

## **Level of awareness and preparedness of MSD Nursing Students about Global Pandemic COVID19 Management.**

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### **Abstract**

#### **Background**

During the first quarter of 2020 year, the coronavirus disease 2019 (COVID-19) outbreak reached more than 100 countries with over 1 1, 210 ,956 cases. Health care authorities have already initiated awareness and preparedness activities worldwide. A deprived understanding and prepare for the disease among nursing students may result in delayed identification of cases and result in the fast spread of the infection.

#### **Objective**

This study aimed to investigate the awareness and perceptions of nursing students about COVID-19.

#### **Methods**

A cross-sectional, web-based study will be conducted among nursing student at MSD about COVID-19 during the first week of June 2020. A 26-item survey instrument was developed and distributed randomly to student using social media.

#### **Result**

The study concludes that, during the early stages of COVID 19 participants at PSMCHS had good level of awareness and preparedness and positive perceptions about COVID-19. This could be due to the measures taken by Saudi Govt . for the control and prevention of COVID-19 in the early stages of pandemic.

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### **I. Introduction**

Coronavirus infections are emerging respiratory disease and are known to cause illness ranging from the common cold to severe acute respiratory syndrome (SARS) [1]. CoV is a zoonotic pathogen that can be transmitted via animal-to-human and human-to-human interaction [2]. Multiple epidemic outbreaks occurred during 2002 (SARS), with around 800 deaths, and 2012 (Middle East Respiratory Syndrome: MERS-CoV), with 860 deaths .[3]

Approximately eight years after the MERS-CoV epidemic, the current outbreak of novel coronavirus (COVID-19) in Wuhan City, Hubei Province, China, has emerged as a global outbreak and significant public health issue [4]. On 30 January 2020, the World Health Organization (WHO) declared COVID-19 a public health emergency of international concern (PHEIC) [5]. Astonishingly, in the first week of March, a devastating number of new cases were reported globally, and COVID-19 emerged as a pandemic. As of 13 March 2020, more than 1 1, 210, 956 confirmed cases across 118 countries and more than 67,594 deaths had been reported .[6]

The newly identified COVID-19 typically presents with fever, cough and Malaise/Fatigue However, more severe symptoms such as dyspnea, diarrhea, pneumonia with radiographs lesions in the lungs and others have been reported. In severe cases acute respiratory disease syndrome (ARDS), sepsis and septic shock, multi organ failure, including acute kidney injury and cardiac injury. Eldest people and those with chronic disease have been stated as risk causes for death[7].The incubation period is estimated between 7 and 14 days[8].Based on epidemiological observations of data from the begins of the outbreak in China from January 2020, the trend

of an increasing incidence largely follows exponential growth, and the mean basic reproduction number (R0) was estimated the mean R0 ranges from 2.24 to 3.58 with an 8-fold to 2-fold increase in the reporting rate.[9 ,8]

COVID-19 is among a family of viruses called corona viruses, these viruses can infect humans and animals. Corona virus infections are respiratory in nature and can range from the common cold with mild symptoms to more severe infections, such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS)[10]. Currently, knowledge about this novel virus remains limited. The effective option of antiviral therapy and vaccination are currently under evaluation and development. WHO recommend infection control interventions the to control the transmission of COVID19 based on previous experience of management of MERS and SARS infections, include limit humans contacts, avoiding close contact with people suffering from acute respiratory infections, frequent hand-washing especially after direct contact with ill people or their environment, and avoiding unprotected contact with farm or wild animals.[11]

Moreover, people with symptoms of acute respiratory infection should practice cough etiquette, which is to maintain distance, cover coughs and sneezes with disposable tissues or clothing, and wash hands. healthcare facilities and health care workers are advised to follow infection control precautions these including ensure hand hygiene, proper use and dispose personal protective equipment (PPE) and environmental cleaning and disinfection [12]. Healthcare workers caring for infected individuals should utilize contact and airborne precautions to include PPE such as N95 or FFP3 masks, eye protection, gowns, and gloves to prevent transmission of the virus [11, 13]. Among the health care providers, the Nurses and nurses' students has unique responsibilities in the COVID-19 outbreak they continue to be at the front line of patient care in hospitals and closely involved with assessment and monitoring in emergency and isolation. Nursing students' clinical training is a vital element of the learning process and can be affected by COVID-19 outbreaks, as their safety can be compromised while dealing with patients and other staffs [3]. Due to the rapid increase in the number of cases in Saudi Arabia, specifically MSD hospitals, one of the head management directives is to involve senior skilled nurses' students in the Military hospitals senior students nurse are needed to protect the public from the spread of Covid-19.

#### **Justification:**

Limited research regarding the current topic was one of the reasons for conducting this study and effective information dissemination and case handling practices must be instilled on nursing students and trainee to prevent nosocomial infections. Hence, awareness and knowledge about COVID-19 should be a key point in guiding all relevant training activities for nursing students. Assessments of COVID -19 perception and awareness will serve as an important aid in the formulation of policies, guidelines, and hospital training programs that will ensure the safety of nursing students, health-care workers, and patients during epidemics.

