Nurses Knowledge and Attitude about Covid-19 among Elderly Patients at Intensive Care Units: Suggested Education

Marwa M. Abdelbacky[1], Aml Ali Mohamed[1] and Eman Fadl Abd El khalik[2]

[1] Department of Medical Surgical Nursing, (Critical Care Nursing), Faculty of Nursing, Minia University, Egypt
[2] Department of Medical Surgical Nursing, Faculty of Nursing, Minia University, Egypt
Email: marwa.radwan1@mu.edu.eg

Abstract: Covid-19is health emergency causing fatal acute respiratory distress syndrome in elderly patients. Knowledge of nurses working with elderly infected had an impact on the attitude and care provided. **Aim:** assess nurses' knowledge and attitude about Covid-19 among elderly patients at intensive care units. **Design:** descriptive research. **Sample:** purposive sample of 78 nurses (male, female) selected conveniently included nurses working at isolation ICUs at Cardiothoracic, Health Insurance, and Malawi Isolation Hospital in Minia city, Egypt. **Results**: (62.8%) of the sample were female, (48.1%) of them had bachelor degree, and (47.4%) institute. (29.5 %) had a satisfactory knowledge (25.6%) had `positive attitude. Mean ± S.D of knowledge (9.50±0.68) for satisfactory group and (6.48±0.68) for unsatisfactory. (21.5±1.10) had positive attitude and (10.7±3.53) were negative. A high statistical significant difference between both domains presented by P value (0.000**). **Conclusion**: nurses had lower knowledge level about caring of elderly patients with COVID-19which reflected on their attitude.

1. Introduction

Covid-19 pandemic is a major health crisis facing the world in recent days. (2019-nCoV) is the newest member of corona virus family which was identified as health emergency causing sever Acute Respiratory Distress Syndrome (ARDS) leading to pneumonia and respiratory failure in humans [1]. The first infected patient who had manifestations of fever, cough, and sever dyspnea was reported on 12 December 2019 by Chinese authorities in Wuhan city, the capital of Hubei province in China. [2].

Covid-19 impacting a global health problem for elderly people, they are facing a significant risk of developing severe life threatening illness due to physiological changes that come with ageing and existing underlying health conditions [3].

As age advances, disruption of the immune system has been reported. In addition, elderly exhibit a continual production of inflammatory mediators and cytokines, also known as 'inflammaging', which makes the elderly response to viral infection is much higher than the young [4].

Covid-19 infected patients need ICUs admission and mechanical ventilation. to help them breathe, or they may die if there is no place, inadequate staff, or inadequate care at the pandemic time [5] Covid-19 infections lead elderly patients to develop ARDS

(96.8%) of them dye at ICU. Notably, ARDS has been found to be higher in the elderly as well as in subjects with acute heart, liver, and kidney function disorders [6].

Histological analysis performed on post-mortem lungs of ICU patients with Covid-19 found a diffuse alveolar damage (DAD). Furthermore, hyaline membrane formation, vascular congestion, and large areas of intra-alveolar hemorrhages and micro - thrombus formation which obstructs oxygen flow to the lung and also to the other vital organs that make patients develop multiple organ dysfunction resulting in fetal outcomes [7].

The health team are in close contact with infected elderly patients, many of ICU nurses get Covid-19 and leave because they are infected. On the other hand, there is increasing numbers of patients in the corridor, and decreased staff. ICU nurses were forced to work with a disease that has no treatment and with extreme overtime and shift work schedules. Covid-19 as a clinical emergency requires a well prepared health care system. The preparation of ICU nurses with knowledge, practice and facilities can affect their attitude. If critical care nurses had negative or

incorrect attitude and knowledge, they will provide nursing care with a low quality [8].

Continuous nursing training at crisis time about preventive measures as hand hygiene, donning and removing face mask, wearing personal protective equipment (PPE), safe and rapid intubation, suctioning and safe care of infected mechanical ventilated patients will enforce their attitude which in turn improves their practice level. ICU nurses at the isolation are at great challenges while caring for elderly infected patients because of inadequate beds, ventilators, endotracheal tubes, laboratory materials, poor infection control system and PPE [9].

Some isolation ICUs Covid-19 time reported that they were not ready to face this pandemic and they did not have crisis management protocol to guide them. Some isolation ICUs were forced to choose between patients especially those more than 65 years. All ICUs tried to sort cases according to the triage method before admission to select who have the right to get isolation at the ICU to receive high quality of care for Covid-19 [10]. So this study was conducted to nurses knowledge and attitude about Covid-19 among elderly patients at ICUs.

Significance of the study

Internationally, many health authorities and governments are warning elderly people that they are at a higher risk of more serious and possible fatal illness associated with Covid-19. The risk is also increased in elderly patients with comorbidities such as hypertension, cardiovascular disease, diabetes, chronic respiratory disease, and chronic kidney [11].

Mortality data from Oxford Covid-19 Evidence Service indicated a risk of mortality of 3.6% for people in their 60s, which increases to 8.0% and 14.8% for people in their 70s and over 80s the risk of death rises to 20% [12]. In China, elderly patients >60 years or older infected by Covid-19 were between 15% to 26 %, with a mortality rate was significantly higher compared to younger patients (5.3%, vs 1.4%) [6].

Italy also, is one of the countries that was severely affected by COVID-19, Italy mortality increases with age, with a rate of 10.6% for 60-69 years-old patients, 25.7% for 70 -79-years-old patients and 31.7% for 80-89-years-old patients [13]. Furthermore, 8.1% of cases were reported in older patients (>90years) with a mortality rate of 28.5%. Sometimes Italy hospitals were forced to refuse elderly patients more than 65 years-old because of the inadequate hospital's beds and not enough mechanical ventilators [14].

The Centers for Disease Control and Prevention (CDC) reported that individuals older than age 65 comprise 17% of the total population in the United States, they make up 31% of COVID-19 infections, 45% of hospitalizations, 53% of them need ICU admissions, and 80% of deaths caused by this infection [15].

According to the Ministry of Health's latest count, reported on Tuesday, Egypt has recorded 47,856 Covid-19 cases and 1,766 deaths in total so far, and the death rate among Covid-19 patients older than 60 years of age is 60 %, while the infection rate is 7% for individuals older than 70 years Also according to the WHO the most infected governorates in Egypt is Cairo, Giza and Alexandria, and the Minia city was in the 20th level [16], [17].

Aim of the study: to assess nurses' knowledge and attitude about Covid-19 among elderly patients at intensive care units.

Research questions

1. What is ICU nurses' level of knowledge about COVID-19 infection among elderly patients?

2. What is the ICU nurses' attitude about COVID-19 infection among elderly patients?

2. Methods

Study design: descriptive research design used in the study at cross section period of three months from the end of March till the end of Jun.

Sample of the study: was purposive sample (78 nurses' males and females) selected conveniently during the previously listed period.

Setting: the sample included nurses whom working at the isolation ICUs that was situated in the Cardiothoracic Hospital, the Health Insurance Hospital, and the Malawi Isolation Hospital at the Minia city, Egypt. All the previously listed hospitals were assigned for Covid-19 infected patients in all age groups.

Tools of the study: questionnaire sheet was divided to three different tools

Tool I: the ICU nurses' sociodemographic data questionnaire as (age, sex, level of education, years of experience, hospital of work).

Tool II: included nurses' knowledge assessment questionnaire included (15) multiple choice questions (prepared by the researcher after literature reviewing) [9] & [18] used to assess ICU nurses' level of knowledge about the Covid-19 infection among elderly (its identification, mode of transmission, high risk groups, manifestations, incubation period, diagnosis, treatments, preventive measures, nursing role and patient education). Each correct answer scored (1) and the wrong answer scored (zero). The total score was (15 degree), if the total score is (60 %) or more it considered satisfactory but if it is below (60 %) it considered unsatisfactory.

Tool III: attitude questionnaire scale for nurses' bout managing Covid-19 elderly patients. This tool prepared by the researcher after reviewing the related literature [9], [10] & [18]. This tool consisted from (16) statements that describe ICU nurses' attitude about adequate training for Covid-19, adequate amount of PPE, if they provide elderly patients with adequate care and support……etc. This tool consisted of 8 positive statement (from 1 to 8) this part had responses agree score (2), sometimes (1) disagree (zero), and 8 negative statement from (9 to 16). The negative statement responses are (agree, scored (0) sometimes (1) disagree (2). The higher score of this tool is (32) and the lower score is (0). If the total score is below (60 %) it considered negative attitude but if it is equals or higher than (60 %) it considered positive attitude.

Preparation phase

Validity and reliability: The validity of tools were done by five expert professors in critical care nursing, medical surgical nursing and gerntological nursing. The reliability of the tools was done using Cronbach' alpha test it was (0.88%) for (Tool one), (tool two) and (tool three) were (0.95% and 0.85%) respectively. To ensure the tools clarity, applicability, feasibility & relevance, a pilot study was carried out on 8 nurses and there were no modifications done.

Ethical consideration

Online permission was sent by e-mail from the researchers to the head nurses of the isolation ICU. Online informed agreement was obtained from each participant nurse before completing the questionnaire. The researchers offer adequate information about aim of the study and significance before starting the online questionnaire. Participants assured the confidentiality of their responses.

Implementation phase

Because of the mode of transmission of the Covid-19 that transmitted through direct contact the researcher used soft war to prepare the questionnaire using the Google docs web site for preparing it. The researcher decided to use this software method to decrease chance of infection. The questionnaire sheet was available for ICU nurses included in the study at any time throughout the study period using social media websites as (Facebook, Messenger and WhatsApp and personal e-mails)

The researchers clarified at the beginning of the questionnaire that it was designed for ICU nurses and also the researchers sent personal message for every ICU nurse included in the study that this questionnaire was prepared for them. The questionnaire was designed that all questions must be answered and they cannot click submit before signing all the questions and signing only one answer and one response for every statement. Then it returned to me by the same site.

The researchers started the implementation phase at the 30th of march. The online Knowledge, and attitude Questionnaires in addition to the sociodemographic data (tool I, II, and III) were sent to as a personal link to the ICU nurses for four weeks through the social media because of the higher using rates of this web sites by many people and easy access to it though the smart phones at their work or rest time.

After data collection period a proposal on line education was started in the form of online lectures were prepared and explained by the researchers after literature review [9], [18], [19] & [20] to the nurses by using the same social media that listed before. The online lectures prepared using the PowerPoint presentation software with sound recording for more attraction and information clarification to the nurses.

The online educational lectures included information about Covid-19 and its occurrence among elderly patients. This lectures consists of (definition of Covid-19, manifestations, the most common manifestations in elderly and the less common manifestations in elderly, diagnosis, the most applicable treatment regimen, nursing management of elderly patients with Covid-19 at the ICU and special guidelines for elderly mechanical ventilated patients. Another PowerPoint lectures prepared about hand washing and using PPE the ideal technique of wearing and taking off the PPE. This lecture was sent to the nurses via the same online social media for another four weeks.

Statistical analysis

Data were analyzed using SPSS version 25 and the forms with considerable missing. Descriptive statistics were used to describe the quantitative variables. Continuous variables were expressed as mean ± standard deviation (SD) and the *t* test at the 0.05 significance level was used to compare different factors between the sample.

3. Results

Table 1: Reveals distribution of ICU nurses according to Socio-demographic data. The table show that (62.8%) were female. n relation to educational levels it was found that (48.1%) of nurses had bachelor degree, and (47.4%) of them had form one year to five years of experiences. (65.4%) of nurses take their information about Covid-19 from internet.

Table 2: shows the level of nurses' knowledge about Covid-19 infection among elderly patients. Only (33.3 %) of the ICU nurses had correct knowledge about most common manifestations of Covid-19 in elderly, also (25.6%) had correct knowledge about the less common manifestations of the disease in elderly. Only (30.8%) had correct knowledge about the need of

mechanical ventilation for elderly patients with Covid-19 started when their oxygen saturation below 80%. Also (28.2%) of the nurses had correct knowledge

about suitable position for elderly patients with Covid-19 attached with ventilation.

Table 1: Sociodemographic data distribution of the studied ICU nurses (n=78).

Characteristics	(N=78)	%	Characteristics	(N=78)	%
Age			Gender		
20-30 years	38	44.4	Male	29	37.2
31-40 years	22	27.2			
<40 years	20	24.7	Female	49	62.8
Mean + SD = 34.5+8.56					
Department (ICU name)			**Level of education**		
Isolation ICU	34	42	Bachelor	39	48.1
Chest ICU	18	22.2	Institute	28	34.6
Health insurance ICU	26	32.1	Diploma	11	13.6
Years of experience			Information sources		
>1 year	8	9.9	Books	4	4.9
1-5 years	37	45.7	Internet	53	65.4
<5 years	33	40.7	Workshops	21	25.9

Table 2: Percentage distribution of nurses' knowledge about elderly patient's infected with Covid-19 (N= 78)

