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Perception of doctors and nurses regarding prevention of COVID-19 infection at a Teaching Hospital, Nepal

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Abstract

Introduction: The use of personal protective equipment can be burdensome and the risk of COVID-19 infection for this group is high. This study details to evaluate how prepared Health Care Workers consider themselves to be regarding the delivery of infection prevention and control procedures in their place of work.

Method: This is a cross-sectional study conducted at Kathmandu Medical College Teaching Hospital in September 2020. A questionnaire was given to participants along with the information about the study. Service demand, skills, beliefs about capabilities, beliefs about consequences, intentions, environmental context and resources, social influences, emotion, WHO Wellbeing (over the last two weeks) were taken as dependent variables.

Result: Out of 112 participants, 58(51.7%) were doctors and 54(48.3%) nurses; 65(58.1%) female and 47(41.9%) were male. The mean age was 31.2±4.1 y. Service demand was scored lowest (mean 0.7 out of 7) and beliefs about consequences were scored highest (mean 5.7 out of 7).

Conclusion: Healthcare workers agreed that personal protective equipment at work is sufficiently effective to prevent the spread of COVID-19. They were not confident that the health care center at present can manage or can continue to manage the current patient surge related to COVID-19.

Keywords: COVID-19, infection prevention and control, personal protective equipment

Introduction

Healthcare workers (HCWs) play a central role in providing quality healthcare for those affected by COVID-19. To prevent healthcare workers from becoming infected and to prevent the nosocomial spread of COVID-19, a wide range of healthcare services must ensure effective infection prevention and control procedures.¹ There are significant pressures on HCWs in providing care during an epidemic.

The use of personal protective equipment (PPE) can be burdensome. The risk of contracting infection for this group is high. There is also a risk of stigma due to the perception that healthcare workers have a high risk of spreading infection.² Research conducted during the severe acute respiratory syndrome (SARS) epidemic identified how organizational and social factors were important to protect both their physical and psychological health. These factors include healthcare workers' confidence regarding the ability to effectively deliver infection prevention and control (IPC) measures.³

This study aims to evaluate the perception of healthcare workers regarding their preparedness of IPC measures in their place of work for COVID-19.

Method

This is a cross-sectional study conducted at Kathmandu Medical College Teaching Hospital, Nepal, in September 2020. Healthcare workers (Doctors and Nurses) providing direct clinical care to patients in the hospital were included in the study. Staff not giving consent were excluded from the study. A questionnaire was given to participants along with the information about the study. Service demand, skills, beliefs about capabilities, beliefs about consequences, intentions, environmental context and resources, social influences, emotion, WHO Wellbeing (over the last two weeks) were taken as dependent variables. If the

participant agreed to take part in the study, they were asked to sign a consent and proceed with the questionnaire. Participants were informed that this questionnaire will require 7-10 minutes to fill up. Ethical approval was obtained from the Kathmandu Medical College Teaching Hospital Institutional review committee (1802802004).

No previously validated measure of healthcare workers' perception has been identified that is suitable for this study. The tool proposed by World Health Organization⁴ was used for this study. The tool is based on Theoretical Domains Framework (TDF). This is a contemporary framework, which has previously been applied to studying clinicians' behavior.⁵ This tool was modified as per the local context. The first part had general information about the study and the consent form. The second part had demographic data. The third part had a 28 questionnaire on 9 domains. The response was recorded on a Likert scale of 1 to 7 (1=strongly disagree, 2=disagree, 3=somewhat disagree, 4=neither agree nor disagree, 5=somewhat agree, 6=agree, and 7=strongly agree).

The mean of each 9 domains was calculated. The score of questionnaires in each domain was added to calculate its mean score. The mean and median of each domain were calculated in Microsoft Excel. Data was transferred to SPSS version 16 and sub-group analysis was done to find the changes between independent variables. Students' T-test was used and p-value<0.05 was considered statistically significant.

Result

There was a total of 112 HCWs (doctors and nurses) who completed the questionnaire (response rate 93.3%, out of 120 approached). There were 58(51.7%) doctors and 54(48.3%) nurses; 65(58.1%) female and 47(41.9%) male. The mean age was 31.2 y (± 4.1). The mean and median score of perception regarding local infection prevention was suggestive of symmetrical

data. Service demand was scored lowest (mean 0.7 out of 7) and beliefs about consequences were scored highest (mean 5.7 out of 7), Table 1.