#### **Concepts and Variables:**

Awareness and Perception about COVID-19: A way that the nursing students are being or becoming aware, understanding and interpreting the COVID-19 management process and that is a combination of their knowledge and attitudes toward it.

#### **Pandemic COVID-19 Management:**

Knowledge. The standard definition of knowledge by Grayling is "justified true belief"(Niedderer, 2007). For the context of this study, knowledge is the level of understanding or misconceptions that nursing students have about the pandemic COVID-19 and its management. Knowledge also encompasses awareness of the level of familiarity that nursing students need to acquire about the pandemic COVID-19 and its management to improve the level of their motivation, and their involvement in the management of the pandemic situation.

#### **Preparedness:**

Preparedness refers to measures taken to prepare for and reduce the effects of disasters. That is, to predict and, where possible, prevent disasters, mitigate their impact on vulnerable populations, and respond to and effectively cope with their consequences.(IFRC, 2020)

#### **Objective:**

In order to address the purpose, the following objectives will be studied:

- Assess level of knowledge and perception of student's nurse regarding COVID19 Management following global Pandemic.
- To assess level of student nurse knowledge regarding COVID-19 in terms (definition, causes, signs and symptoms, mood of transmission, incubation period)
- To determine nurse student's preparedness to deal with current pandemic COVID-19 in terms of taking precautions, preventive strategies, treatment, infection prevention and control in healthcare settings.

**Study design:**

This study design will be cross-sectional quantitative descriptive correlational and will take place in the period from May 2020 to July 2020. A descriptive correlational method will be used to describe the relationship between perceptions of nursing students with their preparedness in the management of COVID-19. This study will employ an online survey methodology. In this study, the perception of nursing students towards COVID-19 management process is the independent variables, and their preparedness is the dependent variables.

**Study Sample:**

A convenience sample will be selected from 6 MSD nursing institutions offering 2-4 years Diploma and Bachelor of Nursing degree who are required to join professionals of armed forces hospital in the management of pandemic COVID-19 management.

**Setting:**

Prince Sultan Military College for Health Sciences in Dhahran (PSMCHS), Health Studies Center at Prince Sultan Military Medical City in Riyadh, The Nursing Institute of the South Armed Forces Hospital, Nursing Institute, Prince Salman Hospital, Northwest Armed Forces, The Nursing Institute of the Armed Forces Hospital in North, and The Nursing Institute is run by the Armed Forces Hospitals in Al-Kharj.

**Sample Size:**

Selecting the largest sample size possible is recommended that it can be an accurate representation of the targeted population, (Polit & Beck (2010)). Ideally a sample size of 158 will be sought, that achieves 80% power.

**Inclusion criteria:**

- 1.Nursing Students.
- 2.Students nurse who will agree to participate.
- 3.Available during the study.

**Exclusion criteria:**

- 1.Students nurse who are not available at the time of data collection.
- 2.Not willing and not agree to participate.
- 3.Nursing students who are not enrolled at PSMCHS and MSD nursing institutions.

**Instrumentation:**

Data will be collected using an online structured questionnaire adopted from previous study and modified to fit the objectives of this study, additional items were developed and added based on questions posted on the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC). The tool is composed of three parts which includes the following:

Part one was composed of 2 sections first section used 2 items to collect data about sociodemographic characteristics of the study group including (age, gender), second section composed of 3 items that will measure the knowledge of the participants which are the previous education about COVID19) using closed ended questions.

Part two was developed to collect data about student's nurse awareness regarding precautions and preventive strategies treatment, Infection Prevention and Control in Healthcare Settings. This part included 14questions include7 multiple choice items and 7 true or false and knowledge question about disease epidemiology, symptoms, incubation period, possible infection sources, mode of transmission, treatment and complications.

Part three was developed to collect data about student's nurse preparedness to work safe with COVID-19 patient using 12 multiple choice items that will test the practice of being in contact with infected patients in terms of infection precautions and preventive strategies history taking, patient isolation, specimen collection, PPE donning and removing, and student preparedness confidence, in Healthcare Settings. This part included questions form of multiple choices.

**Validity and Reliability of the Questionnaire:**

The questionnaire in its initial form has been presented to the co-investigator who give her opinion by adding, excluding or amending some of the statements of the questionnaire. She recommended that the statements ought to cover and express the hypotheses of the study and measure them properly. The instrument will be pilot tested by five volunteer faculty from PSMCHS to enhance readability and understandability of the instrument content.

It will be conducted during May 2020 in order to test applicability of the tools of data collection, to estimate the time required for filling the required forms and modify as necessary. Cronbach's alpha test will be calculated.

