

Nurses' Knowledge on COVID-19 Prevention and Clinical Management at Shaheed Suhrawardy Medical College and Hospital, Dhaka

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Abstract: Corona Virus Disease (COVID-19) is a serious infectious disease caused by the SARS-CoV-2 virus and causes more death than any other disease around the world. In the management of such patients, nurses play a significant role through proper care and preventive measures. This study analyzed the level of Nurses' Knowledge Regarding Management of COVID-19 infection. A descriptive type of cross-sectional study was carried out between 6 month among 90 nurses who were selected conveniently from 120 populations to assess the level of knowledge regarding management of COVID-19 Infection at Shaheed Suhrawardy Medical College Hospital. A structured questionnaire was used for data collection and simple statistics (frequency, percentage and mean) was used for data analysis. The study result showed that the mean age of the respondents was 34 years. The findings of study revealed that the nurses' overall knowledge was at average level with mean score 66%. Among them only 11% respondents had excellent, 15% possesses very good, 17% had good, 23% had average and 34% had poor knowledge on management of COVID-19 infection. In conclusion, the higher educated nurses had better knowledge than others. In the meantime, the nurses having special training reported better knowledge than other. The study provides suggestion to prioritize training programmes in raising the level nurses' knowledge in terms of providing quality care to the COVID-19 infected patient.

Keywords: Nurses, Covid-19, Knowledge, Management, Pandemic.

INTRODUCTION

Corona virus disease (COVID-19) is an infectious disease caused by a newly discovered corona virus (WHO, 2021). In 2020; the World Health Organization (WHO) declared the corona virus disease (COVID-19) a global pandemic. The corona virus is affecting 222 countries and territories. Globally, around 506 million confirmed cases and 6.2 million deaths have been reported, whereas around 34.7 million confirmed cases of Corona Virus Disease (COVID-19) with 475640 deaths reported in Indian subcontinent and around 1.5 million confirmed cases of Corona Virus Disease (COVID-19) with 28028 fatalities reported in Bangladesh (WHO, 2021). COVID-19 can be transmitted from one to another by close contact via the respiratory secretions in coughs or sneezes or by touching virus-contaminated surfaces or objects. Older people with chronic illnesses have been identified as possible risk for morbidity and mortality (WHO, 2020). Approximately, 20% of COVID-19 cases had experienced respiratory distress syndrome, sepsis, septic shock, and organ failure (Wu, Z. and McGoogan, 2020.) .Regular hand washing, social distancing, and respiratory hygiene (covering mouth and nose while coughing or sneezing) can

prevent the transmission of COVID-19 (Feng *et al.*, 2020).

Strong infection control and preventive measures are the primary intervention to decrease the spread of the virus in both health care settings and the community (Saha *et al.*, 2020). Nurses play a crucial role and act as frontline fighters for the safe patient care and management of COVID-19 (M.H.U.R and Akhi 2020). Indeed, nurses' inadequate knowledge can delay recognition and handling of potential COVID-19 patients during the pandemic period. However, the nurses' knowledge toward COVID-19 remains unclear as insufficient studies are conducted on this area. In this regard, the COVID-19 pandemic offers a unique opportunity for nurses playing a key role and act as frontline fighters for the prevention and control of COVID-19 outbreak and safe patient care.

Besides, there are inadequate numbers of studies on knowledge regarding management of COVID-19 infection during epidemics that have been conducted in Bangladesh. Apart from that, the lessons learned from the studies conducted in other countries in an epidemic situation such as the SARS outbreak in 2003 suggest that knowledge

and attitudes towards infectious diseases are associated with serious panic and other emotional reactions among the healthcare workers, which can further complicate attempts to prevent and control the spread of the disease (Ferdous, *et al*). Considering the insufficiency of studies related nurses' knowledge regarding management of COVID-19 infection in Bangladesh, it was an urgent need to conduct the study on nurses' knowledge regarding management of COVID-19 infection. Therefore, this study aimed to assess the knowledge of Nurses regarding management of COVID-19 infection at Shaheed Suhrawardy Medical college hospital. The findings of this study could provide us useful information to evaluate the level of knowledge among nurses associated with patients suffering from COVID-19 and also provide baseline information immediately needed to enable health authorities to arrange training programmes that support nurses during the COVID-19 pandemic.

Background

COVID-19 is a serious infectious disease caused by the SARS-CoV-2 virus, first discovered in Hubei province, China. Since December 2019, a cluster of patients with corona virus disease 2019 (COVID-19) have been identified in Wuhan, a large city of 11 million people in central China. On December 29th, 2019, it all started with the finding of first four cases of COVID-19. All of which were connected to a seafood market of Southern China which is recognized as Huanan Seafood Wholesale Market. After two days, the WHO Country Office in Wuhan of Hubei Province in China got informed on December 31st of a case of pneumonia with an unknown etiology (Lekhraj Rampal and Seng, 2020). These cases were identified by local hospitals using a surveillance mechanism for "pneumonia of unknown etiology" that was established in the wake of the 2003 severe acute respiratory syndrome (SARS) outbreak (Xuet *al.*, 2020). Owing to fast spread it was declared a pandemic virus by the world health organization on March 11 in 2020 (Rahmani, and Mirmahale 2020). According to the World Health Organization, about 506 million COVID-19 cases have been confirmed and documented worldwide, with 6.2 million fatalities. The crucial situation of the COVID-19 outbreak is also applicable for Bangladesh like most other countries all over the world. From 8th March of 2020 in Bangladesh there have been 1.95 million confirmed COVID-19

cases and 29,000 deaths till April 2022 (Dubey *et al.*, 2020)

SARS-CoV-2, which causes severe acute respiratory disease, is related, but distinct from the severe acute respiratory syndrome (SARS) corona virus and Middle East Respiratory Syndrome (MERS) corona virus transmitted by respiratory droplets. The World Health Organization (WHO) stated that most estimates of the incubation period ranged from 1 to 14 days (WHO, 2020). COVID-19 is an infectious disease and almost leads to acute respiratory distress syndrome. Therefore, the virus epidemic is a big problem for humanity and can lead die in people with associated diseases such as chronic obstructive pulmonary diseases, chronic heart failure, diabetes mellitus, and kidney failure.

Justification

According to the World Health Organization (WHO), the outbreak of coronavirus disease 2019 (COVID-19) has become a pandemic, which at the time of writing had affected more than 506 million people and caused more than 6.2 million deaths worldwide, whereas around 1.5 million confirmed cases of COVID-19 with 29000 deaths, reported in Bangladesh (WHO 2021). Corona virus disease 2019 (COVID-19) has been spreading globally, with severe impacts on health and economics. Bangladesh is a densely populated country with insufficient healthcare resources; the control of COVID-19 would be difficult herein without adequate knowledge of healthcare workers on mentioned disease. Nursing is one of the essential components of medical care, and nurses' knowledge regarding the management of the disease directly affects patient's outcomes. It was therefore necessary to evaluate the nurses' knowledge regarding management of COVID-19 infection. The purpose of the study was to assess nurses' knowledge on management of COVID-19. This could reduce the government's burden in combating the outbreak strategies. The findings of the study might be helpful to the health workers especially for the nurses to acquire up-to-date information and deliver the best practice to manage the COVID-19 disease. Consequently patients would be benefited; crisis of hospital bed would be minimized, lessen the hospital burden and economical scarcity would be reduced. On the other hand there were a few studies that have been conducted in the country which address this issue. So it was necessary to conduct study on assessment of Nurses' Knowledge on COVID-19

Prevention and Clinical Management at a public Hospital, Dhaka.

Research Title

“Nurses’ Knowledge on COVID-19 Prevention and Clinical Management at Shaheed Suhrawardy Medical College and Hospital, Dhaka”

Research Question

What is the level of Nurses’ Knowledge on COVID-19 Prevention and Clinical Management at Shaheed Suhrawardy Medical College and Hospital, Dhaka?

Research Objectives

General Objective

To assess the level of Nurses’ Knowledge on COVID-19 Prevention and Clinical Management at Shaheed Suhrawardy Medical College and Hospital, Dhaka

Specific Objectives

1. To find out the level of Nurses’ Knowledge regarding concept of COVID-19 infection.
2. To assess the level of Nurses’ Knowledge regarding management of COVID-19 infection.
3. To identify the level of Nurses’ Knowledge regarding prevention of COVID-19 infection.
4. To assess the level of Nurses’ Knowledge regarding complications of COVID-19 infection.
5. To determine the socio-demographic characteristics of the respondents.

Research Variables

Socio-Demographic Variable

- Age
- Gender
- Religion
- Marital status
- Total Working Experience
- Working Experience in Covid Ward
- Professional qualification
- Training on COVID-19 infection

Knowledge Related Variable

Knowledge regarding concept of COVID-19 infection.

Knowledge regarding management of COVID-19 infection.

Knowledge regarding prevention of COVID-19 infection.

Knowledge regarding complications of COVID-19 infection.

Operational Definition

Nurse

A Nurse is a person who has completed a program of basic, generalized nursing education and is authorized by the appropriate regulatory authority to practice nursing in his/her country. This individual must be prepared and licensed; to practice the general scope of nursing which includes promotion of health, prevention of illness, and care of physically ill, mentally ill and disabled of all ages in all settings; to carry out health care teaching; to actively participate in the health care team; and to be involved in research (ICN, 1987).

In this study, Nurse is the health care professionals who directly responsible for caring with patients suffering from corona virus diseases, providing advice for preventing the complications by ensuring the awareness as well as counsels the patient’s and their attendance at Dhaka Medical College Hospital.

Knowledge

Knowledge is facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.

In this study researchers aimed to point out the ability and understanding of the nurses working at the Dhaka Medical College Hospital regarding concept, causes, clinical features, complications, management, prevention and control of the COVID-19 infection.

Study Framework

This study framework clearly illustrates the structure of the study plan or hypotheses and helps to formulate relevant study questions. Study framework concepts of this study project and assumed relationships between socio-demographic factors and knowledge related factors (Mill *et al.*, 2010).

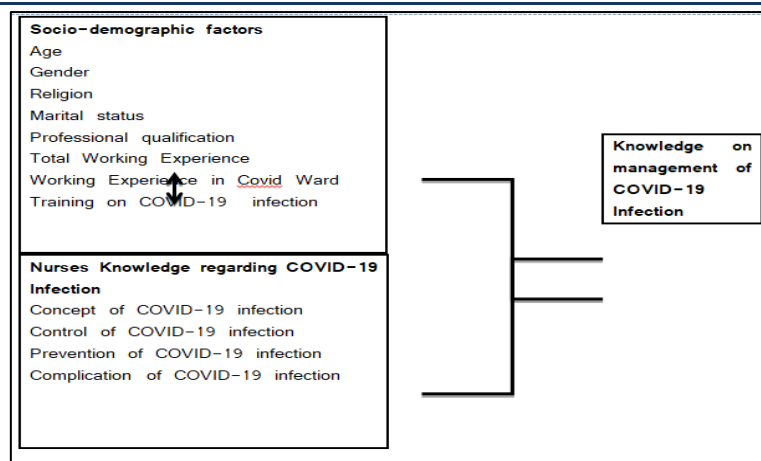


Figure: Study Framework

Chapter-II

LITERATURE REVIEW

Review of literature is a key step in research process. This refers to the activities involved in searching for the study information and developing a comprehensive picture of the state of knowledge on selected problem. The written literature review provides a background for understanding what has already been learned on a topic and illuminates the significance of the new study.

A cross sectional study was conducted by *Saha et.al., (2020)* on nurses' knowledge and practice regarding prevention and control of COVID-19 infection among 384 nurses who were directly related to care of COVID-19 patients in a tertiary level hospital, Bangladesh. This study aimed to identify the nurses' knowledge and practices regarding prevention and control of COVID-19 infection. The result shows that majority of the respondents 83.4% were female and 16.6% were male. Only 8.6% took training on COVID-19. Nearly two third percent nurses possessed (73.42%) good knowledge about COVID-19 and 17.63% had fair knowledge. 73.42% nurses had good practices, 21.84% fair practices and 8.68% poor practices.

Another cross sectional descriptive study was conducted by *M.H.U.R, and Akhi (2020)* on readiness of nurses to provide nursing care for COVID-19 patients at covid dedicated hospitals in Dhaka, Bangladesh. The study was aimed to assess the level of nurses' knowledge, attitude and practice with regard to readiness for providing nursing care for COVID-19 patients at COVID-19 dedicated hospitals in Dhaka. The result found that the total mean score of nurses knowledge on COVID-19 was 34.15 (SD=2.98) ranging from 28-47, which indicated moderate level of knowledge.

Study findings suggested that hospital policy along with in-service education and training is needed to enhance nurses' competencies in order to improve the knowledge, attitude and practice of nurses on COVID-19 patient care at covid dedicated hospitals.