The mean score of perception was between doctors and nurses showed no statistically significant difference ($p=0.9$), Table 2.

Table 1. Mean and median score of perception regarding local infection prevention, N=112

Variables	Mean	Median
Service demand	4.0	3.5
Skills	0.7	1.0
Belief about capabilities	3.9	3.8
Beliefs about consequences	5.7	6.0
Intentions	4.2	4.0
Environmental context and resources	3.1	3.0
Social influences	4.6	4.8
Emotion	5.0	5.5
WHO wellbeing	3.4	3.3

Table 2. Comparison of the mean score of perception regarding local infection prevention between doctors- N=58 and nurses- N=54

Variables	Doctor	Nurse
Service demand	4.1	3.9
Skills	0.6	0.8
Belief about capabilities	4.2	3.6
Beliefs about consequences	6.0	5.4
Intentions	4.1	4.3
Environmental context and resources	3.1	3.1
Social influences	4.4	4.8
Emotion	4.9	5.1
WHO wellbeing*	3.6	3.2

t-value is 0.09, p-value is 0.9

Table 3. Comparison of the mean score of perception regarding local infection prevention between female- N=65 and male- N=47

Variables	Male	Female
Service demand	3.8	4.4
Skills	0.8	0.4
Belief about capabilities	4	4.4
Beliefs about consequences	6.1	5.9
Intentions	4	4.2
Environmental context and resources	3.9	2.6
Social influences	4	4.8
Emotion	4.8	5
WHO wellbeing	3.4	3.8

t value is 0.19, p-value is 0.8

The mean score of perception was compared between male and female participants. This comparison showed no statistically significant difference ($p=0.9$) between these groups, Table 3.

Discussion

In our study, HCWs (doctors and nurses) neither agreed nor disagreed (mean score=4.0) that the health service where they currently work can manage or can continue to

manage current patient demand related to COVID-19. The global shortage of PPE has affected the world and Nepal is no exception to this.⁶ This has resulted in the HCWs to be uncertain whether their institution can fulfil the current demand or not. Moreover, as more and more low and middle-income countries reported COVID-19 infections, there were increasing concerns about whether the health system will be able to cope or not, leading to more uncertainty amongst HCWs.⁷ Despite this, one of the studies done in Nepal revealed that 74.9% of HCWs expressed willingness to work during the pandemic.⁸

In our study, HCWs strongly disagreed (mean score=0.7) that they have received sufficient training in IPC practices, or they are confident in their ability to don and doff full PPE to prevent transmission of COVID-19 to others or themselves. Despite this, HCWs were continuing to work during the COVID-19 outbreak. We did not find any published report of official COVID-19 training courses in Nepal, but we strongly suspect that there might be few courses running at the hospital level like in our hospital. One of the studies done in Libya, reports that no official training was found and only 6.7% of doctors and 5.5% of nurses had participated in the training course.⁹ In the present context it is difficult to conduct a training program, however, this seems to be necessary as lack of confidence in skill can lead to a low level of care and put HCWs at risk of infection. This is further evident by our study where participants disagreed (mean score=3.9) that they are confident that they can follow recommended procedures related to PPE. There is an increasingly growing number of HCWs being infected from COVID-19 globally, making HCWs the most vulnerable population to the pandemic. Lack of safety equipment in place exposes HCWs to infection, and HCWs behaviour also contributes to the infection to themselves.¹⁰ In our study, healthcare workers, however, agreed (mean score=5.7) that PPE at work is sufficiently effective to prevent the spread of COVID-19 and following the recommendations will protect them. They also agreed that the following

recommendation of the IPC procedure will add significant additional strains to their workload.

In one of the studies regarding the safety of health care workers, 81% responded that they have felt the need to have separate non-COVID and COVID emergencies, 46.6% answered that they were not comfortable working with partial PPE (masks, gloves) and 50% felt the need of having primary and secondary triaging.¹¹ In our study, the participants neither agreed nor disagreed (mean score=4.2) on their intention to use recommended PPE when taking care of the patient with suspected or confirmed COVID-19 cases when they have access to these PPE. This has also been assessed for a specialized clinic in another study published from Nepal where 41% of participants disagreed that full PPE should be mandatory for eye care practitioners.¹² In a study published from Ethiopia, gender, educational status, profession, years of service, knowledge towards COVID-19, and availability of PPE were independent predictors of good IPC practices.¹³ However, in our study the findings were independent of gender or profession as a doctor or a nurse.