**Data collection technique:**

1. An online structured questionnaire adopted from previous study (Bhagavathula et al., 2020) and modified to fit the objectives of this study, additional items were developed and added based on questions posted on the World Health Organization (WHO) and CDC (Centers for Disease Control and Prevention, 2020, May 6)
2. The instrument has been pilot-tested by 5 volunteers' faculty from PSMCHS to enhance readability and understandability of the instrument content
3. An email or WhatsApp message stating the purpose, aims, risks and benefits of the study will be sent to the students of MSD nursing institutions and PSMCHS. a link to the survey will be included.
4. In one week a reminder e-mail or a phone call will be made by the researcher to all school's head and students reminding them about the study.
5. Contact information will be provided for any inquiries and additional information or comments.
6. When the questionnaires are completed, they will be sent back electronically through email or message. Data received will be protected and will be accessible for the researcher until study is completed.

**Data analysis:**

Descriptive statistics will be given as mean standard deviation or median with minimum and maximum, for quantitative variables, and number with percentages categorical variables. Cronbach's alpha will be used to assess the internal reliability of the items for each scale variables. Independent samples T test will be performed to test if there is any difference in their mean scores of the quantitative variables between the different level of study. Independent samples Mann-Whitney U test will be used when the assumptions of independent samples T tests are not met. Pearson Chi-Square procedure will be used in the analysis to assess the association between quantitative variables. Statistical analysis will be performed using IBM SPSS statistics (version 23; IBM Corporation 1989, 2014.) Alpha will be set at 0.05 significance level.

**Ethical considerations:**

Ethical clearance will be obtained from the research ethical committee (IRB) in PSMCHS the permission agreement to conduct the study will be obtained from PSMCHS, Confidentiality of information will be maintained throughout the study by making participants' information anonymous and asking participants to provide honest answers. Eligible participation in this survey will be voluntary and will not be compensated. Electronic informed consent will be shown on the initial page of the survey. the participants are free to withdraw at any time without incurring any consequences.

**Respect for persons:**

This will be a self-administered online questionnaire; the beginning statement will describe the study, so participants by answering the questionnaire will be giving their consent of participation in the study.

**Confidentiality:**

An online survey will be used to protect the confidentiality and the anonymity of the participants, also the questionnaires will not be numbered.

**Beneficence/non-maleficance:**

Sensitive and highly personal questions can be threatening if they elicit guilt or when the respondent is alone and without support. The author also mentioned that questions on knowledge or experience may also be threatening to participants if their knowledge is low and they are willing to work in the hospital. A written statement on the electronic information sheet will assure participants that the data collected will be de-identified and will remain confidential and that only the researcher will have access to it.

## **II. Results**

A convenient sample was used to recruit study participants from 6 MSD institutions offering Diploma and Baccalaureate Nursing Programs who are required to join professionals of Armed Forces Hospital in the management of patients with COVID-19 infection. Frequency and percentage distribution of participants shown in **Table 1** reveals that 89% are females and majority of participants (62.2%) belongs to Age 16-24. 33.9% and 3.9% of respondents belongs to 25-34 and >34 respectively. 72.4% were BSN and 27.6% Diploma students.

Majority of students (62.2%) were in level 3 and 4, 20.5% in level 5 &6 and another 17.3% are from level 7 to 8. Only 70.1% attended lectures/discussions about Novel Corona Virus Disease.

**Table 1: Distribution of frequency and percentage of participants according to their demographic variables (n= 127)**

Variables	Frequency & Percentage
<b>Gender</b>	
Male	14(11%)
Female	113(89%)
<b>Age</b>	
16-24	79(62.2%)
25-34	43(33.9%)
>35	5(3.9%)
<b>Qualification</b>	
BSN	92(72.4%)
Diploma	35(27.6%)
<b>Years of experience</b>	
3 to 4	79(62.2%)
5 to 6	26(20.5%)
7 to 8	22(17.3%)
<b>Attendance in lectures/discussions about Novel Corona Virus Disease</b>	
Yes	89 (70.1%)
No	38(29.9%)

**Sources of information**

Figure 1 outlines the main sources used by respondents as their reliable source for information about COVID-19. It shows that social media (41.8%) like Facebook, twitter, whats app, instagram etc. and News, media (33.9%) as the most used sources. Official Govt. web sites is also used by students (19.8%) and a less number of students only depended on family and friends (12.6%).