Descriptive type of study was carried out with the 185 nurses between April and May in Turkey by *Semerci, Kudubes and Esref (2020)*. The purpose of the study was to assess nurses' knowledge regarding novel coronavirus (COVID-19) during the current outbreak in Turkey. The result showed that 52.4% of respondents were working as clinical nurses, 48.1% of the nurses received education for COVID-19 (51.9% did not receive) and 70.3% followed and read the COVID-19 Guidelines published by the Ministry of Health (29.7% did not follow guidelines). The descriptive characteristics of the nurses and their experiences of COVID-19 were found to explain 29.1% of their knowledge level for COVID-19. These findings suggested that hospital management and the Ministry of Health should provide more information for the nurses to better control of patients from the infectious disease.

El-Monshed et al., (2020) conducted this cross-sectional study among 207 nurses in Egypt. The study aimed to assess the nurses' knowledge, concerns, perceived impact and preparedness toward the COVID-19 pandemic. The results in the current study demonstrated that nurses had an acceptable level of knowledge regarding COVID-19. The majority of nurses knew the nature of the virus and its signs and symptoms such as cough, fever and dyspnea. Most of the nurses knew that the elderly and people with chronic diseases are more likely to be infected. All of the nurses knew that people could be infected from other people

who are infected with the virus, and 88.4% knew that the COVID-19 incubation period is between 1 day and 2 weeks and usually lasts for 5 days. Around half of the nurses answered correctly that most people recover from COVID-19 without the need for special treatment. Most of the nurses knew the best effective methods of protection for themselves and others from the emerging COVID-19. The findings provide needed information about the knowledge, concerns, perceived impact and preparedness of nurses toward the COVID-19 pandemic.

An exploratory cross-sectional study of Australian nurses was conducted between June and September 2020, by Nahidi, et al., The aim of the study was to explore Australian nurses' knowledge, preparedness, and experiences of managing patients diagnosed with severe acute respiratory syndrome coronavirus 2 infections (SARS-CoV-2) and COVID-19. Most respondents reported 'good' to 'very good' level of knowledge about COVID-19 and obtained up-to-date COVID-19 information from international and local sources. Regarding managing patients with COVID-19, 82.3% felt sufficiently prepared at the time of data collection, and 93.4% had received specific education, training, or instruction. Most participants were involved in assessing (89.3%) and treating (92.4%) patients with COVID-19. Varying levels of concerns about SARS-CoV-2 infection were expressed by respondents, and 55.7% thought the pandemic had increased their workload.

A cross-sectional study was conducted by (Zhang et al., 2020), involving a total of 700 nurses across 10 hospitals in Henan, China. The study analyzed healthcare nurses' knowledge, practices, and attitudes regarding coronavirus disease 2019 (COVID-19). In this study, 89% demonstrated sufficient knowledge of COVID-19. In this study the researcher recommended training regarding protection should be organized according to different factors (work experience, educational attainment, and so on).

One more study was carried out by (Alwani et al., 2020) in different hospitals of Karachi, Pakistan. The study aimed to assess the knowledge, practices, attitude and anxiety levels toward COVID-19 among nurses of Karachi, Pakistan who are directly involved with COVID-19 patients. Data of 78 nurses was analyzed. The findings showed that nurses possess good knowledge about COVID-19, its sources, symptoms and routes of transmission of the Virus

etc. The knowledge mean score was calculated 14.67 ± 3.36 . Therefore it is recommended by the researchers that proper counseling sessions may help them cope with the pandemic. Proper training and mentorship along with fortnightly or monthly refresher course may aid into tackling such situations.

Huynh et al., (2020) carried on a cross-sectional study was performed aimed to assess the knowledge and attitude toward coronavirus disease-2019 (COVID-19) among nurses at District 2 Hospital in Ho Chi Minh City (HCMC). The result show total of 327 eligible nurses had a mean score of knowledge and attitude of 8.17 ± 1.3 (range 4-10) and 1.86 ± 0.43 (range 1-5), respectively. They showed good knowledge and a positive attitude. However, approximately two thirds of the participants knew the mode of transmission, the isolation period and treatment (67.0%, 65.8%, and 58.4%, respectively), and 82.3% and 79.8%, respectively.

A cross-sectional descriptive was conducted by (Al-Dossary et al., 2020) among 500 nurses working at government and non-governmental hospitals in five regions in Saudi Arabia were selected using convenience sampling. The study aimed to identify the level of Awareness, Attitudes, Prevention, and Perceptions of COVID-19 Outbreak among Nurses in Saudi Arabia. The study illustrated that majority of nurses in this study, 96.85%, had excellent knowledge of COVID-19. Some (83.2%) of nurses reported significant prevention knowledge and treatment skills about COVID-19, while 7.6% had little knowledge about prevention. More than half of the nurses (60.4%) had high positive attitudes toward caring for COVID-19 patients.

Chapter-III

RESEARCH METHODOLOGY

The research methodology describes the whole process of the study which covers the areas on research design, study place, study population study period and sample size, sampling technique, selection criteria for the study, research instruments, pre-test and finalizing of the questionnaire, data collection procedures, data processing, analysis, and presentation, and ethical considerations.

Study Design

The descriptive type of cross-sectional study design was carried out to assess the level of Nurses' Knowledge on COVID-19 Prevention and

Clinical Management at Shaheed Suhrawardy Medical College and Hospital, Dhaka. The reason for employing the descriptive design is to provide accurate description of nurses' knowledge regarding COVID19 infection and management through analysis and interpretation of responses to a questionnaire-based surveys of respondents. The design also offered to convenience in terms of cost and time for conduct of the study.

Study Period

July 2024 to 2025.

Study Setting

This study was conducted at Shaheed Suhrawardy Medical College and Hospital (ShSMCH), Dhaka is a tertiary level and referral hospital in Bangladesh. It is one of the biggest Covid dedicated Hospitals in Bangladesh and facilitates all types of management (including ICU, CCU, OT etc.) regarding COVID19 infection. Patients come from different regions of country to take treatment of COVID19 in this hospital. On the other hand, a large number of nurses are working with the COVID19 patients in this hospital. This hospital can be a representative of all types' medical college hospital and provides the opportunity in finding of adequate number of patients and nurses.

Study Population

Nurses working in the Shaheed Suhrawardy Medical College and Hospital, Dhaka who were directly involved in the care of COVID19 patients respectively ward no 301, 401,402,502, cabin block and HDU. The total number of populations was 120.

Sample Size & Sampling Techniques

A convenience sampling technique (non-probability sampling) was used to select the study participants. Nurses who were available at the time of data collection, met the inclusion criteria, and were willing to participate were included in the study.

Because the total population was relatively small ($N = 120$), a large proportion of the population was included in the study.

