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AWARENESS AMONG CRITICAL CARE NURSES REGARDING PROTECTION AND PREPAREDNESS FOR COVID-19 PANDEMIC AT RURAL TERTIARY CARE HOSPITAL – ARE WE READY YET??

Anesthesiology

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ABSTRACT

BACKGROUND: In a developing country like India, the management of pandemic situation is very challenging. The country has large number of hospitals and healthcare providers as compared to other parts of the world. However, it is important to know about the awareness of the COVID -19 infection related information among the healthcare workers especially among nurses for optimal health outcome of patients. **METHODOLOGY:** This questionnaire based study was conducted among 72 critical care nurses working in a rural tertiary care hospital. A total of 39 questions were asked which covered the demographic data and experience, knowledge and confidence for managing COVID-19 pandemic. The data was analyzed using descriptive statistics and results were expressed as percentages. **RESULTS:** A total of 64 nurses participated in the study. While the knowledge regarding handwash and hydroxychloroquine prophylaxis was fairly good with almost 80% nurses being aware of these, almost 74% nurses were not clear about PPE. **CONCLUSION:** Proper and timely training of nurses would help in the preparedness for a pandemic like COVID-19.

KEYWORDS

Awareness, Critical care, COVID -19, Knowledge, Nurses, Hydroxychloroquine

INTRODUCTION:

Coronavirus disease (COVID-19) is a new corona virus infection which first broke out in Wuhan, Hubei Province, Central China and has spread worldwide.[1] World Health Organization (WHO) declared this viral infection as a pandemic on 11th March 2020 considering the alarming levels of spread.[2] It is a challenge for the government and the healthcare professionals to tackle the problem especially in developing countries like India where the population growth is extensive. India has reasonably good cost effective healthcare facilities compared to other developing countries. In accordance with the rules by the government any sort of social gathering or get together is not permitted. As healthcare personnel it is important to know whether our healthcare workers especially critical care nurses have updated their knowledge regarding managing the pandemic or not. The recent literature has explored the knowledge and practices of residents and other healthcare personnel working at the frontline.[3-5] Being in rural area we do give excellent health related services, but it is important to know how exactly the critical care nurses are prepared to provide their services and whether or not they have updated the knowledge. Hence, this study was conducted at a rural tertiary care hospital.

MATERIALS AND METHODS:

After obtaining institutional ethical clearance, this descriptive cross-sectional study was conducted. A total of 72 critical care nurses were identified who were working in the medical, surgical, respiratory and cardiac critical care unit. Nurses with work experience less than one month were excluded from the study. Out of 72, only 64 participated as rest did not provide consent. An online questionnaire including 39 questions was designed to collect the data with respect to socio-demographic data, knowledge, attitude and practice during COVID-19 pandemic.(Appendix 1) All the questions were submitted to 2 independent intensivists for validation. The questionnaire was provided to each participant and asked to tick the appropriate answer independently without discussing. The questions were fed in the Google form and a tab was used to collect the data. We collected the data from the nurses who were willing to participate in the study and sufficient time was provided for the participants to answer the questions. The questions were prepared to collect the information on socio-demographic characteristics, knowledge, awareness, attitude and practice on the COVID-19 pandemic.

We used a sample size of convenience and the data was collected over a period of one month. The data was analyzed using descriptive statistics and the statistical analysis was performed using the computer program SPSS (Statistical Package for Social Sciences) version 15.0. The results were expressed as percentages.

RESULTS:

A total of 64 nurses participated out of the total 72 enrolled in the study. The socio-demographic details are depicted in Table 1. As per the data, the male nurses were in higher number i.e. 44 (68.75%) than females. The nurses were between the age group of 21 to 50 years only with highest number of nurses (70%) in the age group of 21 to 30 years. Out of 64 people, 44 (68.75%) were married and 32 (50%) people were having children. A total of 38 (59.28%) participants agreed that their family is partially dependent on their earnings. Table 2 shows the details of qualification, experience and knowledge of nurses who participated. Most of the nurses were diploma 40 (62.4%) degree holders and 26 (40.56%) were having more than 4 years of experience in working in the intensive care unit (ICU). A total of 62 (96.72%) nurses were aware of COVID-19 pandemic and 37 (57.72%) said they are afraid of serving in hospital during COVID pandemic. It was observed that a total of 14 (21.8%) nurses felt moderately scared while 3 (4.68%) were highly scared and 12 (18.72%) participants were not at all scared of serving in COVID-19 hospital. Out of 64 people, 62 (96.72%) of them felt their service is really important in the hospital during the COVID-19 pandemic. Of the total participants, 37 (57.72%) were more worried about their family members than self. When asked about their knowledge regarding protocols, we observed that 51 (79.56%) nurses had read about COVID-19 working protocols in the ICU out of which 45 (70.2%) people had read institutional protocols. Very few nurses (6.24%) had read about Indian Council of Medical Research (ICMR) or WHO protocol related to critical care management. Although 60 (93.6%) nurses had heard about personal protective equipment (PPE) but 48 (74.88%) responders did not know the meaning of PPE. Only 35 (54.6%) nurses accepted that they know how to wear the PPE, of which only 24 (37.5%) claimed to have got training till date. With respect to the level of confidence regarding wearing PPE, only 4 (6.24%) nurses were found to be highly confident (rated 10) and maximum of 8 (12.48%) rated a confidence level of 7. A total of 55 (85.8%) nurses said that the working pattern in a COVID critical care unit is different than a non-COVID one.

Of the 24 nurses who had got training on PPE, 06 (9.36%) were trained by anesthesiologists, 04 (6.24%) by infection control team personnel and 05 (7.8%) by nurse in-charge. Regarding the various modalities used to train about PPE, 3 (4.68%) nurses had undertaken online training, 12 people were trained by only lecture (18.72%), 7 (10.92%) people saw only video and 02 (3.12%) people got trained by both lecture as well as video. Only 08 (12.48%) out of 64 nurses knew the meaning of donning and doffing and 02 (3.12%) had previous experience of wearing PPE. All 64 nurses knew about WHO protocol for hand washing but only 3 people were not aware of WHO protocol

for hand rub. A total of 13 (20.28%) nurses felt both hand rub and hand wash techniques are same.

Table 3 shows the details of questionnaire with respect to clinical practice. All 64 nurses confirmed that different types of face masks are available in the market. All 64 nurses had N95 masks but only 32 (50%) nurses knew the meaning of N95 masks. A total of 56 (87.36%) nurses felt N95 mask is must for serving COVID ICU, 6 (9.36%) felt it is optional and 2 (3.12%) people felt N95 is not at all necessary. 53 (82.68%) responders believed that wearing N95 mask with expiratory mask is an ideal thing as per the guidelines. Also, 55 (85.8%) people felt that N95 masks can be reused.

Table 4 shows the questionnaire with regards to prophylaxis using hydroxychloroquine (HCQ). A total of 54 (84.24%) people were aware but only 8 (12.48%) had taken prophylaxis. Out of 64 nurses, 48(74.88%) were aware of side effects of HCQ and 45 (70.2%) nurses were scared of taking HCQ prophylaxis.

DISCUSSION:

As reported by WHO, the number of confirmed COVID cases in India has reached an alarming number of 297535 as on June 12, 2020.[6] The only way to deal with this pandemic is the preparedness of hospitals as well as the healthcare workers. This holds good for the developing and undeveloped countries, especially those which are highly populated. The proper education and training of prevention and treatment guidelines to healthcare workers is of paramount importance.

In our study out of 64, majority were male nurses. As the study was conducted in rural part of the country this is not uncommon to see less number of females working in hospitals. Majority of the nurses were young and were unmarried. Of those who were married, 50% had children. Majority of them said their income is partially supporting the family as their primary earning is mainly by agriculture. Majority of the nurses had diploma degree holders and had more than 4 years of clinical experience. Most of the nurses despite being in the rural area were still aware of COVID-19 pandemic. Since all nurses have mobile phones and use social network platform the information of the COVID as a pandemic was easily available. It is also not untrue that news channels in India keep updating the global issues which are important.

