

Assessment of the Challenges of donning and Doffing in the Management of Covid 19 Patients in Abubakar Tafawa Balewa University Teaching Hospital Bauchi, Northeast Nigeria

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Abstract

The Covid-19 pandemic has a major impact on the capacity of health systems to continue the delivery of essential health services. While health systems around the world are being challenged by increasing demand for care of COVID-19 patients, it is critical to maintain preventive and curative services, especially for the most vulnerable populations, such as children, older persons, people living with chronic conditions, minorities and people living with disabilities. Countries need to achieve the optimal balance between fighting the COVID-19 pandemic and maintenance of essential health services. WHO have been coordinating efforts across several regions and departments to support country implementation of targeted actions to reorganize and maintain access to safe and high-quality essential health services across the life course (WHO, 2020). This research had specifically appraised on Challenges of donning and Doffing in the Management of Covid 19 Patients in Abubakar Tafawa Balewa University Teaching Hospital Bauchi, Northeast Nigeria. The methodology employed were mixed method research designed was used to collect data from ten (10) nurses at the covid 19 isolation centre ATBU Teaching hospital, who were frontline using an in-depth interview who were purposively selected and quantitative data was analyzed using descriptive data statistics while the qualitative data transcribed and analyzed using

content analysis. The respondents confirms that one of the significant challenges is wrong doffing by the health workers, which was observed to be mostly improper disposal of the cloths/items at initial stage, but it was later corrected. 75% of the respondents complained that strict adherence to the step by step donning and doffing processes was not adhered to initially, but there has been a significant improvement due to enlightenment and obvious dangers noticed. As a result of these, the researchers recommended that: Training and retraining of health workers with respect to donning and doffing should be prioritized, Personal Protective Equipment (PPE) should be adequately provided, and Enlightenment to patients on the dangers of diseases spread should be given serious attention.

Key words: *challenges, donning, doffing, covid 19 patients, PPE etc.*

Introduction

The COVID-19 pandemic has had a major impact on the capacity of health systems to continue the delivery of essential health services. While health systems around the world are being challenged by increasing demand for care of COVID-19 patients, it is critical to maintain preventive and curative services, especially for the most vulnerable populations, such as children, older persons, people living with chronic conditions, and people living with disabilities.

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Objectives

The major objectives of this paper are as follows:

1. To appraise on the step by step donning and doffing processes and its importance among nurses working at ATBUTH and Bayara at isolation center Bauchi Northeast Nigeria.
2. To look critically into the challenges encountered during donning and doffing in the management of Covid 19 patients among nurses working at ATBUTH and Bayara isolation centre Bauchi Northeast Nigeria.

Significance of the Study

The importance of this research lies in providing valuable insight analysis on the challenges of donning and doffing in the management of Covid-19 patients in Abubakar Tafawa Balewa University Teaching Hospital Bauchi. Similarly, this research work is significant in the following areas:-

1. The importance of the study is to help enlighten the masses on the Challenges of Donning and Doffing in the Management of Covid 19 Patients in Abubakar Tafawa Balewa University Teaching Hospital Bauchi.
2. This research work will equally serve as reference point of knowledge for those willing to undertake similar research in future.

3. It also provides analytical data that becomes a necessary guide for information and decision making process.

Conceptual Overview

Concept of donning and doffing

Donning and doffing is the practice of disease management workers that involves putting on and removing work-related protective gear, clothing, and uniforms otherwise called Personal Protective Equipment (PPE). Donning refers to putting on Personal Protective Equipment (PPE), while doffing means removing them (Maria, 2019).

How you should look after proper donning



proper donning

Figure 1.1 clearly shows how to look after one has proper wear the protective equipment to prevent getting in contact with the Covid 19 patient to avoid getting infected.