Sample fraction = $90/120 \times 100 = 75\%$

Including 75% of the total population helped to improve the representativeness of the sample, while the use of convenience sampling ensured the feasibility of data collection within limited time and operational constraints in routine clinical settings.

Therefore, the final sample size of the study was 90 nurses, selected using the convenience sampling technique.

Sample size was selected 90 nurses from the total 120 numbers of populations.

Selection Criteria

Inclusion Criteria

- Nurses who worked in the selected Covid ward at ShSMCH
- Nurses who were willing to participate.
- Nurses who were available during data collection period
- Nurses who were physically and mentally sound

Exclusion Criteria

- Nurses who did not meet the inclusion criteria,

Research Instrument

A semi- structured Questionnaire was used for data collection. This was specially designed, consisting of closed and open-ended questions and multiple option questions. The questionnaire was consisted of two-part, Part I and part II. Part I covered demographic characteristics questions and part II covered knowledge related questions. Demographic characteristics question's part contained 08(eight) questions and knowledge related question's part contained 20 questions. Each knowledge related question carried out multiple options (four options). There were 20 questions and four options for each question. Thus, there were total 80 options and 20 correct answers among the total options. Two (2) marks were allocated for each correct answer and the total score were 40 that were considered as 100% during analysis.

Development of the Instrument

The semi- structured Questionnaire tools was developed based on study objectives and variables after reviewing related literatures by group members and consultation with respected guide teachers and subject teachers. Then it was discussed among the group members and taken expert opinion and suggestions from the guide teachers and subject teachers for essential correction. The questionnaire was pre-tested among 10 (ten) nurses at DMCH before finalizing the questionnaire for validity and reliability. Then questionnaire was finalized by 3 (three) experts.

Validity and Reliability

Validity is about the accuracy of measure and reliability is about the consistency of measure

where both of are used to evaluate the quality of research. The tool was assessed and reviewed by the experts for validity. It was evaluated comprehensively based on clear objectives and variables. Then, it was pilot tested on 10 (ten) nurses at SSMCH with the same characteristics of the target respondents. After reviewing and pretesting of the questionnaire, the necessary corrections were made for finalizing of data collection procedure by the researchers.

Data Collection Methods

Permission was obtained from the concerned authority ShSMCH). (The investigators explained the study purpose to the respondents. Participants were assured that their responses were remained confidential and it was used for academic purpose only. The written consent was taken from the participants prior to data collection. The data were collected conveniently through a self-administered semi- structured questionnaire. Data were collected by a group of researchers with the help of ward in charge of Covid ward of ShSMCH).

Data Management

After completion of data collection, all questionnaires were checked daily for completeness, consistency and accuracy by the researcher. Incomplete and inconsistent responses were reviewed and, where possible, corrected immediately through verification with the respondents. The collected data were then organized, edited and coded systematically. Each variable was assigned a unique numeric code to facilitate data entry and analysis. A coding sheet and data dictionary were prepared in accordance with the study objectives and the research variables. Data were entered into computer software (SPSS) for management and analysis. After data entry, data cleaning was performed by running frequency distributions and cross-tabulations to identify missing values, outliers and logical inconsistencies. Necessary corrections were made by rechecking the original questionnaires. The cleaned dataset was then stored in a password-protected computer accessible only to the researcher. Backup copies were maintained to prevent data loss. Throughout the data management process, confidentiality and

anonymity of the participants were strictly maintained by using identification numbers instead of personal identifiers.

Finally, the data were summarized and prepared for analysis in line with the specific objectives of the study.

Data Analysis, Interpretation and Presentation

The descriptive statistics involves description of data using typical values. The obtained data were analyzed by using descriptive statistics like measures of frequency, percentage and mean. The analyzed data were shifted to the master chart for conceptualized it at a glance, then it was inserted into the computer software program for converting into graphical form and all results were presented into the form of tables, pie chart, and bar Chart. The finding of the results was interpreted for writing the discussion.

Ethical Considerations

Ethical approval for this study was sought and granted from Bangladesh Nursing College. Permission was sought from facility authorities of ShSMCH and granted before undertaking the study. Participants were informed about the objectives and methods of the study and a written informed consent was obtained from the participants prior to participation. The researchers explained clearly about the purpose of the study, the procedure, the possible benefit, and free from risk of the study to the participants. Subjects' autonomy and confidentiality were strictly maintained and participation was voluntary. Participants were informed about their right to withdraw from the study without any repercussions.

Grading Criteria

The grading criteria were graded according to the obtained number by the respondents. Total correct answer of knowledge related questions was 20 out of 80 options in 20 questions. Each right answer carried 2 (two) marks and total 40 marks were allocated. The overall score was estimated based on the following criteria. Total marks 40 and grading was done as 100%. (40=100)

Overall Knowledge	Grading criteria
Excellent	90-100%
Very good	80 - 89%
Good	70 - 79%
Average	60 - 69%
Poor	<60%

Excellent Knowledge: The respondents who obtained 90-100% correct answers were considered as having excellent knowledge.

Very Good Knowledge: Respondents who scored 80-89% were considered as having very good knowledge.

Good Knowledge: Respondents who secured 70-79% correct answers were considered as having very good knowledge.

Average Knowledge: Respondents who obtained 60-69% correct answers were considered as having average knowledge.

Poor Knowledge: The respondents who scored less than sixty percent (<60%) correct answers were considered as having poor knowledge.

Part – I: Socio Demographic Information

Chapter – IV

RESULTS

This chapter contains a detailed description of socio-demographic and knowledge related results presented in different forms of table, bar and pie chart. The purpose of this chapter was to describe a number of variables with regards to the respondents who completed the questionnaire. Depending on the nature of variables, the results were presented as simple frequency, percentage and mean. Initially demographic results were showed and after that knowledge based result was documented.

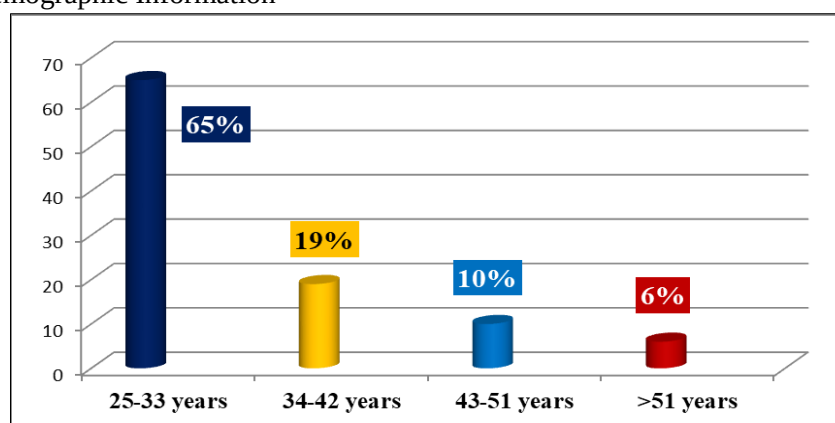


Figure 1: Distribution of the respondents by age, n=90

Mean age= 34 years

Description: The above table shows the distribution of respondents by age where out of 90 majorities of the respondents (65%) were in the age group from 25-33 years, 19% in the age group from 34-42 years, 10% age group was in between 43-51 years and 6% respondents were in the age group between 52-60 years. The mean age of respondents was 34 years.

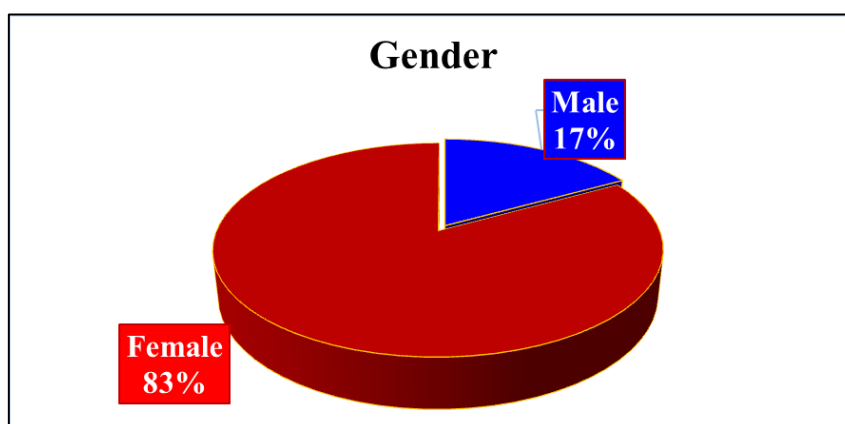


Figure 2: Distribution of the Respondents by gender, n=90

Description: This pie chart shows that among total number of respondents most of them were female (83%) and the rest 17% were male.

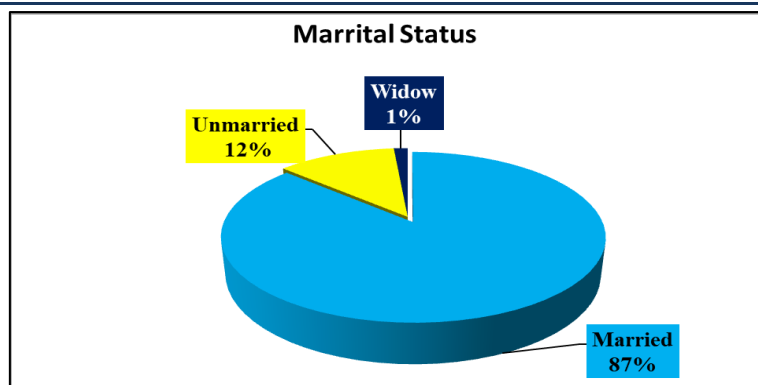


Figure 3: Distribution of Respondents by Marital status, n=90

Description: The above chart shows that the large number of respondents 87% was married; the remaining was unmarried 12%, and Widow 1%.

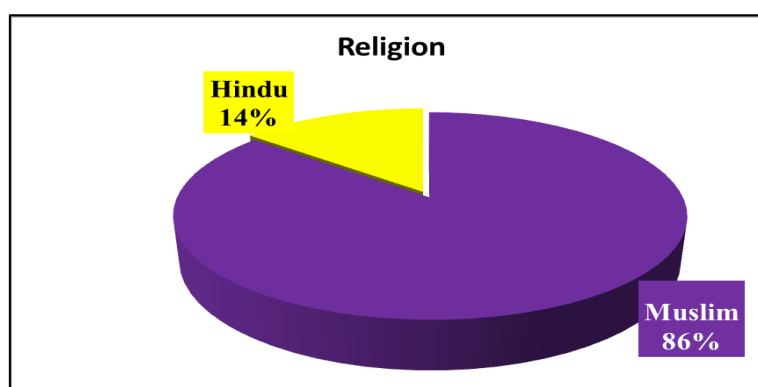


Figure 4: Distribution of respondents by religion, n=90

Description: The mentioned chart illustrates that the greater number of respondents (86%) were Muslim 86% and the rest 14% were Hindu.

Table no-1: Distribution of respondents by the professional qualification, n=90

Variables	Parameter	Frequency	%
Professional Qualification	Diploma in Nursing	59	66
	B.Sc. in Nursing	17	19
	MPH/MSc in Nursing	14	15
	Total	90	100

Description: This table describes that more than half of the respondents (66%) have passed Diploma in Nursing; the remaining 19% have completed B.Sc in Nursing and 15% acquired MPH/ MSc degree.

Table no-2: Distribution of Respondents by total length of service experience, n=90

Variables	Parameter	Frequency	Percentage (%)
Total Length Service Experience	1-7 years	67	74
	8-14 years	10	11
	15-21 years	6	7
	22-28 years	7	8
	Total	90	100

Mean = 7years

Description: The above results show that nearly three fourth of the respondents (74%) respondents had 1-7 years, 11% had 8-14 years, 7% had 15-21 years and 8% respondents had 22-28 years of service experience.

Table no-3: Distribution of respondents by length of service experiences in Covid ward, n=90

Variables	Parameter	Frequency	Percentage (%)
Length Service Experience in COVID ward	1-7 months	72	80

	8-14 months	7	8
	15-21 months	1	1
	22-28 months	10	11
	Total	90	100

Mean= 7 months

Description: The above table describes that the larger number of the respondents (80%) had service experience around 1-7 months, 8% of respondents had 8-14 months, only 1% had 15-21 months, and 11% had 21-25 months service experience in Covid Ward.

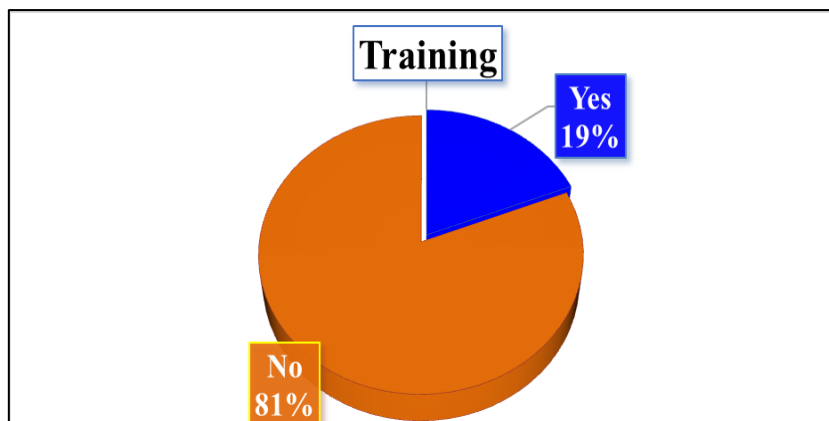


Figure 5: Distribution of Respondents by special training on COVID-19, n=90

Description: The above pie chart mentions that approximately three fourth (81%) of the respondents did not had any special training on covid-19 and only the 19% had special training on covid-19.

Part – II: Knowledge Related Information

Table no-4: Distribution of Respondents knowledge regarding meaning of COVID-19, n=90

Sl.	Variables	correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Illness caused by SARS-CoV			39	43.33
b)	Severe flu-like illness caused by SARS-CoV-2	48	53	---	---
c)	Disease caused by SARS-CoV-4	---	---	3	3.33
d)	Disease caused by MERS-CoV	---	---	0	0
Total		53%		47%	

Description: The above table shows that almost one half (53%) of the respondents provided correct answer and rest of the 47% respondents answered incorrectly regarding the meaning of COVID-19.

Table no-5: Distribution of Respondents knowledge regarding the causative agent of COVID-19, n=90

Sl.	Variables	correct answer		incorrect answer	
		(f)	(%)	(f)	(%)
a)	Bacteria	---	---	10	11.11
b)	Virus	80	89		
c)	Protozoa	---	---	0	0
d)	Fungus	---	---	0	0
Total		89%		11%	

Description: This table describes that majority of respondents (89) provided the correct answer where as 11% respondents gave wrong regarding the causative agent of COVID-19.

Table no-6: Distribution of Respondents knowledge regarding category of Corona virus, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Single stranded DNA virus	---	---	11	12.22
b)	Double stranded DNA virus	---	---	11	12.22

c)	Double stranded RNA virus	---	---	44	48.88
d)	Single stranded RNA virus	24	27	---	---
Total		27%		63%	

Description: The mentioned table reveals that the minor number of respondents (27%) provided the correct answer where the major number (63%) provided wrong answer regarding category of corona virus.

Table no-7: Distribution of Respondents knowledge regarding First reports of COVID-19 cases, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Beijing city of China	---	---	30	33.33
b)	Hubei Province of China	51	57		
c)	Shanghai city of China	---	---	4	4.44
d)	Tainjin city of China	---	---	5	5.55
Total		57%		43%	

Description: The above table indicates that the three fourth of respondents (57%) answered correctly where as 43% respondents did not answer correctly regarding the first reports of COVID-19.

Table no-8: Distribution of Respondents knowledge regarding incubation period of COVID-19, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	2 days	---	---	1	1.11
b)	7days	---	---	9	10
c)	14 days	63	70	---	---
d)	21 days	---	---	17	18.88
Total		70%		30%	

Description: The above table shows that, among the total respondents 70% provided the correct answer and 30% respondents answered wrong regarding the incubation period of COVID-19.

Table no-9: Distribution of Respondents knowledge regarding the most common symptoms of COVID-19, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Headache, nausea, and polyuria	---	---	3	3.33
b)	Fever, dry cough, and tiredness	60	67		
c)	Nasal congestion, polydipsia, weight gain	---	---	5	5.55
d)	Shortness of breath, Irritability and stiff neck	---	---	22	24.44
Total		67%		33%	

Description: The table shows that out of total respondents 67% replied correctly and rest of 33% respondents went wrong regarding the most common symptoms of COVID-19.

Table no-10: Distribution of Respondents knowledge the mode of transmission of COVID-19, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Droplets	51	57	---	---
b)	Contact via contaminated objects	---	---	15	16.66
c)	Airborne	---	---	20	22.22
d)	Feco oral route	---	---	4	4.44
Total		57%		43%	

Description: This table shows that more than half of respondents (57%) provided the correct answer where as 43% respondents answered wrong regarding the mode of transmission of COVID-19.

Table no-11: Distribution of Respondents knowledge regarding the risk factors of COVID-19 Infection, **n=90**

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Adolescent	---	---	0	0
b)	Age >60 years with chronic medical condition	68	76	---	---
c)	Adult age with chronic medical condition	---	---	22	24.44
d)	Women	---	---	0	0
Total		76%		24%	

Description: The above table signifies that three fourth of respondents (76%) answered correctly and the rest of 24% responded wrong regarding risk factors of COVID-19 infection.

Table no-12: Distribution of Respondents knowledge regarding the common investigation for the diagnosis of COVID-19, **n=90**

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Liver function test	---	---	1	1.11
b)	PT INR	---	---	10	11.11
c)	RT-PCR for COVID19	77	86	---	---
d)	Renal function test	---	---	2	2.22
Total		86%		14%	

Description: The above table describes that most of the respondents (86%) provided the correct answer and the rest of 14% respondents went wrong regarding the common investigation for the diagnosis of COVID-19.

Table no-13: Distribution of Respondents knowledge regarding the first line treatment of COVID-19 infection, **n=90**

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Antibiotic treatment	---	---	41	45.55
b)	Antiviral treatment	46	51	---	---
c)	Antifungal treatment	---	---	2	2.22
d)	Antiprotozoal treatment	---	---	1	1.11
Total		51%		49%	

Description: The table shows that approximately half of the respondents (51%) provided the correct answer and remaining 49% respondents did not provide correct answer regarding the first line treatment of COVID-19infection.

Table no-14: Distribution of Respondents knowledge regarding the drugs used for COVID-19 infection, **n=90**

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Remdisivir	69	77	---	---
b)	Meropenem	---	---	17	18.88
c)	Tenofovir	---	---	2	2.22
d)	Tetracycline	---	---	2	2.22
Total		77%		23%	

Description: The above table shows that about three fourth of respondents (77%) provided the correct answer and 23% respondents gave wrong answer regarding the drugs used for COVID-19infection.

Table no-15: Distribution of Respondents knowledge regarding the way that used to treat COVID-19, **n=90**

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Chemotherapy	---	---	5	5.55
b)	Radiotherapy	---	---	1	1.11
c)	Exposure-therapy	---	---	8	8.88

d)	Plasma-therapy	76	84	---	---
Total		84%		16%	

Description: The above table illustrate that majority of respondents (84%) answered exactly where as rest of 16% respondents did not correct regarding the way that used to treat COVID-19.

Table no-16: Distribution of Respondents knowledge regarding self-isolation period for COVID-19 recommended by WHO, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	10 days	---	---	3	3.33
b)	14 days	60	67	---	---
c)	21 days	---	---	26	28.88
d)	28 days	---	---	1	1.11
Total		67%		33%	

Description: The above table describes that 67% respondents provided the correct answer and remaining 33% respondents replied wrong regarding the self-isolation period for COVID-19 recommended by WHO.

Table no-17: Distribution of Respondents knowledge regarding the Initial measurement to prevent COVID-19 infection, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Avoid sharing personal toothbrush and razor	---	---	6	6.66
b)	Safe blood transfusion	---	---	3	3.33
c)	Stop smoking	---	---	5	5.55
d)	Wear face mask	76	84	---	---
Total		84%		16%	

Description: This table shows that large number of respondents (84%) provided the correct answer where as 16% respondents provided incorrect answer regarding the initial measurement to prevent COVID-19 infection.

Table no-18: Distribution of Respondents knowledge regarding the meaning of PPE, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Permanent Protective Equipment	---	---	1	1.11
b)	Personal Producing Equipment	---	---	3	3.33
c)	Personnel Protective Equipment	---	---	20	22.22
d)	Personal Protective Equipment	66	73	---	---
Total		73%		27%	

Description: The above table indicated that nearly three fourth of respondents (73%) provided the correct answer where as 27% respondents provided incorrect answer regarding the meaning of PPE.

Table no-19: Distribution of Respondents knowledge regarding the precaution to be ensured during the care of COVID-19 patients, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Wear gloves	---	---	9	10
b)	Wear gown	---	---	0	0
c)	Wear face mask	---	---	10	11.11
d)	Wear complete PPE	71	79	---	---
Total		79%		21%	

Description: This table signifies that 79% respondents answered correctly where 21% respondents did not answered correctly regarding the precaution to be ensured during the care of COVID-19 patients.

Table no-20: Distribution of Respondents knowledge regarding important measure for preventing COVID-19 infection, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Regular hand hygiene and avoiding crowded place	73	81	---	---
b)	Drinking hot water regularly	---	---	1	1.11
c)	Exercise regularly	---	---	4	4.44
d)	Use mask occasionally	---	---	12	13.33
Total		81%		19%	

Description: The mentioned table reveals that 81% respondents provided the correct answer where as 19% respondents did not provided correct answer regarding the important measure for preventing COVID-19infection.

Table no-21: Distribution of Respondents knowledge regarding Distance for maintaining social distance according to WHO, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	2 meters	14	16	---	---
b)	3 meters	---	---	38	42.22
c)	5 meters	---	---	5	5.55
d)	6 meters	---	---	33	36.66
Total		16%		84%	

Description: The above table shows that very little number of respondents (16%) provided the correct answer whereas greater of respondents (84%) answered wrong regarding the distance for maintaining social distance according to WHO.

Table no-22: Distribution of Respondents knowledge regarding the highest risk of mortality from COVID-19 infection, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Affected frequently	---	---	1	1.11
b)	Young people with associated disease	---	---	30	33.33
c)	Elder people suffering from diabetes and hypertension	53	59	---	---
d)	Elder people suffering from insomnia and anorexia	---	---	6	6.66
Total		59%		41%	

Description: The above table reveals that greater than half of respondents (59%) provided the correct answer and rest of 41% respondents did not answer correctly regarding the highest risk of mortality from COVID-19infection.

Table no-23: Distribution of Respondents knowledge regarding the complication of Covid-19, n=90

Sl.	Variables	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
a)	Acute or Chronic cough	---	---	21	23.33
b)	Low grade fever and high grade fever	---	---	6	6.66
c)	Chest pain and weight loss	---	---	4	4.44
d)	Multi organ failure and death	59	66	---	---
Total		66%		34%	

Description: This table shows that 66% respondents answered correctly where as 34% respondents went wrong regarding the complication of COVID-19.

Table no. 24: Summarized result regarding the area of concept part, n=90

Sl.	Items	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)

1.	COVID-19	48	53	42	47
2.	The causative agent of COVID-19	80	89	10	11
3.	Corona virus	24	27	66	63
4.	First reports of COVID-19 cases were from	51	57	39	43
5.	The incubation period of COVID-19	63	70	27	30
6.	The most common symptoms of COVID-19	60	67	30	33
7.	The mode of transmission of COVID-19	51	57	39	43
8.	The risk group for COVID-19 Infection	68	76	22	24
n=90		63%		37%	

Description: The above table describes the summarized result of concept part where 8 questions were asked to the respondents. Out of total respondents more than half of the respondents (63%) provided correct answer on this area and rest of 37% respondents mentioned incorrect answer where most of the respondents (89%) answered correctly regarding the causative agent of COVID-19 and only 27% respondents provided correct answer regarding corona virus. On the other hand, more than half of the respondents (63%) provided incorrect answers on this area significantly.

Table no. 25: Summarized result regarding the area of control part, n=90

Sl.	Items	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
1	The common investigation for the diagnosis of COVID-19	77	86	13	14
2	The first line treatment of COVID-19 infection	46	51	44	49
3	The drugs used for COVID-19 infection	69	77	21	23
4	One of the ways that used to treat COVID-19	76	84	14	16
5	WHO recommended self-isolation period for COVID-19	60	67	30	33
n=90		73%		27%	

Description: The mentioned table shows the summarized result of care part where the respondents had to provide total 5 answers. Out of 90 respondents (73%) provided correct answer and rest of 27% respondents reported incorrect answer overall in this dimension where majority of the respondents (86%) answered correctly regarding the common investigation for diagnosing of COVID-19 and almost one half of the respondents (51%) provided correct answer regarding the first line treatment of COVID-19 infection. By contrast, almost half of the respondents (49%) provided incorrect answers on this area significantly.

Table no.26: Summarized result regarding the area of prevention part, n=90

Sl.	Items	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
1	Initial measurement to prevent COVID-19 infection	76	84	14	16
2	The PPE stand for	66	73	24	27
3	Precaution to be ensured during the care of COVID-19 patients	71	79	19	21
4	An important measure for preventing COVID-19 infection	73	81	17	19
5	Distance for maintaining social distance according to WHO	14	16	76	84
n=90		67%		33%	

Description: This table indicates the summarized result of prevention part where 5 questions were asked to the respondents. Among total respondents 77% reported correct answer and rest of 33% respondents provided incorrect answer overall in this area where most of the respondents (84%) answered correctly regarding the initial measurement to prevent COVID-19 infection and 16% of the respondents given correct answer regarding distance for maintaining social distance according to WHO. In contrast, almost three fourth of the respondents (76%) provided incorrect answers on this area significantly.