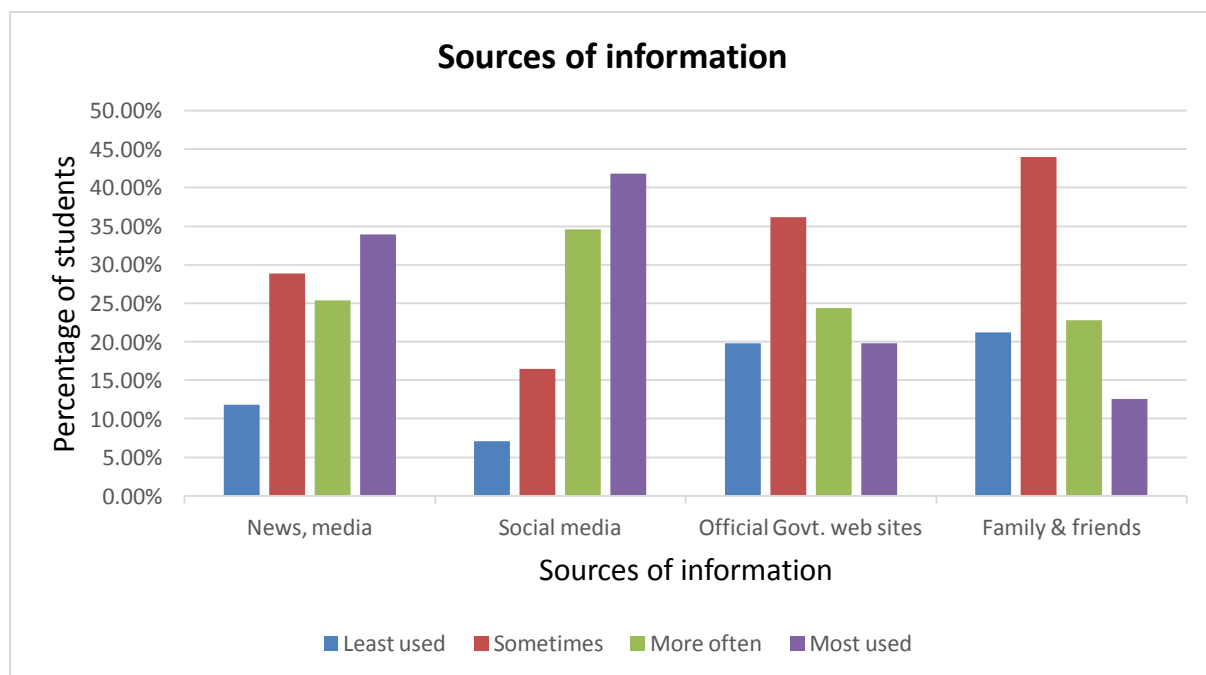


Figure 1: Sources of information about Corona Virus

**Awareness about Corona Virus**

Table 2 explains first objective of the study that was to assess student nurse’s awareness regarding COVID-19. Nursing student’s overall awareness about management of global pandemic COVID 19 is 59.4%.

**Table 2: Distribution according to awareness about COVID 19 (N=127)**

Questions	Total correct responses Frequency & percentage
Incubation period of corona virus is 2-14 days	50(39.4%)
Headache, fever, cough, sore throat and flu are symptoms of COVID 19	95(74.8%)
COVID 19 is thought to be originated from bats	83(65.4%)
COVID 19 is transmitted through air, contact and fecal oral routes	66(52.9%)
COVID 19 leads to pneumonia, respiratory failure and death	97(76.4%)
Supportive care is the treatment for COVID 19	65 (51.2%)
Hand hygiene, covering nose and mouth when coughing, avoiding sick contacts and having well cooked meats and eggs reduces risk of transmission of COVID 19	53(41.7%)

Majority of student nurses (76.4%) agreed that COVID 19 leads to pneumonia, respiratory failure and death. Similarly, 74.8% of participants are aware that headache, fever, cough, sore throat and flu are symptoms of the disease. In addition, 65.4% reported that COVID 19 is thought to be originated from bats and 52.9% only are aware of methods of transmission. However, participant’s awareness was poor regarding incubation period (60.6%) and prevention of COVID 19 (58.3%).

**Perceptions about COVID-19**

**Table 3: Nursing student’s perceptions about COVID 19 (N=127)**

Statements	True	False
It is believed that symptoms of the novel coronavirus (SAR-COV-19) may appear in as few as 2 days or as long as 14 after exposure.	*111(87.4%)	16(12.6%)
If anyone get the novel coronavirus (SAR-COV-19), there is no possibility of survival.	14(11%)	*110(86.6%)
If anyone had a flu shot, vaccination against the novel coronavirus (SAR-COV-19) is enough	28(22%)	* 99(78%)
Even in areas experiencing outbreaks, meat products can be safely consumed if these items are cooked thoroughly and properly during food preparation.	*98(77.2%)	27(21.3%)
If anyone has a fever, cough and difficulty breathing seek early and share previous travel history with the health care providers.	*109(85.8%)	18(14.2%)
If anyone work in a "wet market" it is recommended to disinfect the equipment and working area at least once a day.	* 96(75.6%)	31(24.4%)
As per WHO guidelines for the novel coronavirus, you only need to wash your hands when they are visibly dirty.	22(17.3%)	*105(82.7%)

\* Correct answers

Second objective of the study was to assess nursing student’s perceptions about COVID 19. From **Table 3**, it is clear that overall 81.9% of nursing students showed positive perceptions about COVID 19. A high majority of participants perceived that symptoms of COVID 19 may appear within 2-14 days (87.4%), and if anyone has fever, cough and difficulty of breathing to seek medical care early and to share previous travel history with health care workers (85.8%). Furthermore 77.2% agrees that even in areas experiencing outbreaks, meat products can be safely consumed if these items are cooked thoroughly and 75.6% knew that if anyone work in a wet market, it is recommended to disinfect the equipment and working area at least once a day. A vast majority of nursing students disagree with the statement “if anyone get the infection, there is no possibility of survival” and 82.7% knew importance of hand washing to prevent the infection.78% agrees that corona vaccine is an effective measure for prevention of COVID 19.

**Student's preparedness for management of patients with COVID-19**

**Table 4: Preparedness to practice with COVID 19 patients (N=127)**

Questions	Total correct responses Frequency & percentage
History taking should include questions about travel.	118(92.9%)
History taking should include questions about residence?	104(81.9%)
History taking should include questions about their contact with animals.	64(50.4%)
Patient with COVID-19 infection should stay in isolation.	119(93.7%)
Standard precautions include use of gloves, surgical facemask, protection, and hand hygiene.	112 (88.2%) gown, eye
Sequence of donning PPE is "hand hygiene, mask, protective eye wear, gloves".	102(80.3%)
Sequence of doffing PPE is "Gloves, hand hygiene, gown, hand hygiene, mask, hand hygiene".	90(70.9%) eye wear,
Nasopharyngeal swabbing should be performed in an airborne isolation room.	65(51.2%)
Wear an N95 mask/facemask, eye protection, gloves and gown when performing nasopharyngeal swabbing.	98(77.2%)
Aerosol generating procedures like open suctioning of airways, manual ventilation require N95 mask.	86(67.7%) bronchoscopy and
Transport personnel should wear gloves, gown, and N95 mask/ facemask while transporting patients with COVID 19.	35(27.6%) while

**Table 4** answered third objective of current study that is to assess nursing student's preparedness to work with COVID 19 patients. It revealed that nursing student's level of preparedness to practice with COVID 19 patients is 71.09%. Majority of nursing students agree that while collecting history they will include questions about travel (92.9%) and residence (81.9%). However, only 50.4% agrees that they ask questions about contact with animals. While, 50.4% stated that isolation is required for COVID 19 patients, 88.2% have reported that gloves, surgical mask, gown, eye protection, and hand hygiene are mandatory when treating COVID 19 patients. Similarly, 80.3% identifies correct way of donning PPE, but only 70.9% selected correct method of doffing PPE. Furthermore, 77.2% were able to choose correct precautions that should be taken when performing nasopharyngeal swabbing and 67.7% correctly identified aerosol generating procedures which requires N95 mask. However, nursing students have poor knowledge regarding the place to perform nasopharyngeal swabbing for COVID 19 patients (48.8%) and need to wear gloves, gown, and N 95 mask/facemask while transporting patients with COVID 19 (72.4%).

80.3 % students stated that they are confident to manage or deal with a COVID 19 patient (**Figure 2**).

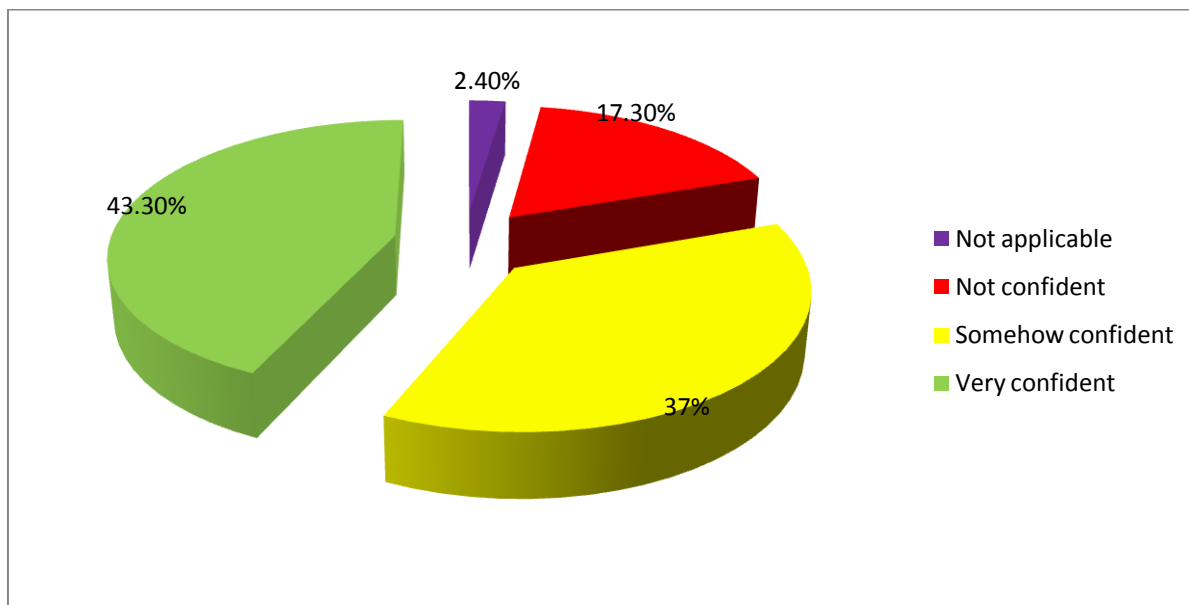


Figure 2: Student's confidence level to manage COVID-19 patient.

