.60 (0.739)			
Measuring blood pressure practice score = (6)	358	89.5	42	10.5
B ± SD	2.20 (1.376)			
Cardiac monitoring practice score = (16)	400	100.0	0	0.0
B ± SD	7.10 (1.80)			
Supplying oxygen inhalation practice score = (7)	400	100.0	0	0.0
B ± SD	2.89 (0.576)			
Intravenous insertion and venipuncture score = (16)	397	99.3	3	0.8
B ± SD	9.14 (1.48)			
Safe injection practice score = (13)	358	89.5	42	10.5

B ± SD	8.01 (1.14)			
Needle stick injury practice score = (5)	276	69.0	124	31.0
B ± SD	3.34 (0.544)			

Table 5 Nursing staff's scores levels of practice regarding infection prevention and control measures in emergencies

Practice	Improper		Proper	
	N=(400)	%	N=(400)	%
Suction practice score =(15)	390	97.5	10	2.5
B ± SD	8.26 (1.613)			
Endo tracheal tube practice score= (13)	356	89.0	44	11.0
B ± SD	6.20 (2.013)			
Inserting a nasal-gastric tube practice score =(15)	400	100.0	0	0.0
B ± SD	6.97 (1.55)			
Gastric lavage practice score = (16)	384	96.0	16	4.0
B ± SD	9.49 (1.41)			
Chest tube practice score = (13)	237	59.3	163	40.8
B ± SD	8.98 (1.28)			
Central Venous Catheter practice score = (12)	267	66.8	133	33.3
B ± SD	8.85 (1.48)			
Urinary catheter insertion practice score = (18)	302	75.5	98	24.5
B ± SD	11.96 (1.98)			
Total practice score = (170)	400	100.0	0	0.0
B ± SD	97.03 (7.074)			

Proper = scores equal 75% of total scores and more (127.5 and more)

(less than 127.5) **Improper** = scores less than 75% of total scores

Table 6 Nursing staff's positive attitude toward infection prevention and control measures and medical wastes disposal in emergencies

Attitude	Strongly disagree		Disagree		Agree		Strongly Agree	
	N (400)	%	N (400)	%	N (400)	%	N (400)	%
infection prevention and control measures in emergencies	B ±S.D 8.69 ±2.31							
The gloves must be changed from one patient to another	0	0.0	69	17.3	7	1.8	324	81.0
Following infection prevention and control measures reduces the chances of catching infectious diseases	0	0.0	48	12.0	104	26.0	248	62.0
All emergent patients must be dealt on the basis that they are a source of infection	68	17.0	63	15.8	269	67.3	0	0.0
Leaving a distance between the health care provider and the patient is an ineffective way to prevent the transmission of infection due to difficulty of its implementation	52	13.0	72	18.0	80	20.0	196	49.0
Medical wastes disposal in emergencies	B ±S.D 6.24 ±2.06							
Disposal of contaminated medical waste in the red box and paper in the black box is very necessary	0	0.0	17	4.3	182	45.5	201	50.3
Saving the patient's life and preserving his health is much more important than separating the waste	76	19.0	50	12.5	166	41.5	108	27
This step causes a lot of time loss in emergency situations	26	6.5	120	30.0	74	18.5	180	45.0

Table 7 Nursing staff's negative attitude toward infection prevention and control measures and medical wastes disposal in emergencies

Attitude	Strongly disagree		Disagree		Agree		Strongly Agree	
	N (400)	%	N (400)	%	N (400)	%	N (400)	%
infection prevention and control measures in emergencies	B ±S.D 14.50 ±3.75							
Hand washing in emergency situations wastes a lot of time	0	0.0	114	48.5	243	60.8	43	10.8
You do not need to wash your hands if you wear gloves	9	2.3	68	17.0	180	45.0	143	35.8
Wearing personal protective equipment does not protect against acquiring an infection	60	15.0	318	79.5	22	5.5	0	0.0
Wearing a gown when caring for a patient with an infectious disease in emergency cases will be difficult and uncomfortable, so it is preferable not to wear the gown	104	26.0	80	20.0	216	54.0	0	0.0
The nursing staff is allowed to eat or drink when caring for patients due to work stress	29	7.3	234	58.5	120	30.0	17	4.3
It is not necessary to follow the preventive and infection control procedures in emergency cases to quickly save the lives of patients first	16	4.0	162	40.5	222	55.5	0	0.0
It is not reasonable to assume that all patients have an infectious disease unless the infection has been confirmed	18	4.5	219	54.8	66	16.5	97	24.3
The nursing team reacts negatively when a co-worker (such as a nurse or doctor) does not follow preventive and infection control measures in emergency situations	68	17.0	87	21.8	153	38.3	92	23.0
I feel shy when following infection prevention and control measures in emergency situations because others do not follow them	51	12.8	98	24.5	164	41.0	87	21.8
I am more following preventive measures and infection control in hospitals only when training a new person	39	9.8	131	32.8	211	52.8	19	4.8

Table 7 Nursing staff's negative attitude toward infection prevention and control measures and medical wastes disposal in emergencies

Attitude	Strongly disagree		Disagree		Agree		Strongly Agree	
	N (400)	%	N (400)	%	N (400)	%	N (400)	%
Medical wastes disposal in emergencies	B ±S.D 10.11± 2.39							
It is better to ignore the previous step and focus on the role that I am playing	66	16.5	161	40.3	155	38.8	18	4.5
Ignore this step as the cleaning worker will separate the waste	70	17.5	181	45.3	131	32.8	18	4.5
Segregation of waste is part of the cleaning worker's job	76	19.0	170	42.5	76	19	78	19.5
Not re-covering the needles and disposing of them completely in the safety box saves time and effort	56	14.0	47	11.8	206	51.5	91	22.8
I think it is necessary to put the cap on the needles back after use and before they are disposed of	146	36.5	76	19.0	178	44.5	0	0.0
It takes a long time to transmit the infection between one person and another when dealing with emergency cases	50	12.5	287	71.8	63	15.8	0	0.0

Table 8 Nursing staff's total attitude score toward infection prevention and control measures and medical wastes disposal in emergencies

Attitude categories	Mean (SD)
Attitude toward infection prevention and control measures in emergencies (42 marks)	23.19 (3.60)
Attitude toward medical wastes disposal in emergencies (27 marks)	16.35 (3.20)
Total attitude score 69 marks)	39.55 (5.54)

5. Discussion

Emergency care is the prime tool for addressing emergent health conditions that present sudden or unexpected threats to life or limb and thus constitute a critical output of the overall health system (Totten & Bellou, 2013). Conceptually, emergency care implies a narrower scope than emergency services but is broader than several other commonly used terms (e.g., emergency surgery and emergency medicine).

In-hospital emergency medical services refer to all those subsets of medical institutions and hospitals that have the capacity to deliver uninterrupted and safe emergency care for all patients in different units (Arnold & Della, 2013). Providing continuous care should be considered part of an in-hospital medical service. Emergency care is the subset of emergency services focused on delivery of curative interventions targeting severe clinical cases (Totten & Bellou, 2013).

In most of emergency situations many sick people are treated or cared for in confined spaces. This means there are many microorganisms present. Patients will come into contact with members of staff who can potentially spread the microorganisms and infections between patients. Large amounts of waste contaminated with blood and body substances are handled and processed in health care settings increasing the risk of infection (Siegel, Rhinehart, Jackson & Chiarello, 2017).

The risk is very high in emergency situations because staff members are focus on save patients life at first neglecting the risk of infection transmission the risk is very low if all staff members follow infection control principles. Standard Precautions will help stop the spread of infections. Often you can't tell who is infected with a disease, or the person may be infected but have not yet developed any signs or symptoms (CDC, 2015).

Sometimes nurses may be in a hurry to save a patient's life in an emergency condition. Application of normal procedures for standard precaution may not be performed. Most of the participants agreed that when there was an emergency condition they were unable to follow the normal procedure. In addition, the emergency situation creates shortage of time to perform appropriate standard precautions (WHO, 2016).

Infection control is the prevention of the spread of microorganisms from patient to patient, from patient to staff member and from staff member to patient. Every health care facility should have a nominated person or team to ensure

Infection Control Policies and Procedures are in place. However, all employees who have contact with patients must adhere to infection control policies and procedures (Bagheri, Allegranzi & Syed, 2014).

Understanding of infection prevention and control practice is necessary for all health care workers (HCWs) in the hospital. But there was knowledge gap, especially in emergency situation (Yenesew & Fekadu, 2014). Patients flow in hospitals was high and a barrier to infection control practice. besides this there were also emergency and nurses' focus were on saving the life of the patients rather than the long impact of hospital acquired infection, so they did not consider in their mind infection prevention activities, this leads nurses to loss of intention of improper practice of universal precaution. The problem arises only when there are emergency situations (WHO, 2016).

The current study indicates that, most of nursing staff has poor score level of knowledge regarding infection prevention and control measures in emergencies. This result agrees with Sarani, Balouchi, Masinaeinezhad and Ebrahimitabs, (2015) whose study's title is "Knowledge, Attitude and Practices of Nurses about Standard Precaution in Hospital Affiliated to Zabol University of Medical Science", which indicates that the majority of nurses had poor knowledge regarding standard precaution.

Eskander, Morsy and Elfeky, (2016) who assessed nurses' knowledge and evaluate their practice regarding infection control standard precautions, reported that almost half of nurses had poor knowledge and practice, accordingly. They recommend updating knowledge and performance of intensive care unit nurses through continuing in-service educational programs.

According to Fleischmann and Fulde, (2017) poor knowledge and practice of infection control measures in emergencies for nursing staff will lead them to neglect it to save patient life at first this action will cause danger for both the patient and staff by transmitting infection.

The researcher argument illustrates that, less than three fourths of nursing staff in the current study got one training courses about infection prevention and control measures, and less than two thirds of them got those course less than three months ago, however most of nursing staff have poor score level of knowledge, this could be attributed to the majority of nursing staff's qualification is Technical Nursing Diploma and they in need to continuity of in-service education.

Based on the results of the present study, all of nursing staff has improper practice regarding infection prevention and control measures in emergencies. This result agrees with **Arthi, Abarna, Bagyalakshmi, Anitharaj and Vijayasree, (2018)** who assessed knowledge, attitude and practice of standard precaution among nursing students in a tertiary care hospital in Puducherry, India. The study reveals that the majority of nursing students had improper practice of standard precaution.

Also, a study was conducted by **Tirivanhu et al., (2017)** who assessed barriers to infection prevention and control practices among nurses at Bindura Provincial Hospital in Zimbabwe. The study indicates that the majority of nurse had lack knowledge and practice in infection principles.

Improper practice of all nursing staff regarding infection prevention and control measures in emergencies could be due to believes less than three fourths of nursing staff illustrates that precautions against communicable diseases procedures sometimes make their tasks more difficult, as well, more than half stated that hand hygiene always makes their tasks more difficult, takes too much time and makes patient care very difficult. The researcher claimed availability of the designed educational booklet may act as reminder and order in its priorities infection prevention and control measures in emergencies for nursing staff.

Based on this study's results less than two thirds of nursing staff illustrates negative attitude more than positive one towards infection prevention and control measures in emergencies and more than half of nursing staff illustrates negative attitude more than positive one towards medical wastes disposal in emergencies.

These results are consistent with the findings of a research study belonged to **Ahmed, Mohammed and Mahgoub, (2020)** indicates nurses' knowledge is usually delivered into their clinical practice. Hence, if nurses are aware of the best evidence for patient care, this will improve their performance, and consequently the quality of care they provide and patient outcome.

In addition to **Hakim, Mohsen and Bakr, (2014)** they assessed knowledge, attitudes and practices of health-care-providers towards standards precautions at Ain Shams University Hospital, Cairo, Egypt. The study shows that training and duration of work experience were not significantly associated with knowledge, attitude and practice scores, except for nurses with longer experience, who were more likely to have

satisfactory knowledge about waste disposal. **Onyemocho, Anekoson & Pius, (2016)** assessed the level of knowledge and practice of injection safety among health care workers of Nigerian prison service health facilities in Kaduna State, Command. The study shows that half of the health workers had poor knowledge scores of key injection safety practice.

Finally, it is obvious the importance of continuous development of nursing staff, updating their knowledge and practice and enhance their positive attitude toward the infection prevention and control measures in emergencies. On the other hand there is a burden of conducting training programs, as well, probability of over lapped of time of training programs and work time.

6. Conclusions

It is concluded that; most of nursing staff have poor score level of knowledge and all of them have improper practice relating infection prevention and control measures in emergencies. Nursing staff illustrate negative attitude more than positive one towards infection prevention and control measures in emergencies.

7. Recommendations

On light of the study findings, the following recommendations are suggested:

- On job training programs to nursing staff on infection prevention and control in emergencies.
- Equip and supply health care settings with all requirements to apply and adhere to infection prevention and control in emergencies.
- Emphasize on hand hygiene as a milestone in infection prevention and control in emergencies.
- Further researches to explore factors contribute to nursing staff did not adhered on infection prevention and control in emergencies for nursing staff.

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