Majority of the nurses (57.72%) in our study felt scared to work in hospital during this pandemic. The rating of fearfulness was done ranging from zero to ten, zero being not at all fearful and 10 being maximum. Though the nurses' perception was different and ranged between zero and 10, for maximum number of participants the rating was 5, indicating neutral nature towards fear to work in critical care. Maximum people also felt it is important to serve the nation in difficult time; especially because it is the common experience in rural area that mortality does happen due to the poor healthcare setup. The nurses do understand the professional obligation and the importance of serving healthcare system despite their life being at risk. The main reason behind the stress in our study was the concern of family members. Similar results were observed in a study by Mo Y et al where higher stress scores were observed amongst nurses who were the only child in their family than those who were not the only child.[7] In rural India joint family is more common than nuclear families. The possible thought of carrying the infection from hospital to their family members at home would result in the obvious worry and concern. It is also important to note that the nurses also had children. Though the infection rate is less common in pediatric age group, the anxiety among the nurses can be one of the reasons for getting fear to work during COVID pandemic. Of 64 nurses, 22 felt that they were worried about themselves along with the family members. Similar fear and anxiety has been noticed in the nurses working as frontline workers during previous pandemics as well.[8]

Various protocols have been released by the standard bodies and organizations all over the world. The government of India (GOI) has been following the guidelines by WHO, Centers for Disease Control and Prevention (CDC) and ICMR with respect to the prevention and treatment of COVID-19 infection.[9,10] It is also important to note that the guidelines on donning and doffing of PPE mentioned by CDC, WHO and All Indian Institute of Medical Sciences (AIIMS) have much been emphasized upon during the pandemic.[11-13] These protocols are modified at the Institute level based on the local parameters. Out of 64 nurses, 45 (70.2%) had read the institutional protocols. The institutional protocol is well formulated as per the local requirement and not deviating from the GOI or state guidelines. The circulation of these institutional guidelines to the root level healthcare workers was well established. To the best of our knowledge and online search we did not get any nursing guidelines formulated by the national body of nurses association. The authors feel that it is important that one should develop these guidelines for the nurses who are working in both COVID and non-COVID hospitals.

About 60 (93.6%) participants in our study had heard about the PPE but only 48 (74.88%) people knew what is the meaning of PPE. Amongst all, 29 (45.24%) nurses knew how to wear the PPE though only 24 (37.5%) nurses had undergone training. Of these, only 4 people were very confident in proper donning of PPE. In a similar study conducted by Modi et al, it was observed that almost 79% of the healthcare workers of Mumbai region were aware of the PPE.[14] However, question regarding donning and doffing of PPE was not put forth in their study. Among trainers, anesthesiologists contributed more in training the critical care nurses. The most common mode of training observed in our study was by delivering lecture. It is important to highlight here that the training of nurses should be done not just by the lecture or by video demonstration but by hands on training as well. Since one of the reasons for healthcare worker cross infection is improper usage of PPE, the precise training of our frontline workers should be considered. Though 24 people had undergone training, only 8 nurses knew the meaning of donning and doffing. Based on these results of our study, a need was identified to modify the existing teaching methodology. Presently, the teaching methodology has been improved by giving hands on training. A post training test is also being conducted now to ensure all the candidates are following the protocol. If the candidates are unable to follow the laid protocol they will be sent for re-training till they satisfactorily follow the guidelines. Here the role of infection control team of the institution also comes into play. This study, thus, helped us to establish better training and post teaching assessment techniques. Such proactive measures including training of all the healthcare workers including doctors, nurses, technicians, helpers and security personnel posted in COVID-19 designated hospitals not only helped us build a committed core team but also ensured effective disaster response.

Majority of nurses (87.36%) felt that the people working in the non-COVID ICU also need to wear N-95 masks. This is because the nurses might have felt that in India due to high population the undiagnosed corona virus infected patients may get admitted in non-COVID ICU. Though all the nurses were aware of different types of mask availability in the market, 32 (50%) of them said they do not know the meaning of N95. Among all nurses, 53 (82.68%) accepted that N95 mask with expiratory valve is mandatory to work in COVID-19 ICU. As per the guidelines from WHO ideally the N95 ask having expiratory valves should be used by healthcare workers dealing with COVID patients.[15] 55 (85.8%) nurses also opted that they can re-use N95 mask without sterilization. This is again an important thing to highlight that there are conflicting recommendations from various bodies in India. As per WHO guidelines, the re-use of N95 mask is not recommended as scientifically it is not proven safe. But the bodies like AIIMS, India suggested to use a 5 masks technique, where in the individual will wear each mask in a sequence wise manner for 4 days continuously and on 5th day the 1st mask will be worn again.[16] Again, this is not scientifically proved that reuse of N95 mask is free from novel corona virus. Though all the critical care nurses are working in the non-COVID ICU all of them wear N-95 mask while working. This is not uncommon to see an asymptomatic patient who did not have travel history to contract novel corona virus infection. Thus, as per the institution protocol sufficient quantity of N-95 masks have been issued to all nurses.

