Study to Assess the Knowledge, Awareness, Perception and Practices of Nurses who Tested Positive after Working in COVID-19 Units

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I. Introduction

The rapid spread of the COVID 19 pandemic has become a major cause of concern for all and especially healthcare organizations globally as healthcare workers working in COVID units are definitely at an increased risk of developing infection due to increased exposure.

Hospitals and researchers are focusing all their resources on trying to understand the factors responsible for the spread of infection and those responsible for causing infection in an individual. We were faced with a novel virus, the dynamic properties of which are being slowly discovered.

Though a lot of research has been done in this regard, there are yet a lot more discoveries to be made. Several intrinsic factors specific to different individuals are responsible for causation in a healthy individual.

According to Phan T. L. Maita D., et al (2019) who observed doffing practices of healthcare workers who cared for patient with viral respiratory infection in a 460 bedded acute care hospital showed that PPE of healthcare workers are contaminated with pathogen surrogates and improper PPE doffing practices may result in contamination of skin and clothing of healthcare workers.

Aim: To develop strategies for prevention of spread of COVID 19 infection among nurses working in COVID 19 units.

Objectives:

- To find out the knowledge among nurses regarding COVID 19
- To find out the perception of risk among nurses during COVID 19
- To identify the practices of donning and doffing of Personal Protective Equipment (PPE)
- To correlate certain demographic variables with practice

Study Design: Descriptive study design.
Study Sample: Nursing Staff tested COVID 19 positive

Criteria

- *Inclusion Criteria:* Nursing staffs tested positive during or after working in COVID 19 unit
- *Exclusion criteria:* Nursing staffs tested positive but not worked in COVID 19 unit

Sample size: 70 staff nurses

Sampling Technique: Purposive sampling

Tool: Questionnaire (Google form) https://docs.google.com/forms/d/e/1FAIpQLSe5isfITOTGVLaecvNo9zZ5hJQJgKhAON7nDqdO71Vwzmwrhw/viewform

Duration: 1 month (20th August till 20th September 2020)

a) Findings

Demographic data

It is seen that 38% staff were between 21- 24 years, 40% of staff were between 25-30 years 6% of staff were in 31-35 years while 16% of staff were above 35 years of age, among those who became COVID positive.

It was seen that 93% of the staff who got COVID 19 were females while 7% were male staff.

Out of 48 times male staff were posted in COVID unit, 5 brothers came positive.

72% of the staff were unmarried while 28% were married.

39% of samples had less than 2 years of experience, 34% of samples had 2-5 years of experience, while 10% of samples had 6-9 years of experience. Also, 17% of the staff had more than 10 years of experience

b) Knowledge

It is seen that 96% of staff are aware about the PPE required for aerosol generating procedures while 89% of staff are aware about details regarding the incubation period of Corona virus. The knowledge of staff regarding other infection control protocols is between 94- 97%.

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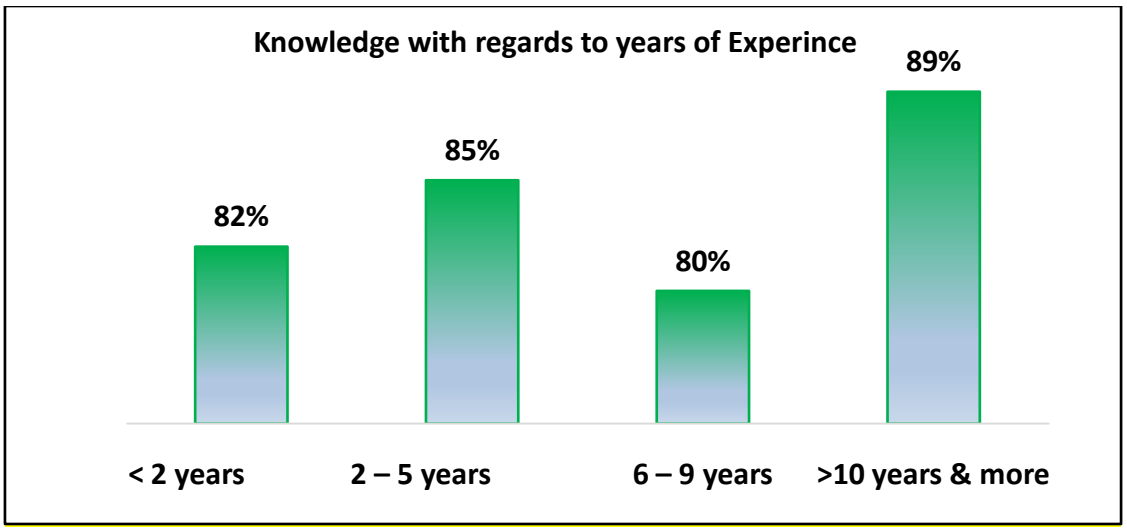


Figure 1

In Figure No. 1,it is seen that staff with more than 10 years of experience had 89% knowledge regarding COVID 19 while those between 6-9 years had 80% knowledge.

c) Perception

It was seen that 21 % of the staff were scared to work in COVID unit, while 65% agreed that by following proper steps of donning and doffing one can prevent getting infected. 92% of staff agreed that it is difficult to work in PPE.

d) Practices followed for control of infection

i. *Practice related to Donning*

It is evidenced that 76% of staff were wearing 3 pairs of gloves at the end of donning while only 54 % of staff were washing hands with soap and water before and after wearing scrub suit.

ii. *Practice related to Doffing*

It is seen that 29% of staff removed sterile gloves after removing shoe cover, only 36% followed correct sequence of doffing while 70% removed mask in correct method. 99% of the staff were wearing mask in quarantine period and 100% of the staff were using hand rub after each step of doffing.

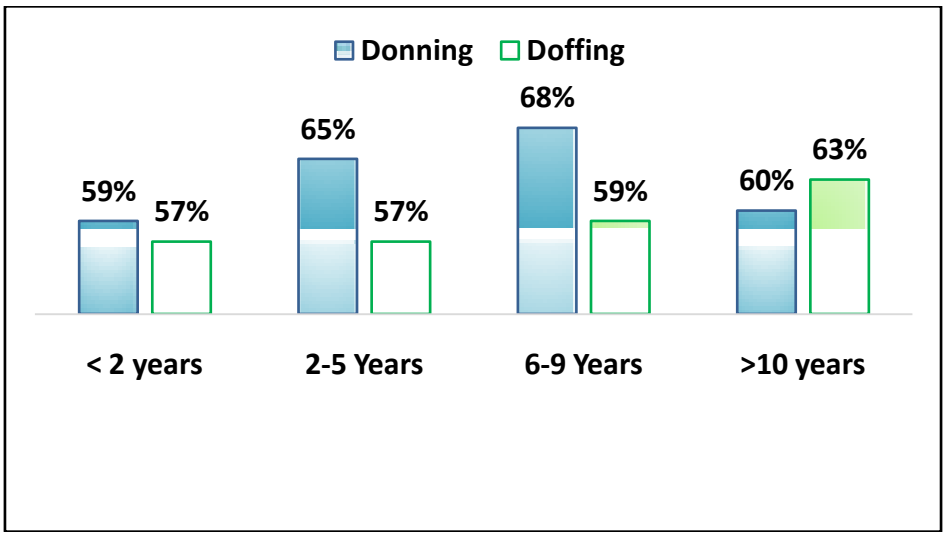


Figure 2

In Figure No. 2, it is seen that donning practice were better with better compliance between 59-68% while the doffing practice compliance ranges between 57-63%. Sixty three (63%) of staff complied with doffing from >10 years & above group while 68% of staff complied with donning in the 6-9 years group.

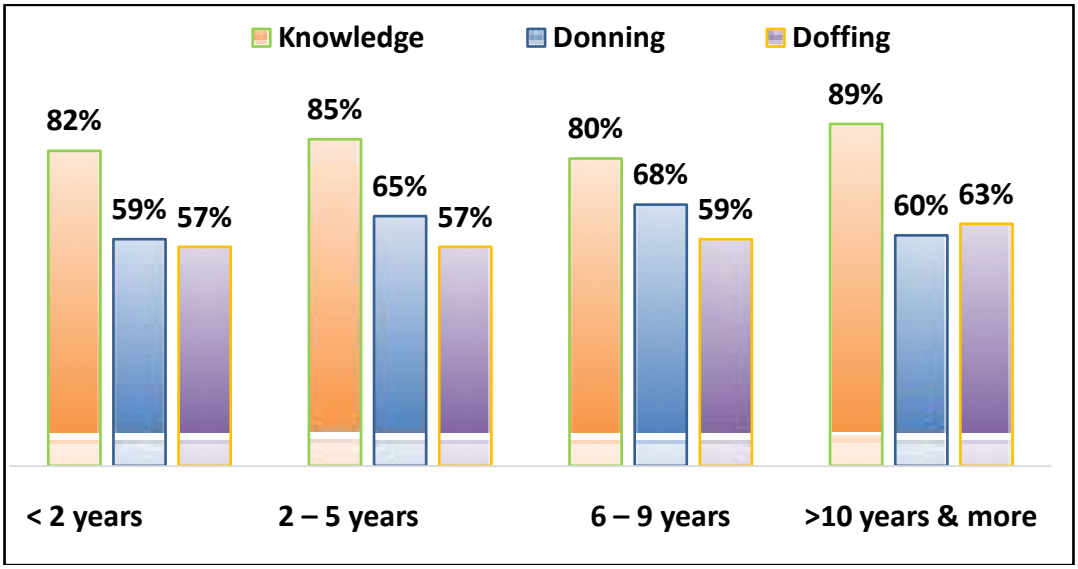


Figure 3

In Figure No. 3, it is seen that in spite of increase in knowledge (82-89%) the compliance to donning & doffing practices is between 59-68% & 59-63% respectively.

