

# Perceptions of Nursing Personnel Regarding Challenges in Usage of PPE during COVID 19 Pandemic

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**Abstract:** The rapid spread of COVID 19 outbreak has put a heavy burden on human society and is a great challenge for health care workers. The present study aims to assess the perceptions of nursing personnel regarding challenges in usage of PPE during COVID 19 pandemic and to find out the association between severity of physical symptoms and selected personal variables of nursing personnel. A quantitative approach with descriptive survey research design was used for the study. Web based self-administered questionnaire, rating scale and checklist were developed and distributed among study participants in the "Google forms". A total of 134 participants were included in the study. Out of the 134 participants, 85(63.4%) nursing personnel were working in the government sector and 49(36.6%) of nursing personnel were working in the private sector. The top five challenges in the usage of PPE ranked based on self-reported data were; 1. difficulty to meet the basic needs such as food and fluids, 2. difficulty to meet elimination needs, 3. Unable to relax, 4. difficulty to meet hygienic needs and 5. disconnected with friends and family during working hours. Analysis of physical symptoms experienced by the nursing personnel showed that 41(30.6%) had mild symptoms, 54(40.3%) had moderate symptoms and 39(29.1%) had severe symptoms experienced owing to PPE usage. The most common physical symptoms reported by nurses were heat stress 124(92.5%), head ache 120(89.6%), exhaustion 117(87.3%) and dryness in throat (86.6%). There were no significant association between physical symptoms of nursing personnel and selected personal variables at 0.05 level of significance.

**Keywords:** perceptions, nursing personnel, challenges, PPE, Covid 19 pandemic

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## 1. Introduction

Coronavirus disease 2019 (COVID-19), caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is one of the worst flu pandemic in human history. The WHO declared pandemic has spread across all continents and sickened a large number of people.

Containment of this disease has been a major problem despite the numerous protocols advanced by various regulatory bodies. These guidelines and protocols include those by the WHO, Centres for Disease Control, ICMR, International Labour Organization, and European Agency for Safety and Health to prevent infections among healthcare and non- health care workers [1].

These guidelines includes wearing of face masks, maintaining social distancing, hand hygiene using sanitizer, vaccination, following travel advisories, case notification and management. Among the critical components of infection and prevention control (IPC) during the management of COVID-19 is the mandatory use of PPE by healthcare workers (HCWs) [2].

In the health care setting, personal protective equipment is mainly used to protect the health care personnel from the exposure of pathogens especially Health Care Acquired Infections (HAIs). The use of PPE is essential in Infection Control (IC) [3].

With the emergence of the new global pandemic, healthcare workers often find it difficult to use PPE, especially in summer seasons and in areas where air conditioners are unavailable or shut down due to fear of spread of infection [4]. The investigators had witnessed the challenges and benefits of using PPE during COVID 19 pandemic. Nurses, as being the frontline warriors of COVID 19 have also shared the difficulties experienced by PPE use in current crisis situation. There were reports that many hospital authorities have discriminatory approaches towards nurses, denying them PPE to shield themselves from the deadly pandemic. Hence the investigators felt the need of conducting the study on perceptions of nursing personnel regarding challenges in PPE usage.

### **1.1. Statement of the problem**

A study to assess the perceptions of nursing personnel regarding challenges in usage of PPE during COVID 19 pandemic in hospitals, India.

### **1.2. Objectives**

- Identify the perceptions of nursing personnel on usage of PPE.
- Find out the association between physical symptoms of nursing personnel owing to usage of PPE during COVID 19 pandemic & their selected personal variables.

### **1.3. Hypothesis**

- There is significant association between severity of physical symptoms owing to PPE usage & selected personal variables of nursing personnel at 0.05 level of significance.

## **2. Materials and methods**

The study used a descriptive survey design to assess the perceptions on challenges in the usage of PPE among nursing personnel. The study population consists of nursing personnel working in Government and private Hospitals, who had used PPE in the care of COVID 19 patients. The data collection tool consisted of personal data sheet, three point rating scale to measure the perceptions of nursing personnel on usage of PPE during COVID 19 pandemic and Check list to measure the physical symptoms experienced by nursing personnel owing to PPE. The tools were converted into "Google forms" and data collection was done by web based methods. A total of 134 participants were included in the study. Electronic consent was obtained for the consenting process. The period of data collection was from April to June 2021.