Statement	Knowledge	
	No (%) In correct	No (%) Correct
1. The type of Covid-19 infection is virus.	23 (29.5)	55 (70.5)
2. Covid-19 mode of infection transmission among elderly is direct contact.	15 (19.2)	63 (80.8)
3. Incubation Period for Covid-19 is 14 to 28 days.	44 (56.4)	34 (43.6)
4. The most common manifestations in elderly are (fever, cough and difficult breathing).	52 (66.7)	26 (33.3)
5. The less common manifestation in elderly (diarrhea, loss of taste and smell).	58 (74.4)	20 (25.6)
6. Diagnosis of Covid-19 done by PCR.	32 (41)	46 (59)
7. Covid-19 in elderly complicated to ARDS.	46 (59)	32 (41)
8. Ideal hand washing should be done with soap and water for 30 sec.	9 (11.5)	69 (88.5)
9. Ideal distance between patients is about one miter	34 (43.6)	44 (56.4)
10. Elderly patients with chronic disease are high risk for Covid-19 infection.	45 (57.7)	33 (42.3)
11. elderly patient with Covid-19 need ventilation if their oxygen saturation below 80%.	54 (69.2)	24 (30.8)
12. Suitable position for elderly patients with Covid-19 attached with ventilation is prone.	56 (71.8)	22 (28.2)
13. elderly obese and cardiac patients with Covid-19 high mortality rates.	45 (57.7)	33 (42.3)
14. Covid-19 suspected treatment is (antiviral).	50 (64.1)	28 (35.9)
15. Elderly patient with Covid-19 should be isolated for 14 days.	33 (42.3)	45 (57.7)
Total mean of knowledge	**7.35 ± 1.5**	

Table 3: Percentage distribution of nurse's attitude toward Covid-19 pandemic (N= 78).

NO	Items	Attitude					
		Disagree (0)		Sometime (1)		Agree (2)	
		N	%	N	%	N	%
Positive statement							
1	Hand washing done with soap and water or alcohol regularly.	6	7.7	9	11.5	63	80.8
2	PPE used all the time while working at the ICU with Covid-19 elderly patients.	6	7.7	12	15.4	60	76.9
3	Disposable items discarded immediate after each use.	14	17.9	35	44.9	29	37.2
4	Elderly patient admitted with fever should be considered as Covid-19 until prove otherwise.	8	10.3	11	14.1	59	75.6
5	Each ICU 's nurse received adequate training about caring of elderly patient with Covid-19 and infection control measures.	45	57.7	19	24.4	14	17.3
6	The hospital and ICUs were ready for facing Covid-19 pandemic.	51	65.4	9	11.5	18	23.1
7	ICU have adequate number of ventilators and beds for elderly Covid-19 patients.	52	66.7	15	19.2	11	14.1
8	In the ICU you prefer having more attendants with the elderly patient	50	64.1	19	24.4	9	11.5
Negative statement		**Agree (0)**		**Sometime (1)**		**Disagree (2)**	
9	Eye goggles were not used regularly.	3	3.8	69	88.5	6	7.7
10	ICU beds, surfaces and grounds were not disinfected regularly.	52	66.7	16	20.5	10	12.8
11	Ventilators were not sterilized after each patient contact.	42	53.8	17	21.8	18	23.1
12	ICU suffer shortage in PPE and safety measures at the Covid-19 crisis.	42	53.8	19	24.4	17	21.8
13	ICU staff and nurses consider elderly patients with Covid-19 less priority when there were inadequate beds.	47	60.3	24	30.8	7	9
14	Covid-19 elderly patients take longer duration of mechanical ventilation and hospitalization.	57	73.1	10	12.8	11	14.1
15	ICU did not provide nurses with clear nursing guidelines about Covid-19 guidelines.	44	56.4	13	16.7	21	26.9
16	Covid-19 crisis will spend for a long time.	46	59	14	17.9	18	23.1
	Attitude total mean	**13.5 ± 5.6**					

Table 3: shows the nurses attitude about caring of elderly with Covid-19. The majority of nurses agree on applying hand washing regularly and wearing the PPE all the time at the ICU. About half (57.7%) of nurses disagree on receiving adequate training about Covid-19. (66.7 %) disagree on the presence of adequate number of ventilators and beds for elderly patients. More than half of nurses (66.7, 53.8 %) respectively agree that beds, surfaces and ventilators were not disinfected or sterilized after each contact. More than half of nurses (53.8%) agree on presence of shortage in the PPE. Most ICU nurses (73.1) reported that Covid-19 elderly patients take longer duration of mechanical ventilation and hospitalization. About half

(56.4 %) of nurses agree on ICU did not provide nurses a clear nursing guidelines about Covid-19.

Table 3: shows the satisfactory mean score and standard deviation of knowledge was (9.50±0.68) and the unsatisfactory one was (6.48±0.68). Regarding to the attitude mean score ± S. D was (21.5±1.10) for the positive and (10.7±3.53) for the negative. There was high statistical significant difference between both domains presented by P value (0.000**).

Table 4: showed negative correlation between knowledge attitude presented by R (. - 409**) and there was high statistical significant deference between them presented by P value (0.000).

