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Research Article

Knowledge and Practice among Staff Nurses Regarding COVID-19: A Cross-sectional Survey from Punjab

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Abstract

Introduction: Coronavirus disease 2019 (COVID-19) is a highly transmittable. Punjab faces sudden hike in number of positive cases including number of staff nurses also acquired infection. Therefore, the aim of study is to assess knowledge and practice among staff nurses in Punjab regarding COVID-19.

Methods: An online survey-based study was conducted during the month of August to September among nurses. A self-administered questionnaire comprised of three sections (Demographics, knowledge, and practice) was used for data collection. Total sample size taken for study was 220 staff nurses.

Results: Findings showed that staff nurses have good knowledge (78.2%) and good practice (97.7%) regarding COVID-19. Use of limited face mask in crowds and do not throwing the used tissues in trash are the major barriers in infection control practice. Factors such as qualification ($\chi^2 = 22.805$) were significantly associated with good knowledge at 0.05 level of significance. Furthermore, there was a significant relationship between qualification ($\chi^2 = 9.314$) and experience ($\chi^2 = 11.635$) with practice of staff nurses regarding COVID-19 at the 0.05 level of significance.

Conclusion: Staff nurses in Punjab have good knowledge, reflected by good practice. Yet, there are areas where gaps in knowledge and practice were observed. To effectively control infection spread, well-structured training programs must be launched by government targeting all kinds of health-care professionals to raise their existed knowledge.

Keywords: Knowledge, practice, COVID-19, staff nurses

Introduction

In earlier December, first case of pneumonia of unknown cause originated in Wuhan, capital city of Province Hubei, China, and on December 31, 2019, with emergence of more such cases, Wuhan gained attention by the World Health Organization (WHO).[1] The pathogen identified was named as novel coronavirus (2019-nCoV), currently called as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), an envelope and single stranded RNA virus[2] which has phylogenetic resemblance to SARS-COV-1.[3] Due to rapid spread of this deadly virus from epicenter to number of countries, the WHO declared it as public health emergency of international concern on January 30, 2020. Later, due to uncased fast spread, severity of illness, the continual escalation in number of affected countries, cases, and causalities, the WHO declared coronavirus disease 2019 (COVID-19) a global pandemic on March 11, 2020.[4]

The COVID-19 pandemic was confirmed to have spread to the Indian state Punjab on March 09, 2020, when an Indian man returning from Italy was tested positive. As of February 20,

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2021, the Ministry of Health and Family Welfare has confirmed a total of 177,376 cases, including 5732 deaths and 169,002 recoveries in Punjab. The economy of Punjab has been severely affected by the COVID-19 pandemic.[5]

COVID-19 transmits from person to person by droplets when an infected person sneezes and by direct contact and virus has an incubation period of 4–14 days.[6] Elderly and patients who suffered with chronic medical conditions such as diabetes and cardiovascular diseases are more likely to get severe infection.[7] The main manifestations of COVID-19 are fever, dry cough, dyspnea, myalgia, fatigue, hypolymphaemia, and radiographic evidence of pneumonia. Complications (e.g., acute respiratory distress syndrome, arrhythmia, shock, acute cardiac injury, secondary infection, and acute kidney injury) and death may occur in severe cases.[1,7] At present, no antiviral therapy or vaccine is explicitly recommended for COVID-19 and implementation of preventive measures to control COVID-19 is the mainstay critical intervention.[8]

Health-care professionals of all levels and kinds are primarily involved in catering patients of this highly transmittable pathogen. COVID-19 has posed serious occupational health risk to the staff nurses owing to their frequent exposure to infected individuals.[9] Protection of staff nurses and prevention of intra-hospital transmission of infection are important aspects in epidemic response and this requires that staff nurses must have updated knowledge regarding source, transmission, symptoms, and preventive measures.[10] The literature suggest that lack of knowledge and misunderstandings among staff nurses leads to delayed diagnosis, spread of disease, and poor infection control practice.[11]

India has approved the AstraZeneca vaccine developed by Oxford University and manufactured by Serum Institute of India. Covishield (Indian name of Oxford vaccine) got the green light from Drugs Controller General of India (DCGI). Covaxin: Bharat Biotech Ltd developed COVAXIN vaccine is under Phase 3 trials including Punjab's three Government Medical Colleges with the help of ICMR from October 15, 2020. Two portions of the inactivated virus infusion given to the members (0 and 28 days) as a component of the Phase-3 human preliminaries. Covaxin developed by Bharat Biotech got approval for emergency use in India by DCGI.[5]

Punjab Chief Minister Captain Amarinder Singh on Tuesday launched 'Mission Fateh as part of state battle against COVID-19. "Mission Fateh represents the determination of the individuals of Punjab to end the spread of the novel coronavirus through control, collaboration, and sympathy.