## **3. Results**

Frequency and percentage distribution of demographic variables were analysed. Among the nursing personnel under study, 88(65.7%) were in the age group of 21 to 30 years, 112 (83.6%) were females, most 115(85.5%) of them were staff nurses, more than half 56(41.8%) of them were working in wards. Out of the sample, 85(63.4%) nursing personnel were working in government sector and 82(61.2%) had more than 5 years' experience.

Table 1 depicts the frequency and percentage distribution of perceptions on challenges regarding PPE usage it includes challenges related to personal needs, patient care and administration.

Table 1. Distribution of nursing personnel according to perception regarding PPE use N=134

Sl No	Items	Always		Sometimes		Never	
		f	%	f	%	F	%
<b>Personal Needs</b>							
<b>I believe that wearing PPE makes me</b>							
1.	Feel difficult to meet basic needs such as						
	• Food and fluids	95	70.9	34	25.4	5	3.7
	• Hygienic needs	65	48.5	57	42.5	12	9.0
	• Relaxation	82	61.2	47	35.1	5	3.7
	• Elimination	92	68.7	41	30.6	1	0.7
2.	Feel disconnected with friends and family during working hours.	65	48.5	49	36.6	20	14.9
3.	At risk of contracting infection from patient.	41	30.6	58	43.3	35	26.1
<b>Patient Care</b>							
<b>I believe that wearing PPE</b>							
1.	Transmit infections from one patient to another.	16	11.9	63	47.0	55	41.0
2.	Affects the quality of patient care.	34	25.4	58	43.3	42	31.3
3.	Interferes with recording and reporting procedure.	33	24.6	55	41.0	46	34.3
4.	Reduces the application of therapeutic touch in patient care.	50	37.3	54	40.3	30	22.4
5.	Reduces communication with patients	30	22.4	68	50.7	36	26.9
<b>Administration</b>							
<b>In my unit of work there is</b>							
1.	Inadequate supplies of PPE.	12	9.0	38	28.4	83	61.9
2.	No time for appropriate donning and doffing due to long work schedule.	12	9.0	56	41.8	66	49.3
3.	Long work schedules and time consuming nature of doffing procedure hinder the methodological way of doffing.	13	9.7	64	47.8	57	42.5
4.	Failure in reporting the defects in PPE.	11	8.2	56	41.8	67	50.0
5.	Unavailability of good quality PPE.	17	12.7	55	41.0	62	46.3
6.	No separate suite for donning and doffing with adequate space.	19	14.2	24	17.9	91	67.9
7.	No additional training for proper use of PPE.	17	12.7	24	17.9	93	69.4
8.	Shortage of manpower makes me perform COVID duty too frequent.	45	33.6	63	47.0	26	19.4
9.	Lack of proper guidance and supervision from the superior.	16	11.9	83	61.9	35	26.1
10.	No provision of welfare services for the management of consequences related to PPE use.	27	20.1	55	41.0	52	38.8

Table 2 shows that the most important challenges encountered by the nursing personnel regarding PPE usage were: difficulty in meeting basic needs such as food and fluids, difficulty in elimination needs, inability to relax, difficulty to meet hygienic needs and feeling disconnected with friends and family during working hours.

**Table 2. Rank, Frequency & Percentage distribution of nursing personnel according to their perception on challenges regarding PPE usage. N=134**

Sl. No.	Items	F	%	Rank
1.	Feel difficult to meet basic needs such as food and fluids.	95	70.9%	1
2.	Feel difficult to meet basic needs such as elimination	92	68.7%	2
3.	Feel difficult to meet basic needs such as relaxation	82	61.2%	3
4.	Feel difficult to meet basic needs such as hygienic needs.	65	48.5%	4
5.	Feel disconnected with friends and family during working hours.	65	48.5%	4
6.	Reduces the application of therapeutic touch in patient care.	50	37.3%	6
7.	Shortage of manpower makes me perform COVID duty too frequent.	45	33.6%	7
8.	At risk of contracting infection from patient	41	30.6%	8
9.	Affects the quality of patient care.	34	25.4%	9
10.	Interferes with recording and reporting procedure	33	24.6%	10
11.	Reduces communication with patients	30	22.4%	11
12.	No provision of welfare services for the management of consequences related to PPE use.	27	20.1%	12
13.	No separate suite for donning and doffing with adequate space.	19	14.2%	13
14.	Unavailability of good quality PPE.	17	12.7%	14
15.	No additional training for proper use of PPE	17	12.7%	14
16.	Transmit infections from one patient to another.	16	11.9%	15
17.	Lack of proper guidance and supervision from superiors	16	11.9%	15
18.	Long work schedules and time-consuming nature of doffing procedure hinder the methodological way of doffing.	13	9.7%	17
19.	Inadequate supplies of PPE	12	9.0%	18
20.	No time for appropriate donning and doffing due to long work schedule.	12	9.0%	18
21.	Failure in reporting the defects in PPE.	11	8.2%	19