Table 4: Comparison of mean score and standard deviation (S.D.) of the ICU nurses in relation to knowledge, and attitude (N=78)

Variable		Study group (N=78)		Mean +SD	T-test	(P value)
		No	%			
Total knowledge	Unsatisfactory (>60%)	54	70.5	6.48±0.68	19.1	0.000**
	Satisfactory (≤60)	24	29.5	9.50±0.68		
Total attitude	Negative attitude (>60%)	58	74.3	10.7±3.53	13.3	0.000**
	Positive attitude (≤60%)	20	25.6	21.5±1.10		

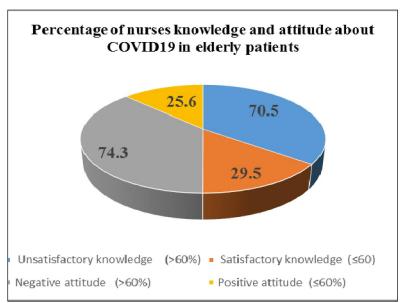* P ≤0.05 (significant) T-test: P – value based on independent sample T-test

Figure 1: shows the high percentage of nurse's had unsatisfactory knowledge about Covid-19 in elderly patients and also high percentage of nurses had negative attitude about the same disease.

Table 5: Correlation between knowledge and attitude of the ICU nurses (n= 78)

Variables		Knowledge pre	Attitude pre
Knowledge	R P	1	. - 409** 0.000
Attitude	R P		1

**Correlation is significant at the 0.01 level (2-tailed). * p≤0.05 (significant) **p≤0.05 (highly significant). PCC: P – value based on Pearson correlation coefficient.

4. Discussion

Covid-19 is an emergency condition affecting all population in all ages with high infection transmission rates. Covid-19 a disease with no vaccine or medication for preventing or treating it. The WHO points that spread of the Covid-19 is due to close contact with the infected person with respiratory manifestation such as cough and sneeze and through touching to the surface or object with virus on it [21]. Elderly population at higher risk of morbidity and mortality than adult. Elderly population needs especial physical and psychological care because of the age, presence of chronic disease and physiological changes [22].

Knowledge about the disease can affect the nurses' attitude and practice so at the beginning of Covid-19, nurses may not receive especial training about pandemic infection control practices which had an impact on their anxiety and attitude [10]. WHO offers guidelines for patients' management and also specific one for elderly infected patients [18]. but the problem is the inadequate time for training and delivering adequate information. Literature suggested that nurses fighting against Covid-19 feel great

amount of stress due to improper knowledge and inadequate personal safety issues [23].

The present study evaluated nurses' knowledge and performance about Covid-19 infection in elderly at the isolation ICU. The present study found that more than half (62.8) of the study nurses were female, (44.7 %) of their age between (20-30 years) the educational categories of them were between bachelor and institute level (48.1, 34.6 %) respectively. The present study was the same as **Mo, Y., et al.,** [24] they found that majority of the nurses were female their age was between 21 to 45 years with mean ± S.D. (32.7±6.5) and most of them their educational category was bachelor degree.

The study found that ICU nurses level of knowledge about managing elderly patients with Covid-19 infection was not completely bad. The study had 15 multiple choice questions, more than half of the nurses had correct answer for (6) questions from the total. This explain the value of social media and internet in supporting ICU nurses' information level. ICU nurses know the type of Covid-19 infection, its mode of transmission, diagnosis and the duration of patients' isolation.

But there some specific information about the less common manifestation in elderly, the deterioration of Covid-19, at which saturation level elderly patient should be attached to mechanical ventilation, Suitable position for elderly patients attached with ventilation and the higher level of mortality between elderly patients with chronic disease.

The present study was in line with **Majeed, M. M., et al.,** [25]. whom evaluated nurses' knowledge, Practices, Attitude and Anxiety of Pakistan's Nurses towards Covid-19. The study found high percentage of the nurses had good knowledge about the Covid-19 type of infection, symptoms, treatment options, method of transmission.

Also **Nemati, M., et al.,** [10]. was in line with the present study and described it as the first disease that nurses had somehow good information about it and this situation was related to the role of online media, WHO and ministry of health in providing information. **Zhou, M., et al.,** [1]. disagree with the present study and found the mean score of knowledge about Covid-19 among nurse's staff were less (37.85 ± 2.63) than doctors ((38.56 ±3.31), they concerned that to the more involving of doctors in the diagnosis and treatment so they have better knowledge level.

The next section explores the nurses' attitude while caring for elderly infected Covid-19 at the ICU. Most nurses agree on applying regular hand washing (80.8%), (76.9%) wearing PPE while caring for elderly infected Covid-19, they consider all elderly patient with fever infected with the virus till the diagnosis confirmed. But (88.5 %) of nurses sometimes were the eye's goggles. This result proves the role of in hospital infection control monitoring system and the higher role of online media in rising nurses' awareness about the danger of the pandemic and they understand that they were included in the nosocomial infection chain so they protected themselves.