### III. Discussion

Today every country in the world is experiencing COVID-19 pandemic. It is important to prepare nursing students to control the outbreak. Since nurses are on frontline, their awareness, perceptions and preparedness towards COVID-19 is crucial for any response. This is a cross sectional study conducted with the objective to assess nursing student's awareness, perceptions and preparedness towards prevention and control of ongoing global pandemic COVID 19. In general nursing students had good levels of awareness and preparedness and positive perceptions towards COVID-19 prevention, and management. This could be due to the effect of training they received during their study.

Participants were predominantly female (89%), which is comparable to the demographic profile of the study conducted among 957 participants in Saudi Arabia (83%) by Temsah et al., in 2021. ---. Most of them belongs to the age group of 16 to 24 years (62.2%). This result aligns with demographic characteristics of a study conducted in GCC region by Abdulwahab. M. et al., in 2021-----in which 67.2% of respondents falls in the age group of <25 years. 72.4% were BSN students and 62.2% are from level 3 & 4 (62.2%).

#### Source of information

COVID-19 updates posted online by official Gov. agencies are unbiased and reliable and is essential for creating awareness, and practice among HCWs. (Bhagayuthula A. S. 2020) --- We found out that mostly used sources by nursing student's in current study as their main sources of information are social media (41.8%) and News media (33.9%). Percentages of students used official Gov. Websites as the primary source of information is less (19.8%). Currently, information available through social medias are less authentic sources that may be inaccurate, unverified and can misguide and is of serious concern. So nursing students should be careful in choosing correct information. They should be warned against fake news and should consult reliable sources such as WHO, CDC and Ministry of Health. A similar study conducted in GCC region by Abdulwahab M. et al. in 2020, -----among HCWs, medical and dental students showed that participants mostly used official govt. web sites and social media as main sources. They also cited news, media and family and friends.

#### Awareness about COVID-19

Although our study findings suggested significant knowledge gap between available COVID-19 information and the depth of nursing student's information, particularly regarding incubation period (60.6%) and prevention of COVID 19 (58.3%), 59.4% of respondents answered correctly on the awareness questionnaire. This is lower when compared to a study conducted in China, which revealed that 89% of respondents (Zhang M., 2020) have adequate knowledge. High level of knowledge was found in another study of Palasthenian students by Salameh B. et al., in 2021---- KAP studies from Uganda,----, Nepal ---, Saudi Arabia ----28, India 29----, and Ethiopia 30----also supported our findings. Additionally, many nursing students had inadequate awareness regarding transmission (52.9%) and treatment (51.2%). In current study, knowledge gap between available COVID-19 information and the depth of nursing student's information awareness level could



be due to the fact that, present study was conducted in the beginning of COVID 19 pandemic (May 2020 to July 2020), some nursing students might not have had adequate awareness regarding COVID 19. Therefore, our findings suggest that greater encouragement of hospital and academic administrators is needed to create awareness regarding COVID-19 among student nurses. Workshops and other educational programs could be conducted by educational institutions, and hospital authorities to help to increase their awareness about COVID 19.

### **Perceptions about COVID 19**

Present study revealed that, overall 81.9% of students showed positive perception regarding COVID 19. This finding is in agreement with a cross sectional study conducted globally among HCWs (Health Care Workers) by Bhagayathula.A.S. et al., in 2020--- in which 78% of respondents displayed positive perceptions about COVID 19. However, 18.1% of nursing students in our study reported negative perceptions. This may have negative consequences on the control of COVID-19 by delaying implementation of preventive measures. As nurses are frontline warriors in fighting against COVID-19 infection, their perceptions need to be promoted for better control and prevention of COVID-19.

### **Preparedness to manage COVID-19 patients/prevention and control of COVID-19**

Our study findings present that level of preparedness of nursing student's to manage COVID 19 is 71.09%. This finding is in align with a study done among Palasthenian University Students by Salameh.B., 2021---which showed that majority of participants are aware of preventive practices for dealing with COVID-19. In that study 63.9% of males and 68.4% of females practiced hand washing correctly. Similarly, 90.1% didn't travel unnecessarily. 80.6% had avoided social visits, and 74.8% asked/planned to ask family or friends not to visit them. KAP study results from China--- and Nepal--- also supported our study. In present study, students are prepared to include appropriate questions related to history collection (70.06%), isolation of patients (93.7%), application of standard precautions (88.2%), correct technique of donning (80.3%) and doffing (70.9%) gloves. However only 27.6% agrees with correct method for transport of patients. Study finding shows the necessity of education and training to prepare novice nurses to control COVID-19 as new variants of Corona virus are emerging. Furthermore, in a literature search conducted by including articles published up to July 30, 2020 by using PubMed and EBSCO databases to assess practice towards COVID-19 over the world, Wake, A. D., in 2019 ---also revealed that in majority of studies participants showed sufficient level of practice towards COVID-19. Through current study authors revealed that for prevention and control of COVID-19, HCWs should practice correct method of hand washing, donning and doffing of gloves, isolation precautions, history collection, avoid contact with animals and adherence to standard precautions.

