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ORIGINAL ARTICLE

Effects of disposable suctions bottle in endotracheal suctioning COVID-19 infection and exposures of nurses

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Author`s Contribution

[1] Conceptualization of study, analysis and recommendation

[2] Data collection and data analysis, conclusion

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A B S T R A C T

Background: Covid-19 is a highly contagious infection that affects healthcare personnel and patients in critical care units. Specifically, while doing endotracheal suctioning of patients, those having severe lung obstruction may have a higher risk of transmitting infections. The speedy emergence and global extent of this COVID-19 shaped a major challenge in the healthcare industry, mainly with the unavailability of personal protective equipment (PPE) to take care of families, patients and Health Care workers.

Purpose: The objectives of this study was set out to measure the evidence-based practices and impact of the disposable suction bottles on patients as well as health care workers who are directly in contact with COVID-19 patient handling.

Methodology: Data have been collected from 200 intensive care nursing staff of 3 public &private hospitals in the Islamabad surveillance. Weekly reports and physical surveys were done in critical areas, from the infection control committee, The NCOC data centers. The quantitative research has been design. Data analysis is done on SPSS version 21.

Results: Data collected from both male and female staff. Male nurses were 80, and females were 112 in number. The age group of 25 years was 51% more than 49%. Work experience: 5 years, 69% more than 7 years, 30% more than 10 years, and 11% of nurses had interviewed. The questionnaire 8 statement data had collected from more than 200 nurses, working in public and private hospitals in Islamabad. Results show more than 17% of chest infections among admitted patients in ICU with other than chest infections and health care staff had exposed to corona.

Conclusion: The use of disposable suction bottles shows less exposure to disease in admitted patients and health care workers. The number of cases had reduced after the use of disposable suction apparatuses. It has revealed that disposable suction is more effective than glass jars.

Keywords: *COVID-19, Disposable Suction, Health, Infection, NCOC, Nurses*

Introduction

As reported by the infection control committee previously, glass jar suction apparatuses were used for endotracheal suctioning in critical areas, which is the source of spreading infection from one patient to another.[1] Endotracheal suctioning practices of nurses and respiratory therapists use the same suction apparatuses for other patients are risk factors for introducing the respiratory infection to other patients. Uses of disposable equipment, suction bottles, ETT tubes, fluoroscopes, and vent tubes PPEs for Healthcare Workers to Clean the Intensive Care Unit Leaks are sources of cross infections as shown in Figure 1.[2]

Nosocomial infections create significant medical issues with high prevalence, morbidity, and death rates around the globe. Nosocomial contamination has become evident in Intensive Care Units (ICUs), where the occurrence is to multiple times higher than in the overall hospitalized populace. In developing countries such as India, Pakistan, Bangladesh, and Sri Lanka, Intensive care unit patients are more vulnerable to diseases due to variety

of factors such as malpractices, lack of negative pressure room, a single-use suctioning apparatuses, and presence of fundamental diseases, prolonged stays, multiple demonstrative methods, and checking performed on impaired invulnerability. High danger factors for fostering in ICU patients are a significant stage to carry out vital insurances for the anticipation of contamination. The underlying advance ought to be focused on the most probable local pathogens when a NI is suspected.[3]

Compared to glass jar suction apparatus, disposable suction apparatus delivers a favorable clinical response for patients with respiratory diseases like COVID-19. In hospitals, fomites can also become contaminated by cleaning suction apparatus, changing catchers of an infected patient, or less commonly, via aerosols, water, or food items. Nosocomial infections create significant medical issues with high incidence, morbidity, and death rates around the globe.

While cleaning the suction container or transporting it from one patient to another, critical care health personnel tested positive for COVID-19. As Pakistan is still developing, all public and private hospitals could not place disposable suction bottles for all COVID-19 patients on ventilators and with large emergency setups. Patients Nurses and healthcare professionals are at high risk while using suction bottles in a hospital setting. The study's goal was to determine the extent of infection spread and whether examining knowledge regarding cross-infection is critical for proper usage and disposal of contaminated items and to find out about the outbreak of COVID-19 patients on ventilators and health care staff. Many episodes of respiratory tract infection and COVID-19 pneumonia, most patients in critical care units are on ventilators, occurred in association with suction and tubing (uses of suction apparatuses), and the uses of devices for multiple patients at the same time. COVID-19outbreaks an immune-compromised patient was associated with infected nebulizers and other tubing used for inhalations of different mobilization.

