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Original article

Assessment of Awareness and Practices Among Health Care Providers and Inspection of Environmental Readiness During COVID-19 Pandemic at Benha University Hospital, 2021

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Abstract:

Background: COVID-19 is an international health emergency of global concern. Physicians and nurses are more susceptible to COVID-19 infection. Therefore, doctors and nurses on the front lines must have essential COVID-19 awareness, knowledge, and preparedness. **Objectives:** To assess awareness, practices and preparedness level among healthcare workers at Benha university hospital (BUH) to fight against Covid-19 and to inspect environmental readiness. **Methods:** This was a cross-sectional study. Data were gathered using questionnaire which were filled out by physicians and nurses. The questionnaire included questions about respondents' demographics and 39 questions concerning knowledge, practices, preparedness and barriers. Overall, 175 physicians and 150 nurses had participated in the study. The observational environmental checklist included 49 questions. **Results:** About 80.6% of physicians and 71.3% of nurses show satisfactory score of knowledge about Covid-19. About 70.9% of physicians had good score of practices while near half of nurses (46%) had poor score of practices towards COVID-19. About 73.1% of physicians and 60% of nurses had adequate preparedness. There was a significant variation between score of practices and preparedness of physicians and nurses($p<0.05$). Overcrowding in emergency room and limitation of infection control material were the most perceived barriers towards control of COVID-19. Inspection of environmental aspects of isolation unit revealed that cleaning, disinfection and waste disposal had the highest percentage of maximum score (100%), while communication had the least percentage of maximum score (20%). **Conclusion:** There was discrepancy between physicians and nurses regarding practice and preparedness. Communication had the least percentage of maximum score of environmental aspect.

Keywords: Covid-19-Knowledge- Practice-BUH-Health care providers.

Introduction

By early March 2020, the World Health Organization had declared a pandemic of COVID-19 (1). By September 2020, the SARS-CoV-2 virus had infected more than 30 millions people, and more than one million had died (2). The infection-related death rate was higher among the elderly and those suffering from chronic and respiratory conditions (3).

Experts from across the world have urged governments to adopt preventative measures against COVID-19 outbreaks among the most susceptible population in order to mitigate the disease's severity (4,5).

Healthcare personnel play a vital role in controlling the COVID-19 pandemic and are more susceptible to contracting the virus at work (6). The most effective method for protecting healthcare staff from the COVID-19 pandemic is prevention (6).

Knowledge and actions about COVID-19 have a significant influence on the adherence of healthcare staff to control measures (7). To maintain proper practices and safety, it is necessary to understand the knowledge of medical professionals and the elements that influence their practices (8).

The incident was initially reported by Egypt on February 14, 2020. Egypt is one of the lower-middle-income countries with limited resources and infection control methods, demanding a simple and practical clinical guideline for the diagnosis and treatment of COVID-19 patients, as well as the prevention of healthcare workers from catching the virus (9).

Comprehensive information promotes good operating methods, hence decreasing the danger of infection (9). Understanding HCWs' knowledge and probable perception of infection risk allows COVID-19 findings in Egypt to be predicted (10).

Objectives

To evaluate the level of awareness, practices and preparedness among health care workers to fight against Covid-19 at Benha University Hospital and to inspect application of infection prevention control procedures for well-being of residents at BUH.

Methodology

1. Study design: cross-sectional study

2. Study setting: Participants were recruited eight departments in the hospital chosen as follows (Critical Care Medicine, Chest, anesthesia, internal medicine, Cardiovascular, Cardiothoracic, Hepatology and Neuropsychiatry), all of whom included in rotatory schedule of Isolation Unit to encounter COVID-19 patients at BUH

3. Study period: collection of data was from first of February to end of July 2021.

4. Study subjects: All doctors and nurses who had worked in these departments for at

least one year and agreed to participate were included in this research.

5. Sampling Design

a- Sample technique: convenient sample

b- Sample size**:** Minimal sample was calculated using the following equation

$$SS = Z^2 \times (P) \times (1-P) / SD^2$$

-Z= Z value (e.g., 1.96 for 95% confidence level).

-P = prevalence of knowledge towards Covid-19 among health care workers (72.2%)(11).

-SD = standard deviation, expressed as decimal (e.g., 0.05)

So, the least sample size = 309.

481 heath care workers (219 physician and 262 nurse) were eligible in our study. 325 of them (175 physician and 150 nurse) accepted to participate with response rate 67.6%. The study sample exceeds minimal sample size.

6. Tools of data collection

- A self-administered questionnaire was used to explore the knowledge, practice, preparation and obstacles of doctors and nurses about COVID-19, and an observational checklist was used to evaluate the isolation unit environment at BUH.
- The questionnaire was comprised of five parts as follow:

Part 1: Socio-demographic and hospital-related data

It included age, sex, job, name of the department, experience in years, information sources about Covid-19 and Confidence in management Covid-19 patients.

Part 2: Assessment of the Health Care providers' Knowledge and awareness regarding Covid-19 infection

There were fourteen questions. Each question got a yes or no answer. The appropriate response was recorded as 1, and the incorrect response as 0. The overall score goes from 0 to 14, with 10 or less indicating inadequate knowledge and 11 or more showing adequate knowledge (12).

Part 3: Assessment of the Health Care providers' Practices towards Covid-19.

It consisted of 6 questions. Each item was responded as yes (1-point), no (0-point), and sometimes (0-point). The total score ranged from 0 to 6, with a score of 4 or above indicating good practice and a score of less than 4 indicating poor practice (12).

Part 4: Assessment of the Health Care providers' preparedness in terms of managing cases of COVID-19 infection.

It consisted of 11 questions. yes, was given a score of 1, and no was given a zero. those who scored ≥ 8 on the preparedness scale had adequate preparedness (13).

Part 5: Assessment of perception of HCPs regrading barriers in infection control practice

It consisted of 8 questions. On a 5-point Likert scale ranging from strongly agree to

strongly disagree, respondents evaluated each statement (12).

- The observational checklist included 9 items as follows:

  organization and planning, Equipment and supplies, safe and healthy work environment, Cleaning, disinfection and waste disposal, Training and education, communication, Visitor access and movement within the facility, Occupational health and post mortem care. Each item was scored as one if present and zero if absent (14,15).

  Ethical Consideration

  Before participation, physicians and nurses provided signed informed consent. They were informed that all data collected would be kept confidential and used exclusively for research purposes. In addition, administrative clearance from The Research Ethics Committee (MD.2.2.2021) and formal authorization from the BUH General Manager were acquired.

Data Management

Statistical analysis was carried out using (SPSS, version 20). Using the Kolmogorov-Smirnov test, the normality of quantitative data were tested. When appropriate, the median and interquartile range (IQR) were used to describe non-normally distributed quantitative data . The qualitative data were demonstrated in term of frequency and percentage. When available, the Chi-square test and Fisher's Exact test were employed to statistically compare the different study groups. A P-value below 0.05 was considered statistically significant

Results

This study shows that the median age of the studied physicians' group is 30 years (29-36) and the median age of studied nurses' group is 25 years (24 – 29). More than half of physicians are male (58.3%) and about two-thirds of nurses were female (66%). Physicians recruited from internal medicine department represent the highest percentage (21.1%) and nurses were mainly from critical care and chest medicine departments (24%, 21.3% respectively). As regarding work experience near two-thirds of physicians and nurses (64.6%, 60% respectively) had work experience less than 5 years. The main information source of more than half of physicians and nurses about COVID-19 pandemic was discussion with colleagues (56.6%,55.3% respectively). Near half of physicians (40%) were moderate confident in management Covid-19 patients and less than half of nurses (40.7%) were little confident in management Covid-19 patients **(**Table 1).

The current study reveals that the relationship between physicians' score of knowledge, practice and preparedness towards COVID-19 and their personal and job characteristics. It shows that there was a statistically significant difference (SSD) between physicians' score of knowledge about COVID-19 regarding their age distribution, work experience, work

position and confidence in management of COVID-19. Table (2) also shows that there was a SSD between physicians' score of practice towards COVID-19 regarding their age distribution, work experience and work position. As regard preparedness, there were a SSD regarding age, sex, work experience, work position, confidence in management of COVID-19 and participation in training courses (Table 2).