### **Implications for practice**

Since nurses are in the frontline defense against COVID-19, measures should be taken to promote awareness, perceptions and preparedness of nursing students. Results can be used for effective risk communication and preventive and control programs. Result of our study findings could be used as a reference by health care authorities and arrangements should be done to conduct educational programs that target nursing students for the control and prevention of COVID-19. Educational institutions should have prior plans in place to disseminate correct information through channels that are trusted by college student's population such as Ministry of Health. In addition, further researches should be conducted regarding risk and protective factors as well as studies on awareness, perceptions and preparedness on large sample.

### **Future research**

It is noted that apart from awareness, perceptions and preparedness many other factors may affect the risk of COVID-19 infection. For example, public awareness, duration of pandemic, availability of supplies and equipment etc. So more research should be conducted on risk and protective factors about COVID-19. In addition, this research is conducted in the early stages of the pandemic (May to July 2020), thus awareness, perceptions and preparedness may change over time. So this study could be replicated at a later time to compare the differences. Since nonclinical workers also is dealing with patient's assessment, their knowledge assessment also is important. No studies have been done among non-clinical HCWs to address their awareness, perceptions and preparedness. Gaps in knowledge among these populations could increase the risk of nosocomial transmission of SARS-CoV-2. Also researches could be done not only in nursing students but also by including all health care professionals.

### **Limitations**

An important limitation of the study is that the information collected may be biased due to self-report of participants as it depends on participant's honesty and recall ability. In addition, in current study we surveyed

MSD nursing students only, and therefore results can't be generalized. Furthermore, low number of participants in present study also might have affected the findings of the study. Similarly, current the study used an online survey for data collection. Face-face-interview might have produced different result. Further studies are needed to expand upon and resolve these issues. Despite this limitations, study result provided useful information about nursing student's awareness, perceptions and preparedness towards COVID 19.

#### **IV. Conclusion**

The study concludes that, during the early stages of COVID 19 participants at PSMCHS had good level of awareness and preparedness and positive perceptions about COVID-19. This could be due to the measures taken by Saudi Govt . for the control and prevention of COVID-19 in the early stages of pandemic. However, since there is significant knowledge gap between depth of information available and the awareness, perceptions and preparedness, to promote adherence to COVID -19 preventive and control measures, additional educational programs that target nursing students should be instituted regarding COVID-19. Mostly used sources by nursing student's in current study as their main sources of information are social media and News media. So nursing students should be warned against fake news and about use of reliable sources such as WHO, CDC and Ministry of Health. Improvement areas include knowledge about incubation period of corona virus and preventive measures. Compliance with application of standard precautions need to be improved among nursing students while transporting patients with COVID-19. It could be achieved through educational programs. For prevention and control of COVID-19, HCWs should practice correct method of hand washing, donning and doffing of gloves, isolation precautions, history collection, avoid contact with animals and adherence to standard precautions.

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#### **References:**

- [1]. Yin, Y. and R.G.J.R. Wunderink, MERS, SARS and other coronaviruses as causes of pneumonia. 2018. 23(2): p. 130-137.
- [2]. Wu, Z. and J.M. McGoogan, Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. JAMA, 2020. 323(13): p. 1239-1242.
- [3]. Bhagavathula, A.S., et al., Novel Coronavirus (COVID-19) Knowledge and Perceptions: A Survey on Healthcare workers. 2020.
- [4]. Lai, C.-C., et al., Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and corona virus disease-2019 (COVID-19): the epidemic and the challenges. 2020: p. 105924.
- [5]. Eurosurveillance, E.E.T.J., Note from the editors: World Health Organization declares novel coronavirus (2019-nCoV) sixth public health emergency of international concern. 2020. 25(5).
- [6]. Organization, W.H., Coronavirus disease 2019 (COVID-19): situation report, 67. 2020.
- [7]. Wu, Z. and J.M.J.J. McGoogan, Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. 2020.
- [8]. Lauer, S.A., et al., The incubation period of coronavirus disease 2019 (COVID-19) from publicly reported confirmed cases: estimation and application. 2020.
- [9]. Chen, N., et al., Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. 2020. 395(10223): p. 507-513.
- [10]. Huang, C., et al., Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. 2020. 395(10223): p. 497-506.
- [11]. Sohrabi, C., et al., World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). 2020.
- [12]. Wang, J., M. Zhou, and F.J.J.o.H.I. Liu, Reasons for healthcare workers becoming infected with novel coronavirus disease 2019 (COVID-19) in China. 2020.
- [13]. Organization, W.H., Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: interim guidance, 13 March 2020. 2020, World Health Organization.
- [14]. IFRC. 2020. Disaster preparedness [Online]. Available: <https://media.ifrc.org/ifrc/what-we-do/disaster-and-crisis-management/disaster-preparedness/> [Accessed].
- [15]. NIEDDERER, K. J. D. R. Q. 2007. Mapping the meaning of knowledge in design research.
- [16]. CENTERS FOR DISEASE CONTROL AND PREVENTION. 2020, May 6. Healthcare Infection Prevention and Control FAQs for COVID-19. [Online]. Available: [https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-faq.html?CDC\\_AA\\_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Finfection-control%2Finfection-prevention-control-faq.html](https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-faq.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Finfection-control%2Finfection-prevention-control-faq.html) [Accessed].

