



ORIGINAL RESEARCH PAPER

Nursing

“Self Awareness Regarding COVID-19 Among Nursing Professionals and Nursing Students In Rajasthan: A Questionnaire Based Survey”

KEY WORDS: COVID-19, self awareness, nursing professionals and students, PPE.

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ABSTRACT

Background: COVID-19 infection is a respiratory illness caused by SARS Co-V-2, a new strain of SARS CoV (Severe Acute Respiratory Syndrome Corona Virus). The COVID-19 was spreading worldwide since December 2019, affected millions of people, shut down major cities, and have imposed global travel restrictions. Precautions are necessary to prevent potential spread of COVID-19 in health care settings and boost up survival in the environment. The aim of this study is to assess the self awareness of COVID -19 and related infection control practices among nursing professionals and nursing students in the Rajasthan.

Methods: The online survey was conducted at nursing teaching institute and hospital in Rajasthan. The online form was sent to 600 potential responders. The period of survey was from 16 April, 2020 to 23 April, 2020. Total of 238 responders completed the survey with a response rate of 39.7%. Self administered questionnaire consists of demographic questions, and 21 questions based on knowledge and infection control practices related to COVID-19. These questionnaires were adapted from the current interim guidance and information for health care workers published by CDC, updated on April 8, 2020. Consent was taken from all participants in this study. Convenient sampling was used for data collection, and the distribution of responders was presented as frequency and percentage. Data were tabulated in excel, and descriptive statistics were performed using SPSS 25. Individual pair wise comparisons were done using the median test for percentage correct response.

Results: The overall awareness of all subgroups was sufficient with 55 % reported correct answers. The highest percentage of correct responses was from nursing faculty and the lowest was from B.Sc.Nursing students. Only 29.8 % of the responders were aware that the virus causing COVID-19 was initially known as 2019-nCoV and was later termed as SARS CoV-2. Only 39.5% of respondents were able to answer correct sequence for application of face mask, 35.3% of respondents received training programme on universal precaution, less than 20% were able to describe close contact, casual contacts and category of vulnerable healthcare worker. However around 76.1% of responders correctly answer the mode of COVID-19 spread, 98.7% aware of common sign and symptoms. More than 90% of respondents agree that social distancing necessary in spite of using face mask, and aware of using face mask and gloves and properly dispose them.

Conclusion: Nursing professionals and students from the Rajasthan demonstrates satisfactory awareness of COVID-19 in the healthcare setting with an overall percentage of 55% correct answers. In this demanding situation they are playing very crucial role as frontline warriors. This study shows that there is a need to implement educational interventions and training programs on infection control practices for COVID-19. Conducting webinars for educational intervention could be a useful and safe tool to create more awareness. Occupational health and safety are of greater importance to minimize the risk of transmission to health care workers and professionals.

INTRODUCTION

WHO declared Novel Corona virus Disease (COVID-19) outbreak as a pandemic on March 11, 2020^[1]. Initially, causative agent of the new virus was called 2019-nCoV. Subsequently, the experts of the International Committee on Taxonomy of Viruses (ICTV) termed it the SARS-CoV-2 virus^[2].

Recent events have shown us the rapid origin of the new disease again. Previously, severe acute respiratory syndrome-corona virus (SARS-CoV) and Middle East Respiratory syndrome corona virus (MERS-CoV) have been known to affect humans. SARS-CoV transmitted from civet cats to human and MERS-CoV transmitted from Arabian camels to humans. SARS-CoV-2 supposed to be transmitted from animal to human from Seafood Wholesale Market of Wuhan, It originated from bats and first reported cases were from Wuhan, Hubai Province in China^[3]. Several countries have now reported community spread. India's first case was reported on January 30, 2020 in Kerala^[4].

Health workers are at the front line of the COVID-19 outbreak response and as such are exposed to hazards that put them at risk of infection. Hazards include pathogen exposure, long working hours, psychological distress, fatigue, occupational burnout.

The objective of this study is to assess self awareness of COVID-19 disease and its infection control practices among nursing professionals and nursing students in Rajasthan. This

was a questionnaire based survey adapted from current interim guidelines and information for healthcare personnel provided by US centers for Disease Control and Prevention (CDC) and WHO.