Challenges: Some challenges faced by nurses during donning and doffing of PPE were as follows:

During Donning

- 10% of the staff were facing challenges related to inadequate place during donning. (There was a dedicated area for donning, but two or more staff couldn't donn at a time, we instructed only one staff to wear PPE at a time).
- 34% of staff were uncomfortable to work in PPE kit due to inappropriate size of PPE & gloves.
- 4% of the staff were feeling suffocated and irritable in PPE kit.
- 52% of staff had no challenges in donning.

During Doffing

- 16% of staff were facing challenges to remove shoe cover, use of hand rub after each step of doffing, difficulty in adhering to sequence of removal of PPE according to protocol & leaving COVID ward without mask.
- 16% of staff stated that there was inadequate place for doffing & the area is close to patient care unit.
- 8% of staff were scared of getting infected from doffing.
- 7% of staff mentioned that presence of one chair in doffing area instead of recommended number two.
- 4% cleaning of doffing room not done adequately, dustbins overflowing in doffing area and no Hypochlorite mat to clean shoes.
- 3% of staff did not have an observer.
- 46% no problem

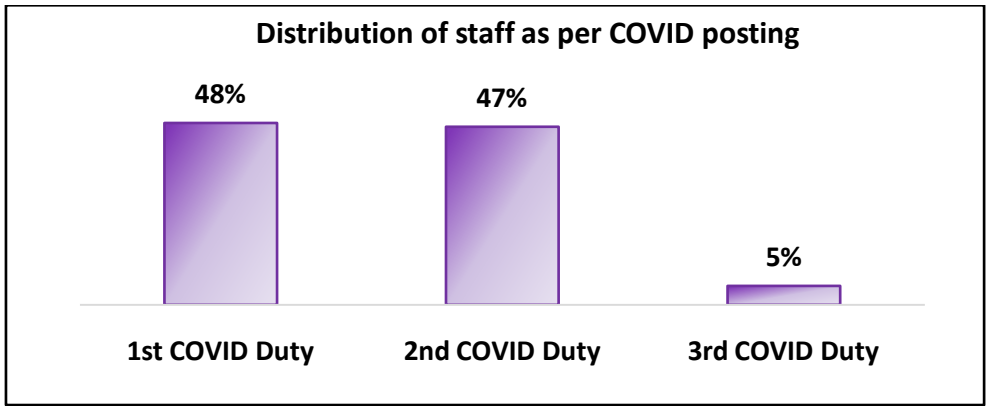


Figure 4

In Figure No. 4, it is seen that the incidence of COVID infection after 1st posting was 48%, which eventually improved and reduced to 5% after 3rd posting.

e) *Overall compliance of Knowledge & Practices*

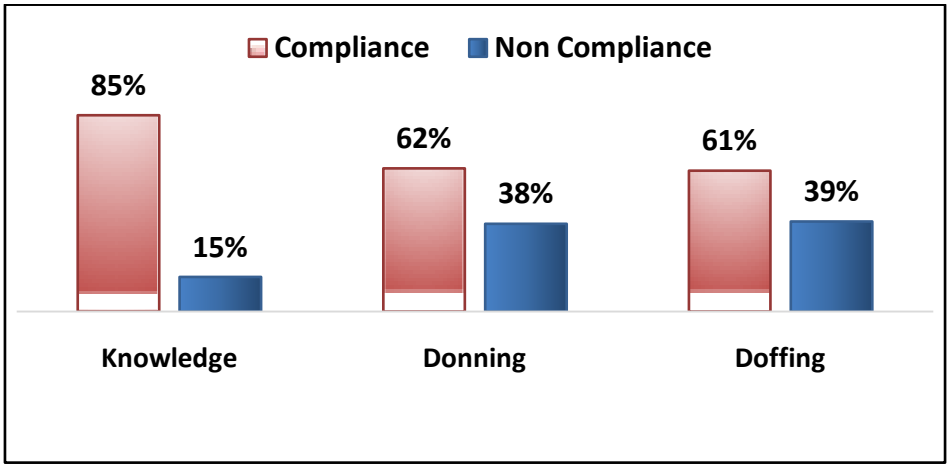
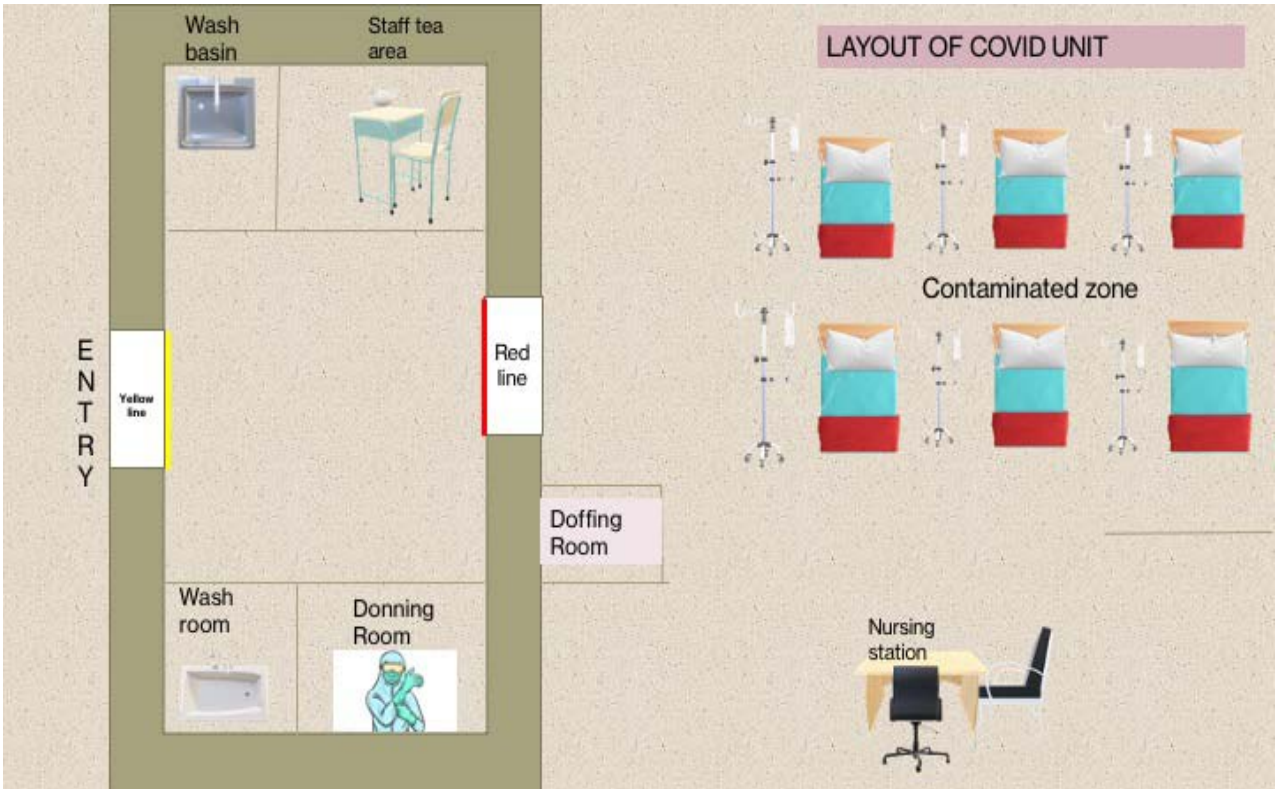


Figure 5

In Figure No. 5 it is seen that staff had good knowledge 85% which may be attributed to the structured training before the posting. But the compliance to practice was between 61- 62%. There is a need to sensitize on appropriate practice.

f) *Pictures of our donning doffing area*



II. Recommendations

- Retraining on sequence of Donning & especially Doffing.
- Supervision of staffs regarding infection control practices.
- Infection control surveillance in COVID units to understand real time compliance and challenges faced.
- Feedback after every COVID duty to improve current practice.

III. Conclusion

- The staff had good knowledge (85%) regarding COVID 19 which may be attributed to the structured training before the posting.
- The compliance to practice was between 61-62%. It is a behavioral change that will come with change in

attitude and may need time. Need to sensitize on practice.

- To conclude the majority of staff may have got infected with COVID 19 due to improper doffing practice, as 64% of staff did not comply to the correct sequence of doffing.
- The remaining 36% may have got infected due to some unknown intrinsic factors.

IV. Summary and the Way Forward

- The COVID 19 pandemic has overwhelmed healthcare services globally. It's a learning curve, we are trying to understand the virus, the treatment, the prevention and causation. Healthcare organisations have devised standard protocols, training modules and methods with the help of knowledge available, guidelines provided by government bodies like Ministry of Health and Family Welfare which are being updated daily from the experience of other countries and hospitals. This knowledge sharing is probably the key to innovate better practices to protect our healthcare staff. There are several ways which could help us provide better safety practices and work environment some of which we implemented after the study, such as CCTV surveillance of COVID unit doffing areas, taking online feedback of staff post COVID duty using Google form. We plan to have a virtual refresher training of all nursing staff to sensitize regarding donning & doffing practice.

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