As on July 21, 2020, CM Capt Amrinder Singh has approved the permission to establish a plasma bank as inventory to treat the severely ill patient by plasma therapy and it is established at Rajindra Hospital, Patiala. Two machines have been set up in the hospital as part of Mission Fateh.[5]

Maharashtra, Gujarat, and West Bengal have the maximum number of COVID positive staff nurses in the country and also the highest fatality rate, the Trained Nurses Association of India (TNAI).

TNAI, the largest nursing association in the country, released data for the first time since the beginning of the pandemic, indicating that 509 nursing staff was infected and 20 died while providing care to COVID patients.

According to the data, West Bengal reported 111 COVID positive nurses with three fatalities; Maharashtra has 75 cases with six deaths and Gujarat 96 cases with four deaths. Mizoram, Chhattisgarh, Kerala, and Uttar Pradesh have the least recorded COVID case-load among nursing staff with Rajasthan, Telangana, and Uttar Pradesh registering the lowest reported fatalities.[12]

COVID-19 healthcare worker (HCW) infections and deaths are tragedies for the individuals, their families, colleagues, and an existential crisis for HCWs and for local and national health-care infrastructures. China reported that 3387 HCWs were infected with this novel coronavirus. Of this number, 23 died, including 21 who were physicians and surgeons, one nurse, and one technician.[13] A survey conducted from 37 nations on HCW infections and deaths due to COVID-19 revealed that in India 108 doctors (1073 got infected), two staff nurses (144 got infected) died due to COVID-19.[14]

Amidst to current pandemic, the WHO has issued several guidelines and also started online courses and training sessions to raise awareness and preparedness regarding prevention and control of COVID-19 among health-care professionals.[15] Although educational campaigns have increased their awareness regarding COVID-19, it remains unclear to what extent this knowledge can be put into practice and to what extent this practice actually reduces COVID-19 infection spread. Knowledge, attitude, and practice (KAP) survey provides a suitable format to evaluate existing programs and to identify effective strategies for behavior change in society.[16] Therefore, the present study aimed to identify the current status of knowledge and practices regarding COVID-19 among staff nurses in Punjab. In addition, the study will highlight the information sources utilized by staff nurses.

Methods

Study design

A cross-sectional survey-based study was conducted during the month of August to September 2020, days of strict lockdown to implement social distancing to avoid spread of pandemic. As it was not feasible to conduct population-based survey in this critical condition, the investigators selected an online data collection method.

Sampling, study population, and data collection method

Survey was started on 28 August 2020, and response acceptance was closed (September 28, 2020) when required sample size was achieved.

The study population eligible for participation in this survey were staff nurses. A questionnaire was designed on Google

forms and link generated was shared on WhatsApp groups of staff nurses. Link was also shared personally to staff nurses who were in contact list of investigators. Informed electronic consent was taken from all the participants in the study.

Measure

A survey instrument was designed based on extensive literature review and course material regarding emerging respiratory diseases including COVID-19 by the WHO.[18]

The questionnaire was consisted of questions assessing demographics, knowledge, and practice toward COVID-19. Demographic characteristics included were gender, age, experience, and qualification.

Knowledge section comprised of 12 items both positive and negative; regarding nature of disease, etiology, symptoms, risk group, testing, transmission, treatment, and precautions/preventions. Each question was responded as correct or incorrect. The correct answer was marked as 1 while wrong answer was marked as 0. Total score ranges from 0 to 12 and a cutoff level of equal to or <8 was set for poor knowledge and ≥9 (75%) for good knowledge.

Practice section included six items regarding use of face mask and practice of other precautionary measures. Each item was responded as yes (1-point), no (0-point), and sometimes (0-point). Practice items total score ranged as 0–6, a score of ≥4 demonstrated good practice, and a score of <4 indicates poor practice toward precautionary measures of COVID-19.

Ethics

The study questionnaire contained consent portion that stated purpose, nature of survey, study objectives, volunteer participation, declaration of confidentiality, and anonymity.

Results

Characteristics of staff nurses

A total of 220 staff nurses were included in study, out of which majority was female (87.7%) and (12.3%) male, majority (82.7%) of respondents were of age <30 years, and (82.7%, 935.9 %) have experience of <1 year, and more than half (50.9 %) of the staff nurses were graduate [Table 1].

Figure 1 summarizes the sources of information utilized by staff nurses to seek information regarding COVID-19. The majority of staff nurses reported social media (70%) as main source of information followed by radio and television (17%), newspaper and magazine (13%).

Table 2 reveals the level of knowledge and practice among staff nurses. The most of the staff nurses (78.2%) had good knowledge regarding COVID-19 and only 21.8% had poor knowledge regarding COVID-19.