In our study HCWs disagreed (mean score=3.1) that they have access to clear policies and protocols regarding IPC and accessibility equipment. The policies and protocols for IPC should be practiced in all healthcare setup irrespective of COVID-19. Every country should have national policies that must be implemented at the local health care facility level. Trained personnel, written IPC protocol, and regular training and monitoring of these staff are cornerstones of a good IPC practice.¹⁴ Risk mitigation strategies, including IPC practices, are meant to keep HCWs safe from occupational exposure to disease and to protect patients from healthcare-associated infections.¹⁵ The study shows HCWs lack easy access to policies and protocols in low and middle-income countries.¹⁶ This is further supported by a finding in our study where HCWs neither agreed nor disagree (mean score=4.6) that

their colleagues regularly followed IPC protocol, or they are encouraged by colleagues or support of the local community.

In our study, HCWs somewhat agreed (mean score=5) that they are concerned for themselves and their family about the risk of becoming ill with COVID-19. A study that included a review of 37 articles concluded that In light of many known and unknown effects of COVID-19, exploration of stress, fear, anxiety, and symptoms of depression were prevalent with many frontline HCWs.¹⁷ Yet another study states that HCWs were chiefly concerned about infection in colleagues or family members.¹⁸ In our study, HWC however accepted that the risk of getting COVID-19 is a part of their job, and infection with COVID-19 is not within their control.

It is also necessary that we address burnout among healthcare workers. A study published in Japan reported an overall burnout prevalence of 31.4%.¹⁹ This study was conducted in a population whose median age was 30.5 years. The mean age of our study population was 31.2 years, so burnout has been documented in the young population which can hold true to our population as well.

The study result may be influenced by the participants' baseline knowledge regarding COVID-19. A study was done in Nepal which looked into the understanding of healthcare workers. It showed that for those working in COVID-19, 65.6% of HCWs had the knowledge of transmission, 90.1% of case definition, and 75.4% of diagnostic tests.²⁰ We have not analyzed the baseline knowledge of our participants. However, as our study site is in the same region, it can be predicted that our participants may also have the same level of understanding as in the cited study.

Despite intensive work that has drained health-care providers physically and emotionally they have shown their resilience and the spirit of professional dedication to overcome difficulties.²¹ So it is of an utmost priority to safeguard the health care

providers. Resource management and intensive IPC training are necessary to promote preparedness and safety in this situation.

Conclusion

In our study, healthcare workers were not confident that the health care center at present can manage or can continue to manage the current patient surge related to COVID-19. However, they agreed (mean score=5.7) that PPE at work is sufficiently effective to prevent the spread of COVID-19 and that following the recommendations will protect themselves from getting infected.

Conflict of Interest

None

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None

Author Contribution

LS contributed to the designing of the study, data collection, write-up, and review. AT contributed to data collection and write-up, SP, HC, and AN contributed to designing of the study, write-up, and review. All authors approved the final manuscript.

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Supplement

Annex A: Participant Invitation

You have been invited to take part in this research survey. Participation is voluntarily. Before you decide to participate, please read the following information on why this research is being done and what will happen to your responses.

The survey will ask you about your opinions, past experience, and current practices regarding local infection prevention and control procedures for COVID-19.

As the COVID-19 pandemic progresses, there is increasing pressure on healthcare workers on the frontline to provide care in epidemic conditions, across different countries and clinical settings. To identify immediate areas of concern that need to be addressed, we need to understand how healthcare workers' view their preparedness to deliver effective infection prevention and control procedures in their place of work.

You have been invited to take part in this survey because you are a health professional providing direct clinical care to patients, or a staff member involved in running clinical services, in community, hospital, and/ or ambulance emergency response settings.

It is up to you to decide whether or not to take part. If you do take part, we will ask you to provide consent. You can withdraw your participation and/ or information at any time, without giving a reason.

All information will be confidential and securely stored.

Information collected in this survey may be shared in an anonymized form to allow reuse within the research team and other third parties for COVID-19 health service-related research only.