Need of study-

In a pandemic situation, health care workers are at increased risk of exposure during risk assessment and management of COVID-19 outbreak. The present study was conducted to find out the self awareness of nursing professionals and nursing students regarding COVID-19 spread and preventive measures as they are performing their duties in COVID-19 OPDs, isolation wards, ICUs, survey / home visit, ambulance. This study will helps in development of training programs and regular institutional interventions.

Materials and methods-

The online survey was conducted at nursing teaching institute and Hospital in Rajasthan. The online form was sent to 600 potential responders at various nursing institutions and hospitals in the Rajasthan. The period of survey was from 16 April, 2020 to 23 April, 2020. Total of 238 responders completed the survey with a response rate of 39.7%.

Self administered questionnaire consisting of demographic questions, and 21 questions based on knowledge and infection control practices related to COVID-19 disease. These questionnaires were adapted from the current interim guidance and information for health care workers published

by CDC, updated on April 8, 2020^[8].

Consent was obtained by all participants in this study. The Institutional Ethics Committee (IEC) reviewed and approved study related documents. Convenient sampling was used for data collection, and the distribution of responders was presented as frequency and percentage. Data were tabulated in excel, and descriptive statistics were performed using SPSS 25. Individual pair wise comparisons were done using the median test for percent correct response.

Results:

Total 238 nursing professionals from Rajasthan responded to the survey. The majority of responders were from the age group of 18-30 years (n=210). Approximately 66.8% responders are male. Among various subgroups, 37.8% B.Sc. Nursing students (n=90), 18.5% M.Sc. Nursing students (n=44), 18.9% Nursing Faculty (n=45), 24.8% (n=59) Staff Nurses completed the survey (Table 1)

TABLE 1: RESPONDER'S PROFILE:

Sr.	DEMOGRAPHIC VARIABLES	SUB-GROUPS	NO.	%
1.	AGE GROUP	18-30 Years	210	88.2
		31-45 Years	28	11.8
		Total	238	100.0
2.	GENDER	Female	79	33.2
		Male	159	66.8
		Total	238	100.0
3.	PROFESSION	B.Sc. Nursing Students	90	37.8
		M.Sc. Nursing students	44	18.5
		Nursing Faculty	45	18.9
		Staff Nurses	59	24.8
		Total	238	100.0
4.	CURRENT CLINICAL WORKING AREA	COVID-19 ICU	14	5.8
		COVID-19 Isolation Wards	36	15.1
		COVID-19 OPDs	23	9.7
		Surveys / Home Visits	165	69.3
		Total	238	100.0

TABLE 2: PERCENTAGE OF CORRECT RESPONSES IN DIFFERENT AGE GROUPS AND GENDER

Q. NO.	AGE				GENDER				TOTAL	
	18-30 Years		31-45 Years		MALE		FEMALE		n=238	%
	n=210	%	n=28	%	n=159	%	n=79	%		
1	62	29.5	9	32.1	41	25.8	30	38	71	29.8
2	160	76.2	21	75	120	75.5	61	77.2	181	76.1
3	104	49.5	16	57.1	69	43.4	51	64.6	120	50.4
4	207	98.6	28	100	157	98.7	78	98.7	235	98.7
5	125	59.5	13	46.4	91	57.2	47	59.5	138	58
6	82	39	12	42.9	53	33.3	41	51.9	94	39.5
7	200	95.2	27	96.4	152	95.6	75	94.9	227	95.4
8	116	55.2	15	53.6	91	57.2	40	50.6	131	55
9	77	36.7	12	42.9	56	35.2	29	36.7	85	35.7
10	197	93.8	26	92.9	148	93.1	75	94.9	223	93.7
11	98	46.7	4	14.3	55	34.6	29	36.7	84	35.2
12	22	10.5	2	7.1	15	9.4	9	11.4	24	10.1
13	21	10	2	7.1	14	8.8	9	11.4	25	10.5
14	124	59	23	82.1	100	62.9	47	59.5	147	61.8
15	113	53.8	18	64.3	100	62.9	31	39.2	131	55
16	29	13.8	17	60.7	31	19.5	15	19	46	19.3