With respect to knowledge regarding hydroxychloroquine (HCQ), among all participants 54 (84.24%) nurses were aware of the drug being used in prophylaxis. Out of 64 nurses, 8 (12.48%) had taken HCQ, 48 (74.88%) knew about the side effects of this drug and majority of them (70.2%) were scared of taking this drug. Though there is a lot of controversy regarding role of HCQ in prophylaxis and treatment for corona virus infection, considering promising results in Indian population, ICMR still recommends the use of HCQ for frontline workers under strict medical supervision.[17]

LIMITATION OF THE STUDY:

We did not record the co-morbid illness of each participant. This might

have contributed to the study as it is quite possible that some nurses may not be willing to work in the hospital due to their co-morbid illness. Further study in large sample size is required to understand the knowledge attitude and practices with respect to COVID-19 pandemic. Regarding HCQ we did not ask whether they did self-medication or by doctor's prescription. The question with respect to quarantine was not asked separately. There could have been different set of questions regarding quarantine requirement as well as facilities.

CONCLUSION:

Considering the evolving nature of the disease and the guidelines, appropriate and updated training of nurses starting from the basics with mental reassurance is the need of the hour. It is a very challenging situation during pandemics but pre-preparedness is really important. One should consider training of all the nurses irrespective whether they will work in COVID or non-COVID critical care area. Post training assessment is an important component and authors do insist that the nurses should be certified once the candidate meets the minimum required knowledge and technique.

Tables and Appendix:

Table 1: Socio - demographic details

S.N	QUESTION	ANSWER
1	Gender	Male: 44 (68.75%) Female: 20(31.25%)
2	Age	21 -30yrs: 45 (70.2%) 31 – 40 yrs: 17 (26.52%) 41 -50yrs: 2 (3.12%) >50 yrs: 0 (0%)
3	Marital status	Unmarried: 44 (68.75%) Married: 20 (31.25%) Do not want to share information: 0 (0%)
4	Status of having children	Yes: 32 (50%) No: 32 (50%) Do not want to share information: 0 (0%)
5	Family Dependency on earning	Yes: 20 (31.25%) Partial: 38 (59.28%) No: 6 (9.36%)

Table 2: Details of qualification, experience and knowledge

S.N	QUESTION	ANSWER
1	Type of nursing education	Degree (Bsc): 24 (37.44%) Diploma (RGNM): 40 (62.4%) Masters (Msc): 0 (0%)
2	Years of experience in critical care	< 1 year: 4 (6.24%) 1- 2 years: 8 (12.48%) 2-3 years: 11 (17.16%) 3-4 years: 15 (23.4%) > 4 years: 26 (40.56%)
3	Are you aware of COVID -19 pandemic?	Maybe: 1 (1.56%) Yes: 62 (96.72%) No: 1 (1.56%)
4	Are you afraid of serving in hospital when COVID-19 is pandemic?	Yes: 37 (57.72%) No: 27 (42.12%)
5	How much do you rate if you are afraid of serving in COVID-19 hospital?	0 (no fear): 12 (18.72%) 1: 3 (4.68%) 2: 6 (9.36%) 3: 7 (10.92%) 4: 10 (15.6%) 5: 14 (21.8%) 6: 3 (4.68%) 7: 5 (7.8%) 8: 0 (0%) 9: 1 (1.56%) 10 (maximum fear): 3 (4.68%)
6	Do you feel your service is important during this COVID-19 pandemic?	Yes: 62 (96.72%) No: 2 (3.12%)
7	You are worried about	Self: 1(1.56%) Family members: 37(57.72%) Both of the above: 22 (34.32%) Not worried at all: 4 (6.24%)
8	Have you read any protocol related to COVID-19?	Yes: 51(79.56%) No: 13(20.28%)
9	If yes then which protocol you have read?	Not read any protocol: 13 (20.28%) ICMR protocols: 2 (3.12%) Nursing protocols: 2 (3.12%) Institutional protocols: 45 (70.2%), WHO: 2 (3.12%)
10	Have you heard about PPE?	Yes: 60 (93.6%) No: 04 (6.24%)
11	Do you know the meaning of PPE?	Yes: 48 (74.88%) No: 16(24.96%)
12	Do you know how to wear the PPE?	Yes: 29 (45.24%) No: 35(54.6%)
13	Are you aware different types of mask are available in the market?	Yes: 64(100%) No: 0(0%)
14	Do you know the meaning of N95 mask?	Yes: 32(50%) No: 32(50%)
15	Do you feel handrub and handwash both are same?	Yes: 13(20.28%) No: 51(79.56%)

Table 3: Details of clinical practice

S.N	QUESTION	ANSWER
1	Have you got training for wearing PPE?	Yes: 24 (37.5%) No: 40 (62.4%)
2	If you have undergone any PPE training which type of method was used to teach	No one trained me: 40 (62.4%) Online Training: 3(4.68%) Only lecture: 12 (18.72%) Only video: 07 (10.92%) Both Lecture and Video: 02 (3.12%)
3	Who gave training of PPE	Anesthesiologist: 06 (9.36%) Infection control team personnel: 04 (6.24%) Nurse in-charge: 05(7.8%) No one: 49 (76.44%)
4	How confident are you wearing PPE?	0: 24 (37.44%) 1: 1(1.56%) 2: 3(4.68%) 3: 4(6.24%) 4: 4(6.24%) 5: 3(4.68%) 6: 3(4.68%) 7: 8(12.48%) 8: 6(9.36%) 9: 4(6.24%) 10: 4(6.24%)
5	Do you know the meaning of Donning and Doffing?	Yes: 08 (12.48%) No: 56 (87.36%)
6	Do you have previous experience of using PPE?	Yes: 02 (3.12%) No: 62 (96.72%)
7	Do you feel the working in routine ICU and in COVID ICU is same?	Yes: 09 (14.04%) No: 55 (85.8%)
8	Do you know WHO protocol for hand washing?	Yes: 64(100%) No: 0 (0%)
9	Have you undergone training in hand washing?	Yes: 64(100%) No: 0(0%)
10	Do you know WHO protocol for hand rub?	Yes: 61(95.16%) No: 03(4.68%)
11	Have you undergone training in hand rub?	Yes: 61(95.61%) No: 03(4.68%)
12	Do you feel N95 mask is necessary for the people working in ICU (NON-COVID)?	Yes: 56 (87.36%) No: 2 (3.12%) Maybe: 6 (9.36%)
13	Which mask we should wear in covid-19 ICU?	Just N95 mask: 09 (14.04%) N95 mask with valve: 53(82.68%) Two-ply surgical mask: 01(1.56%) Triply surgical mask: 01 (1.56%)
14	Can we re-use the N-95 mask without sterilization?	I don't know: 3 (4.68%) Yes: 55 (85.8%) No: 6 (9.36%)
15	Presently do you have N95 mask with you?	Yes: 64 (100%) No: 0 (0%)

Appendix 1: Questionnaire

QUESTIONNAIRE

Survey of knowledge, attitude and practice of critical care unit nurses towards COVID-19 pandemic

1. Do not mention your name(s) or any identification on the questionnaire.
2. Kindly answer all the questions.
3. Mark one alternative per question, if no other instruction is given.
4. Answer by ticking (√) in the boxes or the spaces provided.
5. Kindly fill the form without discussing with anyone.

PART A: SOCIO-DEMOGRAPHIC INFORMATION

1. What is your gender? Female ☐ Male ☐

2. What is your age?
- ≤ 20 yrs ☐
- 20-29 yrs ☐
- 30-39 yrs ☐
- 40-49 yrs ☐
- 50-59yrs ☐
- ≥ 60 yrs ☐

3. Are you married?
- Yes ☐
- No ☐
- I donot want to share the details ☐

4. Do you have kids?
- Yes ☐
- No ☐
- I donot want to share the details ☐

5. Is your family dependent on your earnings?
- Yes ☐
- No ☐
- Partially ☐
- I dont want to share the details ☐

6. What is your highest attained level of nursing education?
- Diploma ☐
- Degree ☐
- Masters ☐
- Certificate course ☐

7. Working experience in critical care?
- <1yr ☐
- 1- 2 years ☐
- 2-3 years ☐
- 3-4 years ☐
- >4 years ☐

PART B: ATTITUDE TOWARDS COVID-19 PANDEMIC

1. Are you aware of COVID -19 pandemic?
- Yes ☐
- No ☐
- May be ☐

2. Are you afraid of serving in hospital when COVID-19 is pandemic?
- Yes ☐
- No ☐

3. How much do you rate if you are afraid of serving in COVID-19 hospital
- 0 Not scared ☐
- 1 ☐
- 2 ☐
- 3 ☐
- 4 ☐
- 5 ☐
- 6 ☐
- 7 ☐
- 8 ☐
- 9 ☐
- 10 Very much scared ☐

4. Whom are you worried about?
- Yourself ☐
- Family members ☐
- Both of the above ☐
- Not worried at all ☐

5. Do you feel your service is important during this COVID-19 pandemic?
- Yes ☐
- No ☐

PART C: KNOWLEDGE REGARDING COVID-19 PANDEMIC

1. Do you feel that working in the routine ICU is same as in COVID?
- Yes ☐
- No ☐

2. Have you read any protocol related to COVID-19?
- Yes ☐
- No ☐

3. If yes, then which protocol have you read?
- Nursing protocols ☐
- AIIMS protocols ☐
- ICMR protocols ☐
- WHO protocols ☐
- Institutional protocols ☐
- Others ☐
- I have not read or seen any protocol ☐

4. Have you heard about PPE?
- Yes ☐
- No ☐

5. Do you know the meaning of PPE?
- Yes ☐
- No ☐

6. Do you know how to wear the PPE?
- Yes ☐
- No ☐

7. How confident are you wearing PPE?
- 0Not confident ☐
- 1 ☐
- 2 ☐
- 3 ☐
- 4 ☐
- 5 ☐
- 6 ☐
- 7 ☐
- 8 ☐
- 9 ☐
- 10Very confident ☐

8. Do you know the meaning of Donning and Doffing?
- Yes ☐
- No ☐

9. Do you have previous experience of using PPE?
- Yes ☐
- No ☐
- I don't remember ☐

10. Do you know WHO protocol for hand washing?
- Yes ☐
- No ☐

11. Do you know WHO protocol for handrub?
- Yes ☐
- No ☐

12. Do you feel hand rub and handwash both are the same?
- Yes ☐
- No ☐
- Not sure ☐

13. Are you aware different types of masks are available in the market?
- Yes ☐
- No ☐

14. Do you know the meaning of N95 mask?
- Yes ☐
- No ☐

15. Do you feel N95 mask is necessary for the people working in ICU (NON-COVID)?
- Yes ☐
- No ☐
- Maybe ☐

16. Which mask should we wear in covid-19 ICU?
- N95 mask with valve ☐
- Just N95 mask ☐
- Triply surgical mask ☐
- Two-ply surgical mask ☐
- Cloth mask ☐
- If face shield is there then no need of mask ☐

17. Can we re-use the N-95 mask without sterilization?
- Yes ☐
- No ☐
- I don't know ☐

18. Presently do you have N-95 mask with you?
- Yes ☐
- No ☐

19.Have you heard or read about hydroxychloroquine (HCQ) prophylaxis for healthcare workers for corona virus?
- Yes ☐
- No ☐

20. Have you taken HCQ? (During the COVID pandemic)
- Yes ☐
- No ☐

21. Do you know any side effects of HCQ?
- Yes ☐
- No ☐

22. Are you scared of taking HCQ prophylaxis?
- Yes ☐
- No ☐

PART D:TRAINING FOR COVID-19 PANDEMIC MANAGEMENT

23. Have you got training for wearing PPE?
- Yes ☐
- No ☐

24. If you have undergone any PPE training, which type of method was used to teach?
- Only lecture ☐
- Only video ☐
- Both Lecture and Video ☐
- Notes distribution (using pamphlets) ☐
- Online Training ☐
- No one trained me ☐

25. Who gave training of PPE?
- Infection control team personnel ☐
- Nurse in-charge ☐
- Anesthesiologist / intensivist ☐
- More than one person of above mentioned list ☐
- No one ☐

26. Have you undergone training in hand washing?
- Yes ☐
- No ☐

27. Have you undergone training in hand rub?
- Yes ☐
- No ☐

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