The present study agrees with **Jiang, L., et al.,** [26] whom observed Chinese nurses' performance during Covid-19 pandemic, they reported that nurses need to protect themselves and their patients form the sever form of infection by following the infection control measures, as wearing PPE as face mask (N95), eye goggle, and protective suits.

(Barati, M., et al.) [27] finding were not the same as the present study in relation to infection control measures behaviors of HCWs against Covid-19 in Iran hospitals they found using of gloves in all procedures was (43.3%), (51.8%) wear face mask, but 87% always washed their hands frequently with water and soap. **Saqlain, M., et al.,** [28] disagree with the present study and found pharmacists were more likely to demonstrate good infection control practice than doctors and nurses.

Nurses at the isolation ICU need instructions about the importance of immediate and safe discard of the highly infected disposable items, the present study found only (37.2 %) agree on the immediate discard of disposable items. Most of health team associated infection transmission occurred because of the unsafe discard of infected items as tubes, catheters, gloves and syringes. The **(CDC Covid-19, 2020)** [29] reported that virus infection can still a life on the surface for up to 72 hours.

During COVID-19crisis most nurses had negative attitude about some measures, (57.7%) reported that they did not receive training in their hospitals about how to manage infected patients, most of them disagree that their hospitals were ready for the pandemic, nurses also disagree on the presence of adequate numbers of ventilators and beds, they did not prefer having or admitting more patients especially those elderly at the ICU because of the shortage in the PPE at the ICU, they reported that ICU beds, surfaces and grounds were not disinfected regularly and Ventilators were not sterilized after each patient contact.

(Shi, Y., et al.) [30] agree with the present study and prove that providing in hospital training and adequate facilities will reflect on the nurses' performance and attitude, and it is important to empower the health team by supporting their ability to acquire and use evidence-based information to improve staff members' willingness to work.

(Elhadi, M., et al.) [31] were in line with the present study, they assessed the concerns for low-resource countries, with under-prepared intensive care units, facing the Covid-19 pandemic, they found that health care staff complained form did not receive in hospital training about dealing with the PPE, inadequate ICUs, beds, ventilators and laboratories, (70%) of nurses in this study reported they were buying the PPE themselves as hospitals did not provide them.

In another study Khurana, S., et al., [32] described the role of health team in India to overcome the crisis, the Infection Control team in New Delhi has taken measures such as in-house production of the WHO-recommended hand wash solutions and indigenous face shields to be used by the health care workers in the hospitals which produced at home.

The present result was not consistent with (Huynh, G., et al 2020) [33] when they assessed the Knowledge and attitude of healthcare workers toward covid-19 at District 2 Hospital in Ho Chi Minh City they found more than (90%) of nurses had positive attitude toward caring of patients infected with covid-19, they also reported because of the nurse's good knowledge their attitude was positive and practice was good.

At the Covid-19 crisis more than half of the ICU nurses had negative attitude toward elderly infected patients they consider them as secondary level of priority, they reported that elderly patients take longer duration of mechanical ventilation and hospitalization. They also complained that their health institutions did not provide them with guidelines about how to deal with the infected patients and especially those elderly. The present result was related to the behavior taken by many health settings at crisis time as accidents, wars and pandemic. The health care staff forced to follow the triage role in sorting cases according priority and according to the availability of staff, beds and resources.

The present study agrees with (WHO) [34] they reported that elderly patients aged 70 years or more at higher risk for infection and even death from the disease, they also documented that elderly may also face age discrimination in decisions of the medical, nursing staff, triage role using and life-saving therapies. Also Malone, M. L., et al., [35] reported that case fatality rate for Covid-19 patients older than 80years in China was 21.9%, while patients of all ages with no underlying chronic conditions had a fatality rate of only 1.4%. They also clarified that inadequate emergency department or ICU care, or lack of resources could also adversely affect mortality in that age as one of many factors.

(Yang, Y. et al., 2020) [36] were in line with the present study they found mortality of elderly patients with Covid-19 is higher than that of young and middle-aged patients, Elderly patients with Covid-19 are more likely to progress to severe disease.

A high percentage of nurses had unsatisfactory mean score ± S.D of knowledge and negative attitude toward caring for elderly infected Covid-19 patients. This result because nurses at the isolation ICUs facing a new type of infection, the hospitals and ICUs did not prepare their staff before crisis. The rapid infection rates between patients and from patients to staff and between the staff also make sever load on hospital's staff and resources. All this factors explained the higher percentage of nurses' negative attitude.

This finding was in line with AlReshidi, N. M. [23] whom described that nurses knowledge was good in most points and bad in a few of them so it is essential to assess nurse's knowledge and attitude about the Covid-19 infection regularly. On the other hand AlReshidi, N. M found that effective staff education and training is the first line of Covid-19 prevention as mentioned by the WHO [18]. Hospital support for health care staff is helpful in providing specific intervention to the nurses and critical patients.

Conclusion

The present study concluded that high percentage of nurses had unsatisfactory knowledge and attitude about caring of elderly patients with COVID-19.

Recommendations

Nurses need training and more information about Covid-19 virus.

Nurses should be trained about the WHO guidelines of Covid-19 patients management and especially those for elderly.

Nurses should be trained about the pandemic infection control measures.

Nurses should have continuous training and support about how to deal with PPE.

Nurses at the ICU should be evaluated regularly for complete knowledge and practice. Nurses at the pandemic and crisis situations should have complete physical and psychological support from the health institutions and the community.

Limitations of the study

The study has many limitation, the inability to control large nurses sample, the researcher tried to provide the nurses in the sample with online lectures about the disease, but the researchers did not able to make face to face training because of the pandemic and isolation regulation all over the city. The researcher did not able to provide complete educational intervention with pre and posttest because of the inability to control the sample online using the social media.

Reference

1. Zhou, P., Yang, X. L., Wang, X. G., Hu, B., Zhang, L., Zhang, W.,... & Chen, H. D. (2020). A pneumonia outbreak associated with a new coronavirus of probable bat origin. *nature*, *579*(7798), 270-273.

2. Rajkumar, R. P. (2020). COVID-19and mental health: A review of the existing literature. *Asian journal of psychiatry*, 102066.

3. WHO   (2020): https://www.who.int/maternal_child_adolescent/links/covid-19-mncah-resources-care-for-older-persons/en/.

4. Mollica M, Nicolai A, Maffucci R et al (2018) Obstructive sleep apnea and cardiovascular risks CDC (2020): https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-increased-risk.html, https://www.who.int/maternal_child_adolescent/links/covid-19-mncah-resources-care-for-older-persons/en/

5. Liu, K., Chen, Y., Lin, R., & Han, K. (2020). Clinical features of COVID-19in elderly patients: A comparison with young and middle-aged patients. *Journal of Infection*.

6. Perrotta, F., Corbi, G., Mazzeo, G., Boccia, M., Aronne, L., D'Agnano, V.,... & Bianco, A. (2020). COVID-19and the elderly: insights into pathogenesis and clinical decision-making. *Aging Clinical and Experimental Research*, 1-10.

7. Chopra, V., Toner, E., Waldhorn, R., & Washer, L. (2020). How should US hospitals prepare for coronavirus disease 2019 (COVID-19)?. Annals of internal medicine, volume 172, issue9, pages 621-622.

8. Shang, Y., Pan, C., Yang, X., Zhong, M., Shang, X., Wu, Z.,... & Sang, L. (2020). Management of critically ill patients with COVID-19in ICU: statement from front-line intensive care experts in Wuhan, China. *Annals of Intensive Care*, *10*(1), 1-24.

9. Nemati, M., Ebrahimi, B., & Nemati, F. (2020). Assessment of Iranian nurses' knowledge and anxiety toward COVID-19during the current outbreak in Iran. *Archives of Clinical Infectious Diseases*, *15*(COVID-19).

10. Shahid, Z., Kalayanamitra, R., McClafferty, B., Kepko, D., Ramgobin, D., Patel, R.,... & Jones, K. (2020). COVID‐19 and older adults: what we know. *Journal of the American Geriatrics Society*, *68*(5), 926-929.

11. Haffower, H. (2020). A certain horrible subset of the internet is calling the coronavirus 'boomer remover'. Business Insider Australia.

12. Yang, Q.B. Lu, M.J. Liu, Y. Wang, A. Zhang, N. Jalali, et al., Epidemiological andclinical features of the 2019 novel coronavirus outbreak in China, Med, Rxiv (2020), https://doi.org/10.1101/2020.02.10.20021675.

13. Spigaglia, P. (2020). COVID-19and Clostridioides difficile infection (CDI): Possible implications for elderly patients. *Anaerobe*, 102233.

14. Covid, C. D. C., & Team, R. (2020). Severe outcomes among patients with coronavirus disease 2019 (COVID-19)—United States, February 12–March 16, 2020. MMWR Morb Mortal Wkly Rep, 69(12), 343-346.

15. https://www.who.int/countries/egy/en/ number of covid 19 confirmed cases according to governorates 10/6/2020.

16. "Egypt Coronavirus - Worldometer". *www.worldometers.info*. Retrieved 18 June 2020.

17. https://www.who.int/countries/egy/en/ number of covid 19 confirmed cases according to governorates 10/6/2020.

18. Singhal, T. (2020). A review of coronavirus disease-2019 (COVID-19). *The Indian Journal of Pediatrics*, 1-6.

19. Phua, J., Weng, L., Ling, L., Egi, M., Lim, C. M., Divatia, J. V.,... & Nishimura, M. (2020). Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations. The Lancet Respiratory Medicine.

20. Desai, R., Singh, S., Parekh, T., Sachdeva, S., Sachdeva, R., & Kumar, G. (2020). COVID-19and diabetes mellitus: A need for prudence in elderly patients from a pooled analysis. Diabetes & Metabolic Syndrome: Clinical Research & Reviews.

21. Mazumder, H., Hossain, M. M., & Das, A. (2020). Geriatric care during public health emergencies: Lessons learned from novel Corona Virus Disease (COVID-19) pandemic. *Journal of Gerontological Social Work*, 1-2.

22. AlReshidi, N. M. (2020): Assessment of Saudi nurses' knowledge, attitude and anxiety towards COVID19 during the current outbreak in KSA, IOSR Journal of Nursing and Health Science (IOSR-JNHS)e-ISSN: 2320–1959.p-ISSN: 2320–1940 Volume 9, Issue 3 Ser. XI (May - June 2020), PP 27-34www.iosrjournals.org.

23. Mo, Y., Deng, L., Zhang, L., Lang, Q., Liao, C., Wang, N.,... & Huang, H. (2020). Work stress among Chinese nurses to support Wuhan in fighting against COVID‐19 epidemic. *Journal of nursing management*

24. Majeed, M. M. Evaluation of Knowledge, Practices, Attitude and Anxiety of Pakistan's

Nurses towards COVID-19during the Current Outbreak in Pakistan. The copyright holder for this preprint this version posted June 11, 2020. https://doi.org/10.1101/2020.06.05.20123703doi: medRxiv preprint

25. Jiang, L., Broome, M. E., & Ning, C. (2020). The performance and professionalism of nurses in the fight against the new outbreak of COVID-19epidemic is laudable. *International Journal of Nursing Studies*, *107*, 103578.

26. Barati, M., Bashirian, S., Jenabi, E., Khazaei, S., Karimi-Shahanjarini, A., Zareian, S.,... & Moeini, B. (2020). Factors Associated with Preventive Behaviours of COVID-19among Hospital Staff in Iran in 2020: An Application of the Protection Motivation Theory. Journal of Hospital Infection.

27. Saqlain, M., Munir, M. M., Rehman, S. U., Gulzar, A., Naz, S., Ahmed, Z.,... & Mashhood, M. (2020). Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a cross-sectional survey from Pakistan. *Journal of Hospital Infection*, *105*(3), 419-423.

28. https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html, cdc, 1/7/2020.

29. Shi, Y., Wang, J., Yang, Y., Wang, Z., Wang, G., Hashimoto, K.,... & Liu, H. (2020). Knowledge and attitudes of medical staff in Chinese psychiatric hospitals regarding COVID-19. *Brain, Behavior, & Immunity-Health*, 100064.

30. Elhadi, M., Msherghi, A., Alkeelani, M., Alsuyihili, A., Khaled, A., Buzreg, A.,... & Gaffaz, R. (2020). Concerns for low-resource countries, with under-prepared intensive care units, facing the COVID-19pandemic. *Infection, Disease & Health*.

31. Khurana, S., Singh, P., Sinha, T. P., Bhoi, S., & Mathur, P. (2020). Low-cost production of handrubs and face shields in developing countries fighting the COVID19 pandemic. *American Journal of Infection Control*, *48*(6), 726.

32. Huynh, G., Nguyen, T. N. H., Vo, K. N., & Pham, L. A. (2020). Knowledge and attitude toward COVID-19among healthcare workers at District 2 Hospital, Ho Chi Minh City. *Asian Pacific Journal of Tropical Medicine*, *13*(6), 260.

33. World Health Organization. (2015). World report on ageing and health. World Health Organization https://apps.who.int/iris/handle/10665/186463

34. Malone, M. L., Hogan, T. M., & Perry, A. COVID-19in older adults: key points for emergency department providers. J Geriatric Emerg Med. 2020; 1 (4): 1-11.

35. Yang, Y., Li, W., Zhang, Q., Zhang, L., Cheung, T., & Xiang, Y. T. (2020). Mental health services for older adults in China during the COVID-19outbreak. *The Lancet Psychiatry*, *7*(4), e19.

7/24/2020