17	206	98.1	28	100	158	99.4	76	96.2	234	98.3
18	135	64.3	23	82.1	98	61.6	60	75.9	158	66.4
19	99	47.1	17	60.7	73	45.9	43	54.4	116	48.7
20	198	94.3	26	92.9	152	95.6	72	91.1	224	94.1
21	122	58.1	17	60.7	86	54.1	53	67.1	139	58.4
Overall correct percentage (median)		54.5		60.7		57.2		59.5		55

TABLE-3: PERCENTAGE OF CORRECT RESPONSES ACCORDING TO PROFESSION

Q. NO.	PROFESSION								TOTAL	
	NURSING FACULTY		M.Sc. Nursing Students		B.Sc. Nursing Students		STAFF NURSES		n=238	%
	n=45	%	n=44	%	n=90	%	n=59	%		
1	20	44.4	22	50	14	15.6	15	25.4	71	29.8
2	37	82.2	37	84.1	55	61.1	52	88.1	181	76.1
3	32	71.1	26	59.1	34	37.8	28	47.5	120	50.4
4	45	100	43	97.7	88	97.8	59	100	235	98.7
5	23	51.1	22	50	49	54.4	44	74.6	138	58
6	32	71.1	23	52.3	16	17.8	23	39	94	39.5
7	45	100	43	97.7	85	94.4	54	91.5	227	95.4
8	29	64.4	23	52.2	50	55.6	29	49.1	131	55
9	23	51.1	15	34.1	25	27.8	22	37.3	85	35.7
10	42	93.3	40	90.9	86	95.6	55	93.2	223	93.7
11	17	37.8	21	47.7	28	31.1	18	30.5	84	35.2
12	7	15.6	3	6.8	9	10	5	8.5	24	10.1
13	4	8.9	4	9.1	9	10	6	10.2	23	9.7
14	29	64.4	28	63.6	52	57.8	38	64.4	147	61.8
15	28	62.2	30	68.2	39	43.3	34	57.6	131	55
16	7	15.6	2	4.5	15	16.7	22	37.3	46	19.3
17	45	100	41	93.2	90	100	58	98.3	234	98.3
18	37	82.2	30	68.2	39	43.3	52	88.1	158	66.4
19	13	28.9	27	61.4	25	27.8	32	54.2	97	40.8
20	45	100	38	86.4	85	94.4	56	94.9	224	94.1
21	44	97.8	27	61.4	37	41.1	31	52.5	139	58.4
Overall correct percentage median		64.4		61.4		43.3		54.2		55

DISCUSSION-

COVID-19 Infection prevention and control is very challenging issue now-a-days. It is very important to focus aspects of prevention and control of COVID-19 spread and to continue work together. Global efforts for managing this epidemic have been ongoing since it was first identified in December 2019. Early identification and isolation of suspected case is of prime importance in prevention of virus transmission.

In this study only 29.8% of the responders were aware that the virus causing COVID-19 was initially known as 2019-nCoV and was later termed as SARS CoV-2^[2]. The mode of transmission of COVID-19 are- respiratory droplets, symptomatic peoples spread from contact with contaminated surfaces, near about 76.1% of respondents answer correctly about mode of COVID-19 virus spread^[9]. The common sign and symptoms of COVID-19 are Cough, fever, shortness of breath, near about 98.7% population answer correctly. The Laboratory test for COVID-19 is Reverse transcription polymerase chain reaction (RT-PCR) around half of responders were answered correctly about laboratory test for COVID-19.

The age group is most at risk of developing COVID-19 infection are- older adults, people with chronic medical condition such as diabetes, cardiac disease, etc. More than 50% of responders were able to answer correctly.

Overall awareness regarding PPE is low about 39.5%. The N95 respirator is preferred over face mask when performing aerosol-generating procedures. A clean gown with goggles or disposable face shield and clean non-sterile gloves are recommended upon entry to the patient room area. In case of shortage, gowns should be prioritized for aerosol-generating procedures.

However, being aware of the PPE it is important. The CDC sequence of donning a face mask is as follows: securing ties or elastic bands at the middle of head and neck, fitting the flexible band to the nose bridge, fit snug to face and below the chin, fit-check respirator^[6].

In spite of having awareness regarding PPE, correct sequencing of donning and doffing PPE plays crucial role in prevention of transmission of infection. Correct sequence of donning a face mask is as follows: securing ties or elastic bands at the middle of head and neck, fitting the flexible band to the nose bridge, fit snug to face and below the chin, fit-check respirator^[7].

Around 48.5% of respondents opinion that the use of N95 facemask/respirator is not advisable for general public use. Extensive use of surgical face mask or N95 respirator may lead to shortage of supplies in health care settings.

Imbalance between increasing demand and shortage of surgical face mask or N95 respirator may put crisis on health care setting. Making a re-usable homemade mask may be a cheap solution of face mask shortage. In this study 58.4% agree that homemade face mask good for public use.

Government encouraging hand washing against COVID-19 because not only washing hands is useful in prevention from getting infected but also stopping the spread. Near about 95.4% of respondents agree that hand washing with soap and water for at least 20 sec can help in prevention of transmission. But only 39.5% of respondents received any training programme on universal precaution in recent years, so there is need of organizing correct hand hygiene practices according to WHO guidelines.

Experts agreed that it can be slowed through social distancing measures. Majority of respondents agreed that social distancing necessary in spite of using face mask and they were maintaining social distancing on workplace and responders were not taking group selfie with community people while distributing pamphlets. Taking group selfie may spread infection rate and broke social distancing rules.

In this study only 9.7% of responders were able to correctly define 'Close contact'. According to Health Protection Surveillance Center (HPSC) a close may be defined as, 'Any Unprotected exposure to the bodily fluids and secretion of case, mainly respiratory secretion or Unprotected exposure while present in the same room when an aerosol generating procedure (AGP) is undertaken to the case or Unprotected exposure during one shift for more than 15 minutes face to face less than 1 meter distance to a confirm case^[10]. Even though all sub groups are not actively involved in patient management, there are high chances of having patient contact in health care setting during performing nursing care to patients in different departments and conducting survey, or creating public awareness during home to home visits. Monitoring of close contacts done by active monitoring and monitoring of causal contacts done by passive monitoring^[10], in this study more than 50% of responders were answered correctly.

Patient isolation and aerosol performing procedures should be carried out in the Airborne Infection Isolation Room (AIIR). These are rooms kept under negative pressure. Suspected or confirmed patients should not be placed in a room that has an

exhaust fan that re-circulate air within the hospital. Air from these rooms should be filtered through a high-efficiency particulate air (HEPA) filter directly before recirculation^[8]. Around 55% of respondents are aware of this concept in this study.

As per Govt. guidelines "Vulnerable Health care worker" category includes HCW with specific cancers, HCW who are organ transplant recipients, HCW over 70 years of age, HCW who are pregnant with specific medical problems, HCW on immunosuppressant therapy. Near about 19.3% of responders were able to answer correctly.

The overall awareness of all subgroups was sufficient with 55% reporting correct answers.

The current challenging situation demands development of pre-exposure and post-exposure prophylaxis strategies. This research study evaluates self awareness of nursing professional and nursing students regarding basic concepts of COVID-19 spread and preventive measures. There is need for training programs and regular educational interventions on infection control practices across all nursing professionals and nursing students in order to prevent infection among high-risk populations.

CONCLUSION-

Nursing professionals and students from the Rajasthan demonstrate satisfactory awareness of COVID-19 in the healthcare setting with an overall percentage of 55% correct answers. In this demanding situation they are playing very crucial role as frontline warriors. This study shows that there is a need to implement educational interventions and training programs on infection control practices for COVID-19. Conducting webinars for educational intervention could be a useful and safe tool to create more awareness. Occupational health and safety are of greater importance to minimize the risk of transmission to health care workers and professionals.