All data will be stored and processed in accordance with national regulations. Approvals for this study have been obtained from IRC of Kathmandu Medical College

This study contains 28 questionnaires and will take 7-10 minutes to complete. If you are willing to take part in this study, please confirm the following: yes/ no

- I understand that my participation is completely voluntary
- I would like to take part in this study

Name:

Signature:

Date:

Annex B: Demographic information

Variables

1. Age:
2. Gender:
3. Role: Doctor/Nurse

Annex C: Questionnaire

The following questions relate to your experience of managing patients in the healthcare setting where you work. Please think about your experience over the past week when responding to these questions.

Response options: 7-point Likert scale: strongly disagree, disagree, somewhat disagree, neither agree nor disagree, somewhat agree, agree, strongly agree.

Service demand

S.no		1	2	3	4	5	6	7
1	I am confident that the healthcare service where I work can manage current patient demand related to COVID-19							
2	I am confident that the healthcare service where I work can continue to manage patient demand related to COVID-19 over the next 3 months							

Skills

S.no		1	2	3	4	5	6	7
3	I feel I have received sufficient training in the infection prevention and control practices specifically for COVID-19							
4	I feel I have received sufficient training in the infection prevention and control practices specifically for COVID-19							
5	I am confident in my ability to correctly don and doff personal protective equipment to prevent transmission of COVID-19 to others and myself.							

Beliefs about capabilities

S.no		1	2	3	4	5	6	7
6	I am confident that I am able to follow recommended procedures related to personal protective equipment (PPE) for COVID-19 e.g. appropriate use and disposal of gloves, apron and fluid resistant surgical mask Social/professional role							
7	I feel it is my professional responsibility to take all measures necessary to care for COVID19 patients.							

Beliefs about consequences

S.no		1	2	3	4	5	6	7
8	I believe that the protective procedures at work are sufficiently effective to prevent the spread of COVID-19 in the health facility where I work							
9	Following the infection prevention and control recommendations will protect me from becoming ill with COVID-19							
10	Following recommended infection, prevention and control procedures adds significant additional strain to my workload.							

Intentions

S.no		1	2	3	4	5	6	7
11	I intend to always use the recommended personal protective equipment (medical mask, eye protection, gown and gloves) when taking care of patients with suspected or confirmed COVID-19 when I have access to these.							

Environmental context and resources

S.no		1	2	3	4	5	6	7
12	In the health facility where I work, I have access to clear policies and protocols for everyone to follow related to infection prevention and control procedures for COVID-19							
13	I can easily access personal protective equipment (PPE) in line with standard infection control precautions, for example, gloves, gown, eye protection and medical mask for COVID-19 in the hospital where I work							
14	During my last clinical shift, I had adequate supplies of the following materials: Hand alcohol Hand soap N95 respirator (FFP2 or equivalent) N95 respirator (FFP1 or equivalent) Surgical mask							

	Fluid resistant gown Disposable apron Gloves Full body suit Eye protection (i.e goggles or face shield)								
15	In the health facility where I work there are dedicated isolation facilities for patients with suspected COVID-19								
16	The health facility where I work receives good support from national/ regional/ local public health authorities, who provide guidance and training on how to manage COVID-19								

Social Influences

S.no		1	2	3	4	5	6	7
17	Most of my colleagues regularly follow infection, prevention and control measures (for example, regular hand washing, use of personal protective equipment, proper disposal of equipment)							
18	It is expected that in my role as a healthcare professional that I will follow infection prevention and control measures							
19	I am encouraged and supported by senior medical/nurse staff to apply recommended infection prevention and control measures.							
20	The local community where I currently live day-to-day are generally supportive of healthcare workers.							

Emotion

S.no		1	2	3	4	5	6	7
21	I am concerned about the risk to myself of becoming ill with COVID-19							
22	I am concerned about the risk to my family related to COVID-19 as a result of my job role							
23	I am afraid of looking after patients who are ill with COVID-19.							
24	I accept that the risk of getting COVID-19 is part of my job. 25. Whether I get infected with COVID-19 is within my control.							

WHO Wellbeing: Over the last two weeks

S.no		1	2	3	4	5
25	I have felt cheerful and in good spirits					
26	I have felt active and vigorous					
27	I woke up feeling fresh and rested					
28	My daily life has been filled with things that interest me					