According to WHO's guidelines, do not reuse the items exposed to COVID-19 pneumonia patients (WHO. December 2020). A randomized controlled trial was conducted in two areas of hospital to replace a disposable suction bottle and monitor the results of the critical care unit's admissions every month. Use disposable equipment, suction bottles, ETT tubes, fluoroscopes and vent tubes as Personal Protective Equipment for Healthcare Workers.[3] Cleaning the Intensive Care Unit is a source for cross infections by changing the pieces of equipment from one patient to another patient.[4]

States, most health care workers are exposed due to malpractices while cleaning non-disposable jars.[5] Poor handling of fomites cause infection among indoor patients and caretakers in intensive care units.[6] Frontline intensive care staff is causing exposure to patients as well as themselves.

Regular infection prevention practices have mounted. In addition, weekly and monthly, critics have to discuss adjustments and updates to the frontline team, coordinated with the head of the branch of waste management, HOD ICU, and senior infection control nurse.[7] COVID-19 nosocomial infection examining the risk of mortality in those who are at high-risk. New behaviors had to sustain through an adjustment in facility subgroups, and staff leaders led the exchange efforts using the example. No go-transmissions were identified due to the implementation and continued recognition of the infection prevention obligations.[8] World Health Organization (WHO) corona virus disease (COVID-19) dashboards (2020) are due to miss management of COVID-19 patients.[9, 10] According to the Clinical characteristics of 138 hospitalized patients with novel corona virus-infected pneumonia is causing massive spread in those who are more prone to get.[11] Most chest infections across the public and private sector are the result of sharing PPES. The concerned authority nurses and doctors have refocused on possibilities that have been modified or highlighted via fact-finding authority and quality departments, surveillance, weekly report notifications, supervisor shift reports. For instance, a skill in single vicinity will become hardwired, including using hand gel before carrying and after discarding gloves. The focal point may also alternate to every different infection prevention challenge improvement.[12, 13]

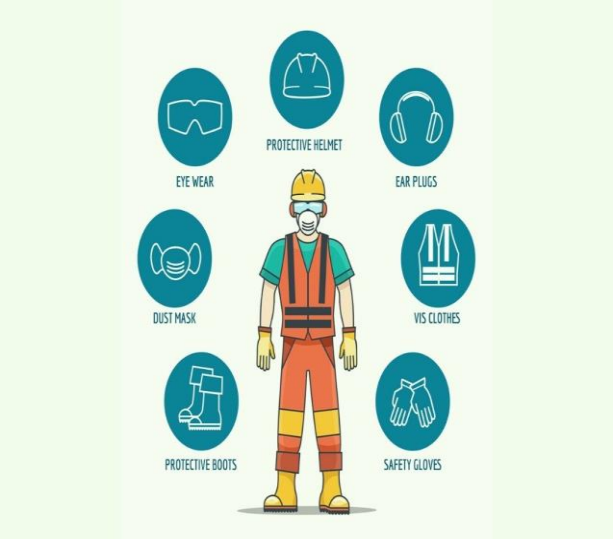

Figure 1: Personal Protective Equipment

Methodology

A 10-statement questionnaire had distributed in three public and private hospitals (PIMS &FGSH, Kulsoom international, Quaid-e-Azam & Shifa International Hospital) in the context of awareness of cleaning, methods of placing suction bottles, Importance of PPES, the willingness to replace disposable suction jars and to follow the proposed guidelines in Islamabad (Pakistan) in November 2020. Post-implementation data has been gained from the same public and private hospitals. Statistics gathered from infection control departments and comparison done to identify the impact of disposable suction bottle uses. The Staff had knowledge about hand hygiene, but they were not aware of the causes of frequent exposure of COVID-19 among working personnel and admitted patients and have no awareness about disposable suction bottle benefits.

Initially, hand hygiene compliance measured 94% and progressively increased. PPE observations showed 67% compliance is getting better with regular education and following standard procedures during duty. No records had been formerly accrued on device cleaning, as it turned into a brand new observation positioned into the area all through the capabilities honest.

Results

A total population of 200 nurses from critical care units in public and private hospitals was 80 male nurses and 112 female nurses. The age group of 25 years old was 51%, more than 25 years old was 49%. Work experience: 5 years was 69%, more than seven years was 30% more than ten years was 11% of the nurses as shown in Figure 2. The questionnaire 10 statement's data ran on SPSS version 21. Results showed 96% of HCWs found not well trained for suction bottle cleaning; only 4% trained staff. Wearing PPES gloves 70%, face shield 20%, and gown 10%. Those who knew about the spread of COVID-19 were 92%, and those who did not were 6% or maybe 2%. The sick leave ratio during shift once a month was 45%, twice a month was 52%, and more than twice was 3%. Knowledge about disposable suction: (No) 96% (Yes) 3% and don't know about suction was 1%. The 91.5% of staff wanted to replace disposable suction, 7.5% did not want to replace disposable suction as shown in Figure 3. Results emphasized that usage of disposable suction units will prevent infection exposure in patients and healthcare workers.