About (97.7%) of staff nurses had good practice related to COVID-19 and 2.3% of staff nurses had poor practice related to COVID-19.

Table 1: Demographic characteristics of staff nurses (*n*=220)

S. No	Demographic characteristics	*N*	%
1.	Gender		
	Male	27	12.3
	Female	193	87.7
2.	Age (in years)		
	<30	182	82.7
	31–39	30	13.6
	40–49	4	1.8
	More than 50	4	1.8
3.	Qualification		
	Diploma	78	35.5
	Degree	112	50.9
	M.sc Nursing	30	13.6
4.	Experience		
	<1 year	79	35.9
	1–3 years	85	38.6
	4–5 years	28	12.7
	More than 5 years	28	12.7
	Total Participants	220	

Table 2: Level of knowledge and practice among staff nurses two acute respiratory distress syndrome COVID-19 (*n*=220)

S. No	Level of scoring	Frequency	%	Mean and SD
1.	Knowledge			
	Good knowledge (9–12)	172	78.2	10.51±0.9115
	Poor knowledge (0–8)	48	21.8	7.208±0.9444
2.	Practice			
	Good practice (4–6)	215	97.7	5.54±0.654
	Poor practice (0–3)	5	2.3	2.40±0.894

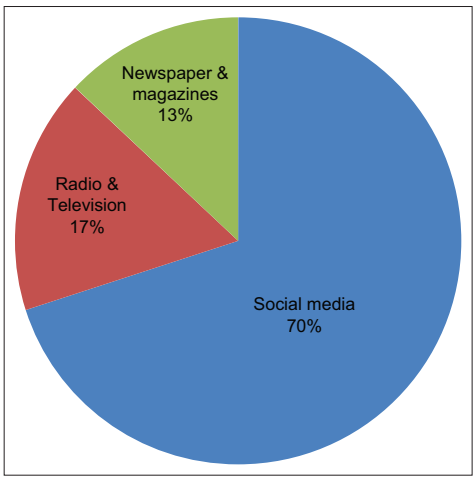

Figure 1: Information sources reported by staff nurses

Table 3 represents the responses obtained for knowledge items of questionnaire. Mixed responses were obtained regarding 10 knowledge items. About 85.9% respondents were well aware of that plant is not a source of infection (K2). About 94.1% respond that COVID-19 patients develop severe acute respiratory illness (K3). In addition, only 34.5% correctly identified that antibiotics are not first line treatment (K5). When questions asked regarding first case of coronavirus seen (K7) and antiviral drug flavipiravir (K8), 27.7% and 53.2%

respondents, respectively, were unable to identify correct responses. More than 86% of staff nurses were well aware about treatment, incubation period, symptoms, transmission, and precautions regarding COVID-19.

Table 4 represents the responses obtained for practice assessing items of questionnaire. The majority of respondents had good practice regarding each item with highest practice showed among staff nurses toward cover your nose and mouth during sneezing and coughing P6 (99.1%) and using face mask in crowds P3 (95.9%). A lower percentage of good practice was observed among staff nurses regarding throwing the used tissues in trash P4 (76.8%) and regarding educating their patients regarding disease P1 (86.4%).

Table 5 shows the association of knowledge and practice with selected demographic variables of staff nurses. There was significant relationship of knowledge with qualification (22.805) at 0.05 level of significance. Regarding practice, there was significant relationship with qualification (9.314) and experience (11.635) at 0.05 level of significance.

Discussion

To best of our knowledge, this is the study that has thoroughly assessed the knowledge and practice of staff nurses toward COVID-19 in Punjab.

Findings of current survey demonstrated that the majority of staff nurses have good knowledge (78.2%, $n = 172$) and good practice (97.7%, $n = 215$) toward COVID-19 [Table 2].

A cross-sectional survey with purposive sampling was conducted at central institute of psychiatry, Ranchi, India. A sample of 235 HCWs consisting of nurses, wards attendants, and housekeeping staff took part in the study. Participants completed a 36-item questionnaire assessing their KAP related to COVID-19. About 79.42% of HCWs in this study had adequate knowledge of COVID-19 symptomatology, transmission, management, and preventive measures. About 89.79% were confident that India would win the battle against COVID-19. About 35.32% fear to work in a hospital, but on the other hand, 80.85% of health-care staff considered coming to work as part of their duty. Good practices such as wearing a mask before leaving home and practicing proper cough hygiene were observed. The significant difference found in KAP among the three groups. Spearman's correlation was significant between age and level of education of the participants with the KAP.[17]