#### **Table legends:**

- **Table 1: Distribution of frequency and percentage of participants according to their demographic variables (n= 127)**

- **Table 2: Distribution according to awareness about COVID 19 (N=127)**
- **Table 3: Nursing student's perceptions about COVID 19 (N=127)**
- **Table 4: Preparedness to practice with COVID 19 patients (N=127)**

**Figures legends:**

- **Figure 1: Sources of information about Corona Virus**
- **Figure 2: Student's confidence level to manage COVID-19 patient.**

**Table 1: Distribution of frequency and percentage of participants according to their demographic variables (n= 127)**

Variables	Frequency & Percentage
<b>Gender</b>	
Male	14(11%)
Female	113(89%)
<b>Age</b>	
16-24	79(62.2%)
25-34	43(33.9%)
>35	5(3.9%)
<b>Qualification</b>	
BSN	92(72.4%)
Diploma	35(27.6%)
<b>Years of experience</b>	
3 to 4	79(62.2%)
5 to 6	26(20.5%)
7 to 8	22(17.3%)
<b>Attendance in lectures/discussions about Novel Corona Virus Disease</b>	
Yes	89 (70.1%)
No	38(29.9%)

**Table 2: Distribution according to awareness about COVID 19 (N=127)**

Questions	Total correct responses Frequency & percentage
Incubation period of corona virus is 2-14 days	50(39.4%)
Headache, fever, cough, sore throat and flu are symptoms of COVID 19	95(74.8%)
COVID 19 is thought to be originated from bats	83(65.4%)
COVID 19 is transmitted through air, contact and fecal oral routes	66(52.9%)
COVID 19 leads to pneumonia, respiratory failure and death	97(76.4%)
Supportive care is the treatment for COVID 19	65 (51.2%)
Hand hygiene, covering nose and mouth when coughing, avoiding sick contacts and having well cooked meats and eggs reduces risk of transmission of COVID 19	53(41.7%)

**Table 3: Nursing student's perceptions about COVID 19 (N=127)**

Statements	True	False
It is believed that symptoms of the novel coronavirus (SAR-COV-19) may appear in as few as 2 days or as long as 14 after exposure.	*111(87.4%)	16(12.6%)
If anyone get the novel coronavirus (SAR-COV-19), there is no possibility of survival.	14(11%)	*110(86.6%)
If anyone had a flu shot, vaccination against the novel coronavirus (SAR-COV-19) is enough	28(22%)	* 99(78%)

Even in areas experiencing outbreaks, meat products can be safely consumed if these items are cooked thoroughly and properly during food preparation.	*98(77.2%)	27(21.3%)	handled
If anyone has a fever, cough and difficulty breathing seek early and share previous travel history providers.	*109(85.8%)	18(14.2%)	medical care with the health care
If anyone work in a "wet market" it is recommended disinfect the equipment and working area at least once a day.	*96(75.6%)	31(24.4%)	to
As per WHO guidelines for the novel coronavirus, you only need to wash your hands when they are visibly dirty.	22(17.3%)	*105(82.7%)	

\* Correct answers

**Table 4: Preparedness to practice with COVID 19 patients (N=127)**

Questions	Total correct responses Frequency & percentage	
History taking should include questions about travel.	118(92.9%)	
History taking should include questions about residence?	104(81.9%)	
History taking should include questions about their contact with animals.	64(50.4%)	
Patient with COVID-19 infection should stay in isolation.	119(93.7%)	
Standard precautions include use of gloves, surgical facemask, protection, and hand hygiene.	112 (88.2%)	gown, eye
Sequence of donning PPE is "hand hygiene, mask, protective eye wear, gloves".	102(80.3%)	
Sequence of doffing PPE is "Gloves, hand hygiene, gown, hand hygiene, mask, hand hygiene".	90(70.9%)	eye wear,
Nasopharyngeal swabbing should be performed in an airborne isolation room.	65(51.2%)	
Wear an N95 mask/facemask, eye protection, gloves and gown when performing nasopharyngeal swabbing.	98(77.2%)	
Aerosol generating procedures like open suctioning of airways, manual ventilation require N95 mask.	86(67.7%)	bronchoscopy and
Transport personnel should wear gloves, gown, and N95 mask/ facemask while transporting patients with COVID 19.	35(27.6%)	while

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