This study illustrates that the relationship between nurses' score of knowledge, practice and preparedness towards COVID-19 and their personal and job characteristics. It shows that there was a SSD between nurses' score of knowledge about COVID-19 regarding their age distribution, work experience, confidence in management of COVID-19 and participation in training courses. The table also shows that there was a SSD between nurses' score of practice towards COVID-19 regarding their age distribution and work experience. As regard preparedness, there were a SSD regarding sex and participation in training courses (Table 3).

The current study shows that there were significant differences between physicians and nurses in practice and preparedness levels, with higher percentage of those with good practice and adequate preparedness were physicians (70.9 and 37.1%, respectively) (Table 4).

This research demonstrates that healthcare providers' perceptions of COVID-19 management barriers were mixed. 25.5% of 325 health care professionals said that a lack of knowledge regarding the transmission of viruses was a barrier, and 44.3% agreed that a lack of infection control materials was a barrier to infection control.. 48.3% of HCPs saw crowded emergency rooms as an obstacle. In contrast, 28.9%, 27.1%, and 26.8% of HCPs stated that absence of infection control policy, hand washing after patient contact, and wearing the mask during patient inspection were not obstacles to infection control (Table 5).

This study shows that cleaning, disinfection and waste disposal had the highest percentage of maximum score of environmental aspect of isolation unit (100%). While communication had the least percentage of maximum score of environmental aspect of isolation unit (20%) (Table 6).

Table (1): Frequency distribution of the studied physicians and nursing group according to some personal and work-related characteristics

Personal and work-related characteristics	Physicians		Nurses	
	Frequency (n=175)	Percentage (%)	Frequency (n=150)	Percentage (%)
Age (years)				
20 <25	0	0	60	40
25 <30	74	42.3	57	38
30 <35	51	29.1	12	8
35<40	50	28.6	21	14
Median (IQR)	30.0 (29.0 – 36.0)		25.0 (24.0 – 29.0)	
Sex				
Female	73	41.7	99	66
Male	102	58.3	51	34
Department				
Anesthesia	17	9.7	9	6.0
Cardio-Thoracic Surgery	10	5.7	8	5.3
Cardio-vascular Medicine	20	11.4	20	13.3
Chest Medicine	22	12.6	32	21.3
Critical Care Medicine	24	13.7	36	24.0
Hepatology	23	13.1	12	8.0
Internal Medicine	37	21.1	23	15.3
Neuro-Psychiatry	22	12.6	10	6.7
Work experience				
≤ 5 years	113	64.6	90	60.0
6-10 years	39	22.3	31	20.7
> 10 years	23	13.1	29	19.3
Information sources: #				
Discussion with colleagues	99	56.6	83	55.3
Media (TV & Radio)	48	27.4	39	26.0
Social media	82	46.9	74	49.3
Training courses (face to face)	28	16.0	23	15.3
Online training	6	3.4	4	2.7
Confidence in management Covid-19 patients:				
High confidence	57	32.6	26	17.3
Moderate Confidence	70	40.0	47	31.3
Little confidence	47	26.9	61	40.7
No confidence	1	0.6	16	10.7

#: multiple responses.

Table (2): Distribution of the physicians personal and job characteristics according to score of Knowledge, practice and preparedness towards COVID-19

Personal & Job characteristics	Knowledge			Practice			Preparedness		
	Poor knowledge (≤ 10) N (%)	**Good knowledge (≥11) N (%)**	**Test of Sig.(P)**	**Poor practice (<4) N (%)**	**Good practice (≥)4 N (%)**	**Test of Sig.(P)**	**In-adequate preparedness (<8) N (%)**	**Adequate preparedness (≥ 8) N (%)**	**Test of Sig.(P)**
Age (years)									
25 <30	19 (25.7)	55 (74.3)	FET=	29(39.2)	45(60.8)	X^2=	33 (44.6)	41 (55.4)	FET=
30 <35	13 (25.5)	38 (74.5)	10.645	13(25.5)	38(74.5)	6.953	14 (27.5)	37 (72.5)	30.22
35<40	2 (4)	48 (96)	**(0.005) (H.S)**	9 (18)	41 (82)	**(0.03) (S)**	0 (0)	50 (100)	**(0.003) (H.S)**
Sex									
Female	13 (17.8)	60(82.2)	X^2= .210 (0.647) *	18(24.7)	55(75.3)	X^2= 1.220 (0.269)*	30 (41.1)	43 (58.9)	X^2= 12.92 **0.02(S)**
Male	21(20.6)	81 (79.4)		33(32.4)	69(67.6)		17 (16.7)	85 (83.3)	
Work experience									
≤ 5 years	30(26.5)	83 (73.5)	FET= 11.302 **(0.004) (H.S)**	38 (33.6)	75 (66.4)	FET= 8.949 **(0.01) (S)**	47 (41.6)	66 (58.4)	FET= 35.25 **0.002 (H.S)**
6-10 years	4 (10.3)	35 (89.7)		4 (10.3)	35 (89.7)		0 (0)	39 (100)	
> 10 years	0 (0)	23 (100)		9 (39.1)	14(60.9)		0 (0)	23 (100)	
Work position									
Resident	19 (46.3)	22 (53.7)	FET= 30.206 **(.001) (H.S)**	20(48.8)	21(51.2)	X^2= 11.469 **(0.009) (H.S)**	29 (70.7)	12 (29.3)	FET= 59.816 **0.001 (H.S)**
Demonstrator	0 (0)	15 (100)		5 (33.3)	10(66.7)		3(20)	12 (80)	
Assistant lecturer	13 (18.8)	56 (81.2)		17(24.6)	52(75.4)		15 (21.7)	54 (78.3)	
Lecturer	2 (4)	48 (96)		9 (18)	41 (82)		0 (0)	50 (100)	
Confidence in management Covid-19 patients:									
High confidence	9 (15.8)	48 (84.2)	FET= 17.020 **(0.001) (H.S)**	18(31.6)	39(68.4)	FET= 5.736 **(.125)** *	1 (1.8)	56 (98.2)	FET= 28.293 **0.001 (H.S)**
Confidence	7 (10)	63 (90)		15(21.4)	55(78.6)		29 (41.4)	41 (58.6)	
Little confidence	17 (36.2)	30 (63.8)		17(36.2)	30(63.8)		17 (36.2)	30 (63.8)	
No confidence	1 (100)	0(0)		1 (100)	0 (0)		0(0)	1 (100)	
Participated in a training course for outbreak management									
No	29 (20.6)	112 (79.4)	X^2=.601 (0.438)*	38 (27)	103 (73)	X^2=1.6 (0.194)*	45(31.9)	96(68.1)	FE=9.4 **0.002 (H.S)**
Yes	5(14.7)	29 (85.3)		13 (38.2)	21 (61.8)		2(5.9)	32(94.1)	

*Non-significant result (p>0.05)

Table (3): Distribution of nurses personal and job characteristics according to score of Knowledge, practice and preparedness towards COVID-19

	Knowledge			Practice			Preparedness		
Personal & Job characteristics	**Poor knowledge (≤ 10) N (%)**	**Good knowledge (≥11) N (%)**	**Test of Sig.(P)**	**Poor practice (<4) N (%)**	**Good practice (≥)4 N (%)**	**Test of Sig.(P)**	**In-adequate preparedness (<8) N (%)**	**Adequate preparedness (≥ 8) N (%)**	**Test of Sig.(P)**
Age (years)									
20 <25	40 (66.7)	20 (33.3)	FET=	36 (60)	24(40)	FET=	25 (41.7)	35 (58.3)	FET
25 <30	3(5.3)	54 (94.7)	70.898	24(42.1)	33(57.9)	11.314	24 (42.1)	33 (57.9)	=.786
30 <35	0 (0)	12 (100)	**(<0.001)**	5 (41.7)	7 (58.3)	**(0.01)**	4 (33.3)	8 (66.7)	(0.85)
35<40	0 (0)	21(100)	**(H.S)**	4 (19)	17 (81)	**(S)**	7 (33.3)	14 (66.7)	
Sex									
Female	28 (28.3)	71 (71.7)	X^2=0.021	46(46.5)	53(53.5)	X^2=	34 (34.3)	65 (65.7)	X^2=
Male	15 (29.4)	36 (70.6)	(0.885)	23(45.1)	28(54.9)	0.025 (0.874)	26 (51)	25 (49)	3.882 **0.04 (S)**
Work experience									
≤ 5 years	43 (47.8)	47 (52.2)	FET=	53 (58.9)	37 (41.1)		40 (44.4)	50 (55.6)	
6-10 years	0 (0)	31 (100)	40.187 **(<.001)**	8 (25.8)	23 (74.2)	X^2= 15.067 **(0.001)**	8 (25.8)	23 (74.2)	X^2= 3.366 **(**.186)
> 10 years	0 (0)	29 (100)	**(H.S)**	8 (27.6)	21 (72.4)	**(H.S)**	12 (41.4)	17 (58.6)	
Confidence in management Covid-19 patients:									
High confidence	6 (23.1)	20 (76.9)	X^2=	17(65.4)	9 (34.6)	X^2=	12 (46.2)	14 (53.8)	X^2=
Confidence	12 (25.5)	35 (74.5)	10.075 **(0.018)**	24(51.1)	23(48.9)	7.740 **(**.052**)**	18 (38.3)	29 (61.7)	5.164 (0.16)
Little confidence	15 (24.6)	46 (75.4)	**(S)**	21(34.4)	40(65.6)		20 (32.8)	41 (67.2)	
No confidence	10 (62.5)	6 (37.5)		7 (43.8)	9 (56.3)		10 (62.5)	6 (37.5)	
Participated in a training course for outbreak management									
No	41 (33.3)	82 (66.7)	FET= 7.277 **0.007 (H.S)**	60 (48.4)	63 (51.2)	X^2= 2.127 (0.145)	54(43.9)	69(56.1)	X^2= 4.336 **(.037) (S)**
Yes	2 (7.4)	25 (92.6)		9 (33.3)	18 (66.7)		6(22.2)	21(77.8)	

Table (4): Comparison between physicians and nurses' groups regarding levels of knowledge, practice, and preparedness

	Nurses (n=150)	**Physicians (n=175)**	**X^2**	**p**
COVID-19 Knowledge				
Poor knowledge	43 (28.7)	34 (19.4)	3.813	.051
Good knowledge	107 (71.3)	141 (80.6)		
Practice				
Poor practice	69 (46)	51 (29.1)	9.855	**.002**
Good practice	81 (54)	124 (70.9)		**(H.S)**
Preparedness				
In-adequate preparedness	60 (40)	47 (26.9)	6.318	**0.012**
Adequate preparedness	90 (60)	128 (73.1)		**(S)**

Table (5): Frequency distribution of barriers perceived by Health care providers regarding COVID-19 pandemic management.

Barriers	Strongly disagree		Disagree		Undecided		Agree		Strongly agree	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Lack of knowledge about the mode of transmission of the disease Covid-19										
Total Participants	58	17.8	73	22.5	36	11.1	75	23.1	83	**25.5**
Not wearing mask while examine or contact with the patient										
Total Participants	87	**26.8**	71	21.8	10	3.1	82	25.2	75	23.1
Limitations of infection control material										
Total Participants	35	10.8	17	5.2	47	14.5	144	**44.3**	82	25.2
No hand washing after examine or contact with patient										
Total Participants	70	21.5	88	**27.1**	19	5.8	69	21.2	79	24.3
Lack of policy and procedures of infection control practice										
Total Participants	94	**28.9**	47	14.5	48	14.8	75	23.1	61	18.8
Insufficient training in infection control measurements										
Total Participants	45	13.8	26	8	66	20.3	98	**30.2**	90	27.7
Less commitment of health care workers to the policies and procedures										
Total Participants	48	14.8	36	11.1	72	22.2	96	**29.5**	73	22.5
Overcrowding in emergency room										
Total Participants	11	3.4	12	3.7	12	3.7	157	**48.3**	133	40.9

Table (6): Total scores and percentage from maximum score of environmental aspects in the isolation unit

Environmental aspects	**Score**	**Percentage from maximum score (%)**
• Organization and planning (maximum score=9)	7	77.8
• Safe and healthy work environment (maximum score=4)	2	50
• Equipment and supplies (maximum score=8)	5	62.5
• Cleaning, disinfection and waste disposal (maximum score=5)	5	100
• Training and education (maximum score=6)	4	66.7
• Communication (maximum score=5)	1	20
• Visitor access and movement within the facility (maximum score=4)	3	75
• Occupational health (maximum score=5)	3	60
• Postmortem care (maximum score=3)	2	66.7
• Total score (51)	32	62.7

Discussion:

Regarding the prevention and treatment of COVID-19, healthcare practitioners are the first line of defense. Their capacity to respond methodically to sickness in hospitals will be determined by their knowledge, readiness, and experience. During the COVID-19 pandemic, this research intends to evaluate the degree of knowledge, practice, and preparation among healthcare professionals, in addition to their related variables and the level of environmental preparedness. This research was done between February and the end of July 2021 at Benha University Hospital.

This study discovered that the knowledge score of physicians and nurses is affected by their age distribution, work experience, employment position, faith in COVID-19 management, and participation in training courses (Table 2 and Table 3). A cross-sectional survey conducted in Pakistan supports the findings of this research, revealing an association between age and doctors' and nurses' knowledge of COVID-19 (12). However, research performed among Nigerian healthcare professionals revealed no SSD across age groups (16). This might be because senior doctors and nurses are more likely to have sought postgraduate education and scientific opportunities to have a deeper understanding of COVID-19.

According to the results of this study, physicians and nurses with more work experience had a substantial advantage in terms of COVID-19 knowledge. In contrast, a Nigerian study found no statistically significant correlation between knowledge score and years of work experience (16). This can be explained that older physicians and nurses were usually in higher work position and had higher post graduate qualifications in addition to higher work experience.

According to the findings of this research, doctors' and nurses' confidence in treating COVID-19 patients was substantially correlated with their understanding of COVID-19. According to research done in South Africa, health care workers with more confidence in handling COVID-19 patients had a better degree of competence (17).

This research found that nurses who attended outbreak management training were much more likely to be acquainted with COVID-19. Similar outcomes were found in a cross-sectional research of health care workers in southern Ethiopia, which found that COVID-19 training was substantially linked with HCWs' COVID-19 knowledge (18). This may be explained by the fact that training increases knowledge by reducing false beliefs.

This study showed that practice score of physicians towards COVID-19 statistically

differed by age, with those aged 35- 40 showing the highest percentage of good practice (82%) (Table 2). Also, that practice score of nurses statistically differed by age, with those aged 30 to <35 and 35 to <40 years had the highest percentage of good practice (58.3% and 81 respectively) (Table 3). This is consistent with the findings of a study conducted in Bangladesh, which found that the practice score of doctors and nurses varies substantially based on age distribution, with participants over the age of 30 more likely to display exceptional behavioral practice than younger individuals (19).

This study revealed that practice score of physicians and nurses towards COVID-19 statistically differed by experience years. physicians with more than 5 experience years had the highest percentage of good practice (89.7%). and nurses with work experience less than 5 years had the highest percentage of poor practice (58.9%). A cross-sectional trial conducted in Lebanon indicated that physicians with at least ten years of experience were 3.35 times more likely to have an exceptional practice (20). This can be explained by that increasing years of work experience are associated with increased feelings of preparedness and promotion of better practice.

This study revealed that preparedness score of physicians towards COVID-19 statistically differed by sex and work experience (Table 2). The highest percentages of physicians with adequate preparedness were males (83.3%) and of experience more than 5 years. This result is the result of a study conducted at South Gondar Public Hospitals, which discovered that healthcare professionals with less than five years of experience increased the low level of preparedness by 3.4 times compared to those with more than five years of experience (21). This is likely because healthcare staff have had more time to get diverse infection prevention training, hence increasing their readiness for COVID-19.

According to this study, the majority of physicians (80.6%) and more than two-thirds of registered nurses (71.3%) have appropriate knowledge of COVID-19 (Table 4). According to a study conducted in Egypt, 91.7% of physicians and 79.2% of nurses are familiar of COVID-19 (22). According to a study conducted in Lebanon, 89.5% of physicians have a full grasp of the COVID-19 virus (20). Furthermore, a study of nurses in northern Ethiopia revealed that 74% of nurses had enough knowledge of the COVID-19 epidemic (23). A later study of nurses revealed that only 56.5% of respondents had appropriate knowledge of the transmission, symptoms, and management of COVID-19 (24). This may be due to

differences in the length of the research and the number of participants in the study.