Table no. 27: Summarized result regarding the area of complication part, n=90

Sl.	Items	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
1	Highest risk of mortality from COVID-19 infection	53	59	37	41

2	The complications of Covid-19	59	66	31	34
n=90		63%		37%	

Description: The above table reveals the summarized result of prevention part where respondents were asked 2 questions in this area. Among total respondents 63% reported correct answer and rest of 37% respondents provided incorrect answer overall in this area where larger than half of the respondents (66%) answered correctly regarding the complications of Covid-19 and on the other hands 34% provided incorrect answers on this area significantly.

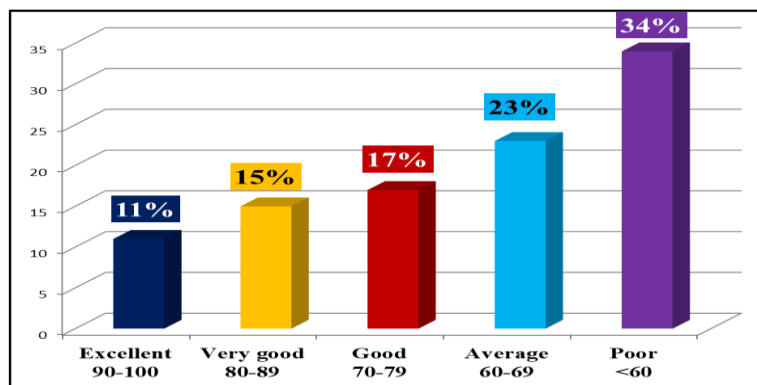


Figure 6: Distribution of the respondents by overall knowledge regarding management of COVID-19 infection, n=90

Description: This table shows the overall knowledge of respondents regarding management of COVID-19 infection where 11% respondents had excellent knowledge, 15% of the respondents had very good knowledge, 17% respondents had good knowledge, nearly one fourth of respondents (23%) had average knowledge and rest of 34% respondents had poor knowledge.

Chapter V DISCUSSION

A descriptive type of cross-sectional study was designed to assess the nurses' knowledge regarding management of Covid-19 infection at Dhaka medical college hospital. The study was carried out among 90 respondents who were selected conveniently. A semi-structured questionnaire was used for data collection. The study basically focused on knowledge based findings. However the significant findings from both demographic and knowledge based information on management of COVID-19 infection among nurses' at Dhaka Medical College Hospital are discussed below.

The significant findings of the demographic information indicated that the maximum (65%) respondents' age was in between 25-33 years and only 6% were in between 52-60 years old. The mean age was 34 years. There is a significant difference among the gender. Out of total number of respondents 83% were female and rest of 17% was male. A study carried out by *Saha et al.,(2020)*,to identify nurses' knowledge regarding prevention and control of COVID-19 infection where majority of the respondents (83.4%) were

female and 16.6% were male. In the area of professional qualification, greater than half of respondents (59%) completed Diploma in Nursing and 17% respondents completed B.Sc Nursing and rest of 17% complete MPH/MSc in nursing respectively. The study revealed that majority of respondents (74%) length of service experience was 1-7 years, 10% respondents 8-14 years, 6% respondents 15-21 years and rest 7% respondents 22-28 years. The study showed that the large number of respondents (80%) length of working experience in current place was 1-7 months, 7% respondents 8-14 months, only 1% respondents 15-21 months and the rest of 10% respondents 22-28 months respectively.

Regarding the knowledge, on the area of concept part most of the respondents (63%) answered correctly and 37% provided incorrect answer. On the area of control part, almost three fourth of respondents given correct answer and rest of 27% did not answer correctly. In the area of prevention, 67% respondents answered correctly on this area and rest only 33% respondents mentioned incorrect answer. Out of total respondents more than half (63%) provided correct on the area of complication and rest of 37% respondents

provided incorrect answer respectively out of 90 respondents more than half (63%) provided correct on the area complication and rest of 37% respondents provided incorrect answer.

The findings revealed that nurses overall knowledge is average regarding management of COVID-19 infection. The professional qualification and training experience may be a factor related to this average level of knowledge. In this study, the higher educated nurses compared to others scored statistically higher result. The minimum number of nurses had completed training on COVID-19 who scored average (69%).

Current findings of average knowledge among nurses is in line with findings of *Alwani et al., (2020)* who reported that nurses possessed good knowledge on COVID-19. *Saha et al., (2020)* also reported that nearly two third of respondents (73%) possessed good knowledge about COVID-19.

The study has number of inherent limitations. Firstly, it is a cross sectional study conducted in a single selected hospital with small sample size selected conveniently due to shortage of time. Secondly, this study only focused on the assessment of knowledge level but not the practice of nurses. So generalizability of study might be limited.

Chapter – VI CONCLUSION

This study revealed that nurses had an overall average level of knowledge regarding the management of COVID-19 infection, indicating an important gap in preparedness for optimal clinical practice. Although basic knowledge was evident, the findings highlight the need for structured and continuous in-service training programmes to strengthen nurses' understanding of updated guidelines, standard precautions and evidence-based management of COVID-19. Strengthening nurses' knowledge through comprehensive and regular training is essential to ensure safe and effective patient care, to reduce the risk of transmission from patient to nurse and nurse to patient, and to promote consistent adherence to preventive and infection control measures. Therefore, it is strongly recommended that a comprehensive and uniform training programme be implemented for all nurses to achieve an equitable and adequate level of knowledge on COVID-19 management and to enhance overall

quality of care during current and future infectious disease outbreaks.

Limitation of the Study

There were some limitations during carrying out the research project is as follows:

- This study was conducted in one selected hospital due to shortage of time. Therefore, the findings cannot be generalized to other hospitals.
- The study sample size was relatively small and selected conveniently, so it does not necessarily represent the real picture of knowledge of all the nurses around the country.
- Data was collected during working hours of the respondents, for that reason there may be some inconsistency in result due to lack of concentration toward completing the questionnaire.
- Insufficient number of literature related to this research project
- This study only focused on the assessment of knowledge level but not the practice of nurses. So this study may not explore the management of all services.
- There was no budget for this research project.
- There was no available computing, printing and transport facilities.

Recommendations

According to the finding, the present study recommends the following issue to improve the level of nurses' knowledge regarding management of COVID-19 infection.

- Regular seminar, symposium and workshop should be organized for nurses to acquire knowledge about management of COVID-19 infection.
- Government should implement various awareness and special training program for nurses to raise level of knowledge on management of COVID-19 infection
- Similar study can be conducted in a large scale for generalization of the findings.

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