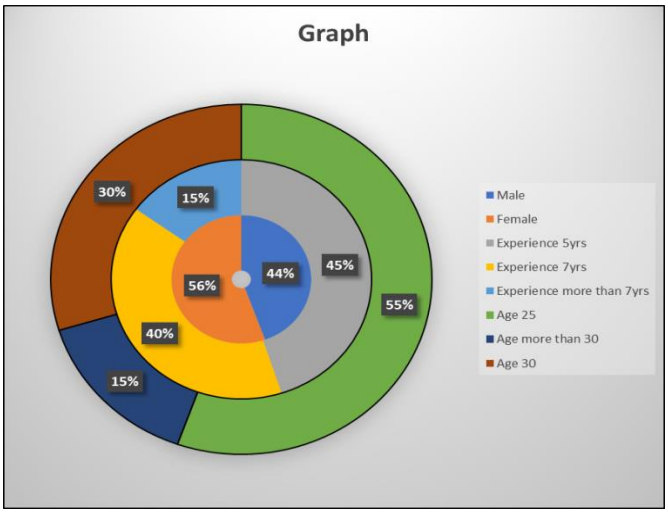

Figure 2: Distribution of Respondents

Those hospitals that adopted this disposable equipment and negative pressure rooms significantly showed atropine the number of cases of COVID-19 cross-infection and fewer people became sick. As reported by the infection control committee, change requires a secure environment for frequent and open conversation. Regular infection prevention practices installed weekly and month-to-month to communicate modifications and updates to the frontline workforce. Implementations have been maintained for over 12 months as of this writing. For example, a change in a single region turns into hardwired, which includes the usage of hand gel before wearing and

after removing gloves. The focal point may alternate with every other infection prevention project for improvement.

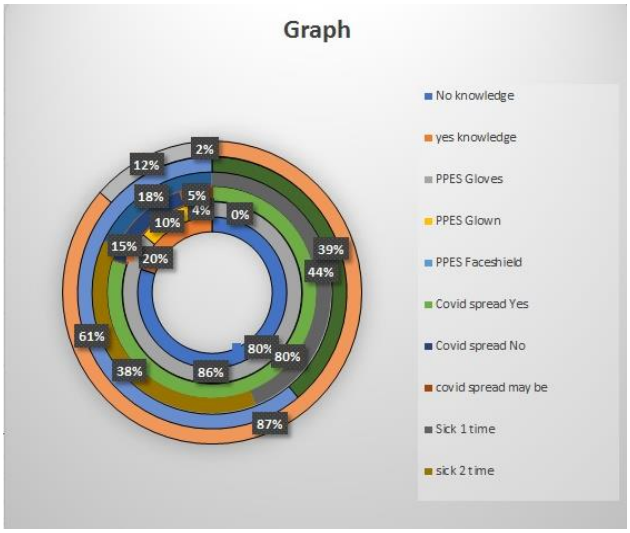

Figure 3: Response of respondents in Percentage

Conclusion

Spread of nosocomial infection found high in an early outbreak of COVID-19 15% of admitted patients reported by infection control committee. The infection rate had reduced by 3% after the intervention of the disposable end tracheal suction method. Make the coverage for the utilization of gadgets, proper disposal of waste from COVID-19 patients, and prevent spillage of the infected people's secretions. Do educate staff and families of patients and attendees of patients in hospitals that they must take private safety. Use a disposable device. Healthcare workers must be conscious about the spread of disease and be proactive in covering themselves and the sufferers properly. There is a need for extraordinary clinical, academic interventions and applications on contamination manipulation practices for COVID-19 across all healthcare professions. Occupational fitness and protection are paramount to minimize the risk of transmission to healthcare professionals and patients and offer care for patients.

Recommendation

Utilized patient-care hardware ruined with blood, body fluids, secretions, or discharges ought to be taken care of cautiously to forestall skin and mucous membrane exposures, contamination of clothes, and transfer of microorganisms to HCWs, different patients, or the climate. Assurance that reusable equipment isn't utilized for the consideration of another patient until it has been cleaned and properly sanitized. Ensure those unmarried-use gadgets and sharps have thrown out well. Replace disposable or reusable transducers. Waste and sharp removal strategy. Schooling and preparing for ICU staff about the anticipation of nosocomial diseases routine cleaning, disposal of waste material, and assembling contaminated cloth.

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