Steps in donning and doffing

Donning of Personal Protective Equipments

- Surgical scrubs to be worn. These will need to be changed with each case if a COVID-positive case is treated or there is any concern about soiling.
- No jewelry should be worn
- Scrub top to be tucked into scrub pants.
- Thorough washing of hands for at least 20 seconds prior to initiating the donning process.
- Shoe covers to be initially donned. Thereafter, prior to scrubbing, don the N95 respirator mask with the surgical scrub cap over the N95 mask

- A second method for eye protection should be used and worn over the respirator and scrub cap. We recommend a surgical mask with a visor be used for eye protection.



Figure 1.2

Disposable face shields may also be used. Surgical safety goggles can be used as an alternative but will need to be sterilized after each case.

Healthcare workers should ideally have N95 respirator masks fit-tested and the correct size respirator mask should be used. The scrub cap should cover both ears.

Prescription glasses/lead glasses on their own are not enough for protection

The visor should adequately cover both eyes and provide some protection to the side of the face

See red arrows in Figure 1B where the wrong mask is used, ears are not covered, and sufficient eye protection is not used. Put on usual radiation protection equipment as used.

Thoroughly scrub hands to the level of the elbows using an anti-bacterial surgical scrub and warm water and prepare to gown.

Disposable surgical gown to be worn

Take care to ensure that gown sleeves do not go beyond wrists as it is put on

Ensure that the top of the gown covers as much of the exposed neck area as possible

We recommend a two-glove technique. Put on two pairs of gloves ensuring that both gloves fit snugly and cover the sleeves of the gown.

Perform angiography. In unstable patients, the person responsible for potential airway problems should wear full PPE from the outset. (John & Weich, 2020).

Doffing of PPE

- There is a very high risk of contamination and therefore another individual should watch you doffing the PPE and alert you to any possibility of contamination.
- Wash/clean the outer pair of gloves in water and thereafter remove the outer pair without touching the outside surface of the inner pair of gloves, and discard into a medical waste bin.
- Remove shoe-covers and discard (performed more easily if sitting).
- Clean internal pair of gloves with alcohol.
- Remove the visor without touching the front/exposed surface of the visor and dispose directly into medical waste bin (Figure 5).

- Clean internal pair of gloves with alcohol.
- Remove the disposable gown by grasping the inside surface of the gown at the collar and rolling the gown away from you without touching the exposed surface of the gown.
- Clean internal pair of gloves with alcohol.
- Remove scrub cap.
- Clean internal pair of gloves with alcohol and then remove.
- Remove radiation protection.
- Clean hands with alcohol.
- Remove N95 respirator mask by pulling the elastics over one's head and discard the mask without touching the exposed surface of the mask. The respirator is removed last to reduce the likelihood of exposure to aerosolized droplets during doffing.
- Wash hands with soap and warm water.
- Radiation protection should be cleaned with an alcohol scrub, surgical scrubs should be washed, and the chair used during doffing of overshoes should be cleaned with an alcohol scrub.
- There is a recommendation that you then take a shower, but we aim to shower only before leaving the hospital. (John & Weich, 2020).



Figure 1.3

Why donning and doffing

Amidst the global COVID-19 pandemic, it is now especially crucial that healthcare professionals working in multidisciplinary areas are educated in the correct application and removal of personal protective equipment in order to protect both themselves and their patients. Personal protective equipment (PPE) donning and doffing is a critical process that requires significant care. This process, particularly the removal and disposal of contaminated PPE, is considered a highly important step in limiting exposure to pathogens (CEC, 2020).

When it comes to respirators used for protection in the healthcare industry, safe use does not end with putting on, or donning. The proper removal, or doffing technique, is just as important. Correct donning of filtering facepiece respirators protects workers against inhaling infectious particles such as viruses and bacteria. And the correct doffing technique protects workers from exposure to infectious materials that may have settled on the respirator itself. Once on the hands, viruses or bacteria pose a risk of infecting the worker if they are re-released in the air and inhaled or if the worker touches any of his or her mucous membranes. (National Institute for Occupational Safety and Health (NIOSH, 2016).

Types of PPEs



Figure 1.4

Challenges and problems associated with donning and doffing

When the infection-control team reviewed and analyzed monitoring videos of PPE donning and doffing, it was found that although the steps of donning were complicated, everyone managed to focus on the donning standards layer by layer without major problems, and the donning areas were maintained as clean environments. The PPE were also clean and sterile, and therefore, the risk of COVID-19 infection was low (Maria. et al., 2019).

However, during PPE doffing, due to the long hours of intensive diagnostic and treatment duties and the extremely extensive physical exertion, staff were susceptible to mistakes due to fatigue, causing themselves to become more prone to infection. After prolonged contact with COVID-19 patients, the PPE were exposed to high risk environments and became seriously contaminated materials. Incorrect doffing of PPE can be more fatal than direct occupational exposure to the virus, because medical staff may be infected while doffing PPE without realizing it, whereas direct

exposure is always dealt with immediately. The following sub-sections summarize the analysis of the problems in the PPE doffing procedures (World Health Organization, 2020).

Inadequate implementation of hand hygiene

The seven-step hand-washing process was not strictly followed, and there were missed steps and insufficient time for hand-rubbing (<15 s). Due to the long hours and overloads in duties, staff often felt physically and mentally tired. The total number of required hand-washing steps for completing the procedure in the two doffing areas was 16 times, which possibly reduced the strict compliance of staff in performing adequate hand-washing.

Too close a distance for the disinfectant spraying

The two people doffing PPE together (the buddies) are required to spray a (0.2%) chlorine-based disinfectant on each other. When the disinfectant was sprayed too close to the subject, the atomization effect was not ideal, and the person did not avoid the head and neck region.

Too vigorous movements when removing the isolation gown

The movement was too vigorous when removing the blue isolation gown. Hence, the gown was not gently rolled away from the body to contain the soiled outside surface inwards.

Improper removal of the face shield

Touching the side edge or front surface of the face shield when removing, it caused contamination.

Contamination during surgical mask removal

When the staff member untied the upper tie straps of the surgical mask, it fell down and contaminated the chest area of the disposable coverall. (Lin Cheng, et al., 2020).

Empirical Review

Based on the data available at the WHO website, about (35%) of health workers got infected by the novel Covid 19, this is as a result of donning and doffing errors.

A new study monitoring the spread of Multi-Drug Resistant Organisms (MDRO) in hospitals, found that as many as (36%) of healthcare workers was contaminated with MDRO following patient contact. After removing personal protective equipment (PPE) such as gloves, aprons and respirator masks, as many as (10.4%) were still shown to be contaminated on their hands, clothes or personal items.

The study goes on to reveal that as many as (72%) of workers made multiple errors while removing their PPE., Suggesting a direct link between contamination rate and the incorrect PPE removal.

World Health Organization (2020), a total of 125 HCWs completed the survey. The majority were nurses (66.4%) or physicians (19.2%) and female (77.6%). A total of 64 (51.2%) HCWs received PPE training for prevention of Ebola virus transmission in the past year; 26 (20.6%) thought that they were unlikely or very unlikely to be contaminated with MDROs after PPE removal; 16 (12.1%), 106 (84.8%), and 49 (39.2%) of HCWs made multiple errors in donning gloves, donning gowns, and doffing PPE, respectively. In univariate analysis, HCWs who felt more tired were more likely to make multiple errors in donning gloves (RR 2.21, P = .058) or gowns (RR 1.17, P = .073). HCWs who received their professional degree ≥ 6 years ago were less likely to make multiple errors in donning gowns (RR 0.86, P = .057). The following factors were associated with multiple errors in doffing PPE: completing degree training ≥ 6 years ago (RR 1.54, P = .061), PPE training ≥ 5 years ago (RR 1.83, P = .043), being overweight (RR 1.56, P = .057), and having a stressful day (RR 2.39, P = .054). HCWs who completed their degree training ≥ 6 years ago were more likely to

doff gloves first (RR 2.78, P = .006), which in other analyses was associated with self-contamination.

Methodology

A descriptive cross sectional survey design was used to obtain data regarding the Assessment of the Challenges of Donning and Doffing in the Management of Covid 19 Patients in Abubakar Tafawa Balewa University Teaching Hospital Bauchi.

The study was carried out in Abubakar Tafawa Balewa University Teaching Hospital Bauchi Covid-19 isolation Centre and General Hospital Bayara Covid 19 Isolation Centre Bauchi State Northeast Nigeria. The target populations were ten (10) nurses working at the two isolated centres at Abubakar Tafawa Balewa University Teaching Hospital Bauchi Covid-19 isolation Centre and General Hospital Bayara Covid 19 Isolation Centre Bauchi State Northeast Nigeria.

The methodology employed was mixed method research designed to collect data from ten (10) nurses who were frontline nurses in the hospital. The researcher further collected the data using an in-depth interview from the nurses who were purposively selected. Part of the data collected was quantitatively coded, and the quantitative data was analyzed using descriptive statistics while the qualitative data was transcribed and analyzed using content analysis. Funding and time were the major limitations of this study.

Results

Responses from the direct interview conducted at the Abubakar Tafawa Balewa University Teaching Hospital Covid 19 isolation centre suggested challenges not too far from the ones suggested in our review. The respondents confirmed that one of the significant challenges is wrong doffing by the health workers, which was observed to be mostly improper disposal of the cloths/items at initial stage, but it was later corrected, (75%) of the respondents complained that strict adherence to the step by step donning and doffing processes was not adhered to initially, but there has been a significant improvement due to enlightenment and obvious dangers noticed.

The respondents further opined that, initially items (N-95) were disposed after each entry but it was later recycled, however other equipment were readily available all the time. Some essential PPEs (face shield, goggles, N95, boots) are all recycled, but hospital gowns and gloves are disposed after each usage.

The major challenges usually emanate from the patients. At some points patients do agitate claiming that they are okay, but subjected to isolation, four (4) patients were recorded to have run away. On the other hand, it was also opined by the respondents and observed by the researcher that, the health workers need frequent training and retraining with respect to the donning and doffing procedures. Most of the health staff found at the isolation centre normally skip a step or even confuse a step at some point in time, this requires a constant training and retraining to keep the health workers reminded and alerted.

Summary

This study was basically carried out with the sole aim of appraising on the 'challenges of donning and doffing in the management of Covid 19 patients in Abubakar Tafawa Balewa University Teaching Hospital isolation centre Bauchi. Simple random sampling was used in selecting the respondents, and unstructured questions were administered based on direct interview.

The results of the findings show that, (75%) of the respondents complained that strict adherence to the step by step donning and doffing processes was not adhered to initially, but there has been

a significant improvement due to enlightenment and obvious dangers noticed. The respondents further confirms that one of the significant challenges is wrong doffing by the health workers, which was observed to be mostly improper disposal of the cloths/items at initial stage, but it was later corrected. It was also observed by the researcher that, the health workers need frequent training and retraining with respect to the donning and doffing procedures.

Conclusion

Since the emergence of the coronavirus disease pandemic, the circumstances under which donning and doffing of PPE is being learned, trained, and subsequently performed seems to be very minimal. Going by this appraisal, proper donning and doffing appeared to be an important aspect of disease management. This calls for serious attention on training and retraining of health workers on donning and doffing procedures.

Recommendations

In the light of the findings forwarded by this study, it is recommended that:

1. Training and retraining of health workers with respect to donning and doffing should be prioritized.
2. Personal Protective Equipment (PPE) should be adequately provided.
3. Enlightenment to patients on the dangers of diseases spread should be given serious attention.

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