An online survey-based study was conducted to assess knowledge, attitude, and practice among HCPs in Pakistan regarding COVID-19. Of 414 participants, 29.98% ($n = 120$) physicians, 46.65% ($n = 189$) pharmacists, and 25.36% ($n = 105\%$) nurses. The most commonly utilized information source was social media (87.68%, $n = 363$). Findings showed HCPs have good knowledge

Table 3: Knowledge of staff nurses regarding COVID–19 (n=220)

S. No	Statement	Frequency correct answer	Percentage
K1	Influenza vaccine also gives immunity against COVID-19	134	60.9
K2.	The main source of virus may be plant	189	85.9
K3.	COVID-19 patients develop severe acute respiratory illness	207	94.1
K4.	Gloves, gown, mask, and Goggle's must be used when dealing with COVID-19 patients	215	97.7
K5.	Antibiotics are first line of treatment	76	34.5
K6.	Coronavirus infections could be fatal	172	78.2
K7.	The first case of coronavirus was found in Shinghai	159	72.3
K8.	Flavipiravir is antiviral COVID-19 drug	117	53.2
K9.	Plasma therapy is a clinical trial in which plasma is collected from recovered COVID-19 patient to treat coronavirus patient who is in critical condition	190	86.4
K10.	Some people become infected but does not develop any sign and symptom and do not feel unwell	197	89.5
K11	Incubation period of virus is 2–14 days	215	97.7
K12	Virus survive on the surface of doors tables and objects	220	100
	Total	Mean SD±(range)	
	Specific knowledge score	9.509±1.5245 (0–12)	

Table 4: Practice of staff nurses regarding COVID-19

S. No	Statements	Yes	No	Sometimes
P1.	Do you educate your patient about disease.	190 (86.4%)	69 (10.9)	24 (2.7)
P2.	Do you avoid touching your eyes, nose, and mouth as far as you can.	205 (93.2)	79 (3.2)	8 (3.6)
P3.	Do you use face mask in crowds	211 (95.9)	0	9 (4.1)
P4.	Do you throw the used tissues in trash	169 (76.8)	41 (18.6)	10 (4.9)
P5.	Do you use soap or hand sanitizer to was your hand continuously	210 (95.5)	1 (0.5)	9 (4.1)
P6.	Do you cover your nose and mouth during sneezing and coughing.	218 (99.1)	2 (0.9)	0
	Total	Mean±SD		
	Specific Practice Score	5.47±0.807 (0–6)		

Table 5: Association of knowledge and practice with selected demographic variables of staff nurses

Characteristics	Adequate knowledge *n* %	Inadequate knowledge *n* %	Total	Chi-square *P*-value df	Good practice	Poor practice	Total	χ^2 *P*-value Df
Gender								
Male	22	5	27	1.96	20	0	27	0.716
Female	150	43	193	0.658	188	5	193	0.398
				1				1
Age (years)								
Less than 30	141	41	182	1.252	177	5	182	1.068
31–39	24	6	30	0.741	30	0	30	0.785
40–49	4	0	4	3	4	0	4	3
>50	3	1	4		4	0	4	
Qualification								
Diploma	47	31	78	22.805	73	5	78	9.314
Degree	99	13	112	0.000	112	0	112	0.009
Postgraduation	26	4	30	2	30	0	30	2
Experience (years)								
<1	56	23	79		77	2	79	
1–3	68	17	85	6.168	85	0	85	11.635
4–5	22	6	28	0.104	25	3	28	0.009
>5	26	2	28	3	28	0	28	3

(93.2%, *n* = 386), positive attitude (8.43 ± 1.78), and good practice (88.7%, *n* = 367) regarding COVID-19. HCPs perceived that overcrowding in emergency room (52.9%, *n* = 219), limited infection control material (50.7%, *n* = 210), and poor knowledge regarding transmission (40.6%, *n* = 168) of COVID-19 are the major barriers in infection control practice.[18]

Strengths and limitations

The present study highlighted the less explored area where scarce literature was available. The study identifies the current status of staff nurses knowledge; an important aspect in successful response to any epidemic. The study has number of implicit limitations. First, it is a cross-sectional study conducted during lockdown period, and universities were also closed; therefore, institutional review board was not approached. Second, this is an online survey, responses mainly depend on honesty and partly affected by recall ability, and thus may subject to recall bias. Potential sample clustering might also limit the generalizability of study.

Conclusion

Findings providing confidence as staff nurses have good knowledge and good practice regarding COVID-19. The study also able to highlight gaps in specific aspects of knowledge and practice that should be focused in future awareness and educational campaigns. The study recommends the ministry of health authorities to promote all precautionary and preventive measures of COVID-19 with a comprehensive training program consisting better structured targeting all staff nurses to have equilibrium clinical knowledge about COVID-19.

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Conflicts of Interest

None declared.

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