APPENDIX (SURVEY QUESTIONNAIRE)

(Correct answers are in bold text)

- **BASIC KNOWLEDGE QUESTIONS R/T COVID-19 VIRUS (Q.NO.1-5)**
- 1) The virus causing COVID-19 infection is called-
 - a) Severe Acute Respiratory Syndrome Corona virus (SARS)
 - b) Severe Acute Respiratory Syndrome Corona virus-2 (SASS CoV-2)
 - c) 2019-nCoV.
 - d) **Both B and C**
- 2) The mode of Transmission of COVID-19 infection spread is-
 - a) Respiratory droplets c) Symptomatic people
 - b) Contact with contaminated surfaces. d) **All of above**
- 3) Laboratory Test for COVID-19 is-
 - a) **a) RT-PCR** c) Serology
 - b) Hemagglutination assay d) Immunofluorescence Assay
- 4) What are common Sign and symptoms of COVID-19 infection?
 - a) **Cough, fever, shortness of breath**
 - b) Nausea, vomiting, anorexia
 - c) skin rashes and constipation
 - d) Nose bleed and frequent urination
- 5) What age group is most at risk of developing COVID-19 infection-
 - a) Older adults
 - b) People with chronic medical condition such as diabetes, cardiac disease, etc
 - c) Adults
 - d) **Both a and b**

e) All of above

QUESTIONNAIRE R/T COVID-19 PREVENTIVE MEASURES (Q.NO.6 – 11)

6) Personal Protective Equipment (PPE) includes- (Tick all that apply).

- Mask and Respirator.
- Gloves and Gowns.
- Face Shields and Eye Protection Goggles.
- Head and Shoe covers.

7) Hand washing with soap and water for at least 20 sec can help in prevention of transmission-

a) No b) Yes

8) Which of the following recommended for isolation of a patient with confirmed COVID-19 cases-

- a) Airborn Infection Isolation Room (AIIR) with exhaust
- b) **Airborn Infection Isolation Room (AIIR) without exhaust**

9) What is the correct sequence of using surgical face mask, choose appropriate option-

- a) **Put on surgical face mask > Secure ties / straps to crown of the head > fit flexible band to bridge of nose > fit snug to face and below chin.**
- b) Put on surgical mask > Fit flexible band to nose bridge > Secure ties or elastic bands at middle of head and neck > fit snug to face and below chin.

10) Is social distancing is necessary in spite of using face mask properly

a) No b) Yes

11) Did you receive any training programme on universal precaution in recent years-

a) No b) Yes

QUESTIONNAIR R/T RISK ASSESSMENT OF HEALTH WORKERS WITH POTENTIAL WORKPLACE EXPOSURE (12-16)

12) CASUAL CONTACTS describes as, choose correct statement- (Tick all that apply)

- Protected exposure during one work shift for more than 15 minutes face-to-face less than 1 meter distance) to a confirm case
- Any protected exposure to the bodily fluids and secretion of case, mainly respiratory secretion.
- A health care provider who was not wearing glove but wearing all appropriate PPE, performed hand washing immediately after contact with secretion and excretion of case.
- I don't know Answer (All tick except I don't know)

13) CLOSE CONTACTS describes as, choose correct statement- (Tick all that apply)

- Any Unprotected exposure to the bodily fluids and secretion of case, mainly respiratory secretion.
- Unprotected exposure while present in the same room when an aerosol generating procedure (AGP) is undertaken to the case.
- Unprotected exposure during one shift for more than 15 minutes face to face less than 1 meter distance to a

confirm case.

I don't know.

14) Monitoring of cases done as Close contact-

a) **Active monitoring** b) Passive monitoring

15) Monitoring of cases done as Causal contact-

a) Active monitoring b) **Passive monitoring**

16) As per Govt. guidelines "Vulnerable Health care worker" category includes- (Tick all that apply)

- HCW with specific cancers
- HCW who are organ transplant recipients
- HCW over 70 years of age
- HCW who are pregnant with specific medical problems, HCW on immunosuppressant therapy

QUESTIONS R/T POTENTIAL WORKPLACE EXPOSURE TO COVID-19 CASES (Q.NO. 17-21)

17) Are you maintaining social distancing on potential work place-

a) No b) **Yes**

18) Are you taking group selfie with community people while distributing pamphlets-

a) No b) **Yes**

19) Is N95 respirator is advisable for general public use?

a) No b) **Yes**

20) Are you using face mask and gloves and properly dispose them-

a) No b) **Yes**

21) Home made cloth face mask is good for public in spite of surgical face mask-

a) No b) **Yes**

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