This study also revealed that more than two-thirds of physicians (70.9%) and more than half of nurses 54% had good practice (Table 4). In contrast a study conducted in Lebanon revealed that only 49.7% of physicians adopted good preventive practices (20). A study performed in Egypt revealed that 100 percent of physicians and 82.33 percent of nurses had excellent practices (22) and a study conducted in Pakistan revealed that 91.4% of physicians had efficient procedures for preventing COVID-19 (12).

Other studies reported 78.9% in Nepal (25) and 88.7% in Pakistan; the current study revealed a smaller proportion (12). Numerous factors, including a shortage of medical and nursing professionals, training programs, and supervision and monitoring throughout practice, may contribute to inadequate treatment.

Findings of this study demonstrated that near three-fourth of physicians (73.1%) and near two-thirds of nurses (60%) had adequate preparedness (Table 4). A Saudi Arabian research found that 92.47 percent of oncology nurses received the required COVID-19 training, whereas 7.53 percent did not. Age, gender, education, and experience had no significant relationship with nurses' preparation (26). In contrast, a research was done to assess physicians' and nurses' knowledge and readiness regarding COVID-19. Only 7.8% of responders were well prepared for COVID-19 outbreaks, while the remaining 92% scored poorly (13).

This study indicated that 25.5 percent of health care professionals considered that confusing knowledge concerning the transmission of viruses was a barrier to infection control, while 44.3 percent stated that a lack of infection control materials was a barrier. In addition, 48.3% of HCPs identified emergency department congestion as a barrier. Although more than a quarter of HCPs reported the absence of an infection control policy, hand washing, and mask usage are not obstacles to infection management (Table 5). Another study conducted in Egypt revealed that the leading perceived barriers to the implementation of IPC measures during the COVID-19 pandemic were overcrowding of patient care areas in 73.1% of cases, limited IPC supplies in 68.1% of cases, inadequate training in 66.9% of cases, a lack of PPE in 66.21 % of cases, and a lack of knowledge in 66.21 % of cases (27).

The readiness of the facility was evaluated using an observational check list. The mean hospital preparation score for COVID-19 out of 100 (Table 6). The score for organization and preparation was 77.8% due to the absence of a flexible shift

schedule and current emergency contact information for the patient's family. However, the present research's findings are superior to those of a study done in Iranian hospitals, which revealed a framework for planning and decision-making score of 53.3% (28). This may be due to the intense workload and lack of frequent monitoring by healthcare experts.

The score for equipment and supplies was 62.5 percent due to the lack of hand-washing stations and no-touch trash cans. However, the present research provides better outcomes than a study done in Iran, where consumables and durable medical equipment and supplies scored 37.9% (28). 66.7% of visitors were informed of the symptoms and indicators of COVID-19, in addition to prophylactic measures such as hand and respiratory cleanliness and physical separation. This research suggested a higher level of education and training than the Iranian hospital study, which scored 49% (28).

The facility got 20% for Communication because it failed to provide residents and their families with COVID-19 status updates. This comes with a study conducted in Iran revealed that facility communications score was 15% (28). Poor communication can be explained by poor communication skills, workload pressure, poor documentation, conflicts between staff members and ineffective communication in hospitals.

The score for visitor accessibility and mobility across the site was 75%. In comparison, according to study conducted in Iran, visitor access and mobility inside the university scored 33.3%. This can be explained by lack managing, screening and educating visitors to prevent the transmission of COVID-19 (28). Regarding occupational health, the score was 60%. On the other hand, a study conducted in hospitals in Iran revealed that occupational health score was 30.7%. This could be explained by work load, poor work environment and work place design.

The average hospital preparedness score for COVID-19 was 62,7 %. A study of 24 hospitals in Iran indicated an overall readiness score of 42%, with problems in almost every preparatory checklist component (28).

Conclusion:

There were significant differences between physicians and nurses in practice and preparedness levels, with the higher percentage of those with good practice and adequate preparedness were physicians. Inspection of environmental aspects of isolation unit of BUH revealed that cleaning, disinfection and waste disposal had the highest percentage of maximum score (100%). While communication had

the least percentage of maximum score (20%).

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