**Table 3** reveals the physical symptoms experienced by the nursing personnel while using PPE. The most common physical symptoms reported by nurses were; heat stress 124(92.5%), head ache120(89.6%), exhaustion 117(87.3%), dryness in throat 116(86.6%) and excessive thirst 115(85.8%).

**Table 3. Distribution of nursing personnel according to physical symptoms experienced owing to PPE usage. N=134**

Sl. No	Physical symptoms	Frequency	Percentage
1.	Heat stress	124	92.5
2.	Headache	120	89.6
3.	Exhaustion	117	87.3
4.	Dryness in the throat	116	86.6
5.	Excessive Thirst	115	85.8
6.	Disturbed food pattern	110	82.1
7.	Dryness in the skin	109	81.3
8.	Elimination-related problems (Bladder)	108	80.6
9.	Difficulty in breathing	107	79.9
10.	Skin damage over nasal bridge	107	79.9
11.	Pain in the face	100	74.6
12.	Discomfort during menstruation (Female nurses)	100	74.6
13.	Redness in the face	99	73.9
14.	Skin damage around the ears	98	73.1
15.	Facial itching	94	70.1
16.	Odour due to sweating	90	67.2
17.	Skin rashes	84	62.7
18.	Disturbed sleep	79	59.0
19.	Loss of appetite	66	49.3
20.	Skin damage around the eyes	62	46.3
21.	Skin damage over cheeks and jaw	62	46.3
22.	Asphyxiation	58	43.3
23.	Elimination-related problems (Bowel)	56	41.8
24.	Latex allergy	53	39.6
25.	Contact dermatitis	27	20.1
26.	Nausea/ vomiting	8	6.0

The **Table 4** explicit that the nursing personnel 41(30.6%) had mild symptoms, 54(40.3%) had moderate symptoms and 39(29.1%) had severe symptoms experienced owing to PPE usage.

There were no significant association between physical symptoms of nursing personnel and selected personal variables at 0.05 level of significance. Hence null hypothesis was accepted and research hypothesis was rejected.

**Table 4. Distribution of nursing personnel according to severity of physical symptoms experienced owing to PPE usage. N=134**

Severity of physical symptoms	Frequency	Percentage	Mean ± SD
Mild	41	30.6	16.13 ± 4.97
Moderate	54	40.3	
Severe	39	29.1	

#### 4. Discussion

Nurses play a key role in the containment of Covid 19 pandemic. The use of personal protective equipment protects them from the greater risks of the ongoing pandemic. The most common challenges experienced by the nurses were; difficulty to meet basic needs such as food and fluids, elimination needs, hygienic needs. Majority of the nurses reported that they are not able to relax. Other perceived challenges reported were; feeling disconnected with friends and family during working hours and difficulty in the application of therapeutic touch in patient care. The common physical symptoms reported by nurses were; heat stress 124(92.5%), head ache 120 (89.6%), exhaustion 117(87.3%) dryness in throat (86.6%) and excessive thirst 115(85.5).

Results of the present study were consistent with a cross-sectional study conducted among 150 frontline nurses in ICUs of COVID hospital [5], North India. The most common adverse health effects expressed by them were headache (73.4%), extreme sweating (59.6%), and difficulty in breathing (36.7%); 91.7% complained about the fogging of the goggle. Majority of frontline nurses expressed nasal bridge scarring (76.64%) and indentation and pain on the back of the ears (66.42%) as the adverse skin reactions after wearing N95 masks. The common skin problems identified due to double gloving of latex gloves were excessive skin soakage with sweat (70.07%) and skin chapping (19%). Heat and moisture generated inside the PPE after the prolonged period make nurses more discomfortable, with sweating profusely, restlessness, headache, weakness, and giddiness [6].

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