Study on Knowledge, Attitude and Practice of Hospital Sanitation Staff Post Covid-19 Training in District Lakhimpur Kheri, Uttar Pradesh

By

Katyayni Agarwal

Dissertation submitted in partial fulfillment of the requirements of the degree

MBA Hospital and Health Management

Academic year, 2018-2020

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **A Study On Knowledge, Attitude and Practice of Hospital Sanitation Staff Post Covid-19 Training in District Lakhimpur Kheri, Uttar Pradesh** and submitted by **Dr. Katyayni Agarwal** Enrollment No. **0759** under the supervision of **Dr. Pankaj Gupta (President)** for award of MBA in Hospital and Health Management in Health and Hospitals of the University carried out during the period from 3rd February 2020 to 3rd May 2020 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Signature

ACKOWLEDGEMENT

The Internship opportunity has been a novel experience for learning and professional development about the Public Health System. Writing this note of thanks is the finishing touch on my dissertation. It has been a period of intense learning for me, not only in the scientific arena, but also on a personal level. I would like to reflect on the contributions of people who have supported and helped me so much throughout this period.

I would like to extend my deepest gratitude towards, my guide and President Dr. Pankaj Gupta of IIHMR University, for being a constant source of inspiration and guiding me to successful completion of my internship.

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ABBREVIATIONS

1. **BMW**: Bio Medical Waste
2. **COVID-19**: Corona Virus Disease of 2019
3. **CHC**: Community Health Centre
4. **ICU**: Intensive Care Unit
5. **IV**: Intra Venous
6. **IHAT**: Indian Health Action Trust
7. **MOIC**: Medical Officer In-Charge
8. **MERS**: Middle East Respiratory Syndrome
9. **OSCE**: Objective Structures Clinical Examination
10. **PHC:** Public Health Centre
11. **PPE:** Personal Protective Equipment
12. **SARS**: Severe Acute Respiratory Syndrome

ABSTRACT

Aim and Objectives:

Novel Corona virus has become a major threat to the point where it is of utmost importance to take maximum precaution for its control. In an effort to alleviate the outbreak of COVID-19, government is adopting various measures to regulate all the processes. From identifying isolation and quarantine facilities to training of broad array of people from healthcare workers and sanitation staff. The aim of this study is to assess the knowledge, attitude and practices of ward boys and sweepers on corona virus and infection prevention and also to identify gaps, if any, in the present training methodology that is being followed to train the Hospital staff.

Methods and Materials

A Descriptive Cross-sectional study was conducted from March'2020 to May'2020 consisting of a total of 40 respondents in Lakhimpur Kheri district (Uttar Pradesh). The study is focused on knowledge, attitude and practices of mainly hospital sanitation staff (ward boys and sweepers) who were selected to be in teams that will be posted at an COVID facility. The assessment was carried put after the staff received one training session on COVID-19 given by government authorities. Data collection was done through a structured phone interview using an OSCE checklist and a questionnaire to determine the readiness of the hospital staff. Analysis using MS-Excel has been done.

Results:

Knowledge regarding prevention of transmission was satisfactory (62.5% answered correctly) but on the other hand means of spread and detailed knowledge on high risk contacts was lacking. Around 70-80% of the respondents were well informed about the frequency of change of linen and cleaning of the wards. Majority of the respondents showed dissatisfaction towards the Government policies in controlling the spread of corona virus (62.5%) and believes that the situation can be handled in a better way. Most of the respondents lied in the score bracket of 50%-80% on hand washing and use of face mask Practices on hand washing of all the respondents. Hence, the results of the study indicate a requirement of repeat training sessions with better use of audio-visual aid so that more amount of information can be retained in a short span of time.

Contents

List of Tables and Figures:

CHAPTER 1:

1.1 INTRODUCTION

Corona virus is a group of RNA virus which is mainly known to be affecting mammals and birds. In humans the corona virus causes respiratory tract infections which can range from being mild to lethal. In mild cases the symptoms are similar to that of a common flu whereas in extreme cases it can lead to diseases like SARS, MERS and COVID 19 which is the abbreviated form of Corona Virus Disease '19.

Talking about COVID 19, an ongoing pandemic, it is caused by SARS-CoV-19. It was first recorded in Wuhan, China in December 2019 and so far has affected as many as 5.28 million people worldwide causing around 340000 deaths and has spread to approximately to 188 countries and regions. On 30th January, 2020, COVID-19 was declared as a Public Health Emergency of International Concern and as a Global Pandemic on 11th March, 2020 by the World Health organization. As of May 2020 around 3.1 million people have recovered from the disease.

Corona virus mainly spreads by coming in close contact with an infected person via droplets that are produced by coughing, sneezing and even talking. These droplets produced by an infected person then reach the lungs via nasal routes and even mouth of the healthy individual thereby elongating the infection chain. The droplets are even reported to be settling on the face of the individual leading to infection. In order to avoid contracting the disease a minimum distance of 2 meters has to be maintained from the infected person. Another aspect of the disease is the presence of asymptomatic carriers who can transmit the disease without any symptoms.

The virus has an incubation period of approximately 14 days. The major signs and symptoms include fever, dry cough, sore throat and even shortness of breath in emergency cases. Milder symptoms include body ache and fatigue and production of phlegm and even loss of smell and taste. It has been seen that people above the age of 60, children below the age of 10 years and people with already existing medical condition are more susceptible to the disease.

One of the most important things that we have to do to prevent the spread of the disease is to take precautions like hand washing with soap or sanitizer, wearing face masks along with maintaining respiratory hygiene and maintaining social distance.

A few nations have been severely hit by the pandemic which include USA, Italy, Spain, Germany, China, Iran, Turkey etc. Almost all the nations have suspended any kind of domestic as well as international travel via trains, flights to curb the spread the of the disease. The first ever case that was reported in India was on 30th January, 2020 and as of May 2020, approximately 1.25 lakh cases have been reported along with 4000 approximate deaths. The Indian Government has since then implemented nationwide lockdown to prevent the further spread of the disease and the lockdown is currently in its fourth phase. The government has also been promoting and educating people about the various precautionary measures that should be taken by the public to hold the spread of the disease. Along with that Indian Government decided to nominate few facilities as L1, L2 and L3 where the positive patients will be taken care of. These facilities were to be made depending upon the level of treatment that can be provided to the patient depending upon the need. Along with that various teams were also formulated composing of healthcare workers and para medical staff who will be looking after the patients admitted in these facilities.

Indian Health Action Trust (IHAT) an organization that is entirely dedicated to maternal and child health has also left no stone unturned to stop the spread of the disease and impart the necessary training and education to its employees as well as the healthcare staff so that an infection free, hygienic and safe environment can be created for everyone in the current situation. A comprehensive training program was undertaken by IHAT to educate the team constituting of Doctors, Nurses, Pharmacists, Lab technicians, Ward boys and Sweepers, working in different facilities about the pandemic and the various ways to prevent its spread. The following study was then conducted to access the impact of the training program by gauging the levels of their knowledge, attitude and practices for the same using various checklists and questionnaires.

TYPES OF FACILITIES AND FORMULATION OF TEAMS:

a. Novel Corona virus has shown a tendency of remarkable spread after reaching a critical level. Thus it became a National urgency and the government of all the states were informed to start preparing for the same. It was crucial to separate the symptomatic cases from the positive cases. This was extremely important to minimize the spread, to keep the other patients and hospital staff in an environment free of corona virus infection and to prevent community transmission. Therefore, the government decided to prepare the hospitals, both government and private, to be equipped to admit and treat the positive and symptomatic patients, if any. In such a scenario, additional hospitals and quarantine facilities were required to isolate and treat the confirmed cases and to keep contacts in quarantine.

b. Under this preparation, in a government setup, three types of facilities depending upon the condition of the patient and requirement of level of care, were made. L1 facilities were made at a district level where one of the CHC was converted into an isolation facility that consisted of 30 beds. This level of facility was made to admit and treat symptomatic but uncomplicated positive patients. These patients would not require ICU facility. L2 and L3 facilities were dedicated at district/divisional level to manage any emergency case and referred cases from L1 facilities. These facilities were well equipped to provide ICU and ventilator support. In District Lakhimpur Kheri, Uttar Pradesh, the Community Health Centre at Behjum Block was recognized and prepared as L1 facility. L2 facility was placed in another District, Hardoi, and L3 was recognized in Lucknow, Uttar Pradesh, at Sanjay Gandhi Postgraduate Institute of Medical Sciences.

c. Along with the hospital preparedness came the most crucial part of formulating the teams constituting of six doctors, six staff nurses, two pharmacists, two lab technicians, three ward boys and six sweepers. This makes a team of 25 members altogether, responsible to look into the needs of the patients and provide necessary treatment. Total 11 teams were prepared, as per the government orders, who will be posted at the facility as and when required.

    - The sequence for the time for which the teams were supposed to be posted, was prepared. At a time, one team will be posted for 14 days at the facility.

The team members were divided according to the roster to work in shifts. This team will be called the “Active Team”. An Active Quarantine was selected and converted for the active team to stay for the time period. In District Kheri, the CHC Residence was converted into active quarantine. Once the serving period of Team 1 was over (post 14 days), the team was then shifted to the “Passive Quarantine” to prevent any contact with their families while being tested for corona virus. This quarantine time is supposed to be for another 14 days. In the same manner other teams will be posted as long as the facility holds positive patients.

d. It was necessary for the teams to undergo a training session regarding general information about novel coronavirus and Infection prevention protocols one needs to follow while dealing with a COVID-19 positive patient. Hence, following these said orders training sessions were organized for the teams in various batches, keeping the moral of social distancing in mind. The session was taken by government authorities. Audio-visual aids were circulated through social media apps but were not played during the training session due to lack of proper infrastructure.

This study focuses on the assessment of the team members based on their knowledge, attitude and practices once they have completed the COVID-19 training session.

1.2 RATIONALE:

In a normal scenario, we expect mainly the healthcare providers i.e. the doctors and staff nurses to be well informed but during this pandemic it is all the more vital for the hospital staff like ward boys and sweepers to have basic knowledge about the said virus along with infection prevention practices to cross transmission.

The main rationale of this study is to focus on those ward boys and sweepers who have been chosen to be the part of the hospital staff team, elected to perform their respective duties at a L1 facility to treat the COVID-19 positive patients. Emphasis has been given to the para-medical staff i.e. the staff who are not directly involved in providing specific healthcare to the patients but are involved in other important activities of keeping the healthcare facility sanitized to prevent further spread of infection.

The KAP study conducted will assess on all the three measures by using an OSCE checklist that will evaluate them on their infection control practices and a questionnaire that assesses their knowledge and attitude towards COVID-19.

1.3 OBJECTIVES:

A. To assess the knowledge, attitude and practices of ward boys and sweepers on corona virus and infection prevention.
B. To identify gaps in the present training methodology that is being followed to train the Hospital sanitation staff.

CHAPTER 2:

2.1 LITERATURE REVIEW

A quasi-experimental study with control and intervention design was conducted in public healthcare setup in the city of Rawalpindi, Pakistan. Healthcare workers were randomly selected making sure there was equal representation from all the groups. Ethical clearance was taken from the Health Services Academy Pakistan. A self-administered questionnaire was used after taking written consent.

A total of 275 healthcare workers across the spectrum with a mean age of 30 years, were interviewed. Statistically not significant ($p = 0.33$) biomedical waste management practices were found. However, personal and demographic information like age, level of education and experience etc. was found to be statistically significant ($p < 0.05$). Doctors and nurses on the whole showed more intricate knowledge, which was applied with a positive attitude in comparison to the sanitary staff with regards to biomedical waste management. On analysis, this was found to be statistically significant ($p < 0.05$). It was, therefore, elucidated that trends among healthcare workers with regards to biomedical waste management were below the global WHO guidelines in public hospital settings in Pakistan [1].

The study was designed to assess the knowledge, practices, and attitudes of healthcare professionals with regards to the pandemic of Covid-19. A cross-sectional study was performed between February 4th to February 8th, 2020. A total of 1357 healthcare professionals were assessed in Henan, China. Eighty-Nine percent of healthcare professionals were found to have sound information regarding COVID-19. Around 85% were

scared getting infected by the virus themselves. Also, 89.7% of the total healthcare professionals assessed followed correct guidelines of safety protocols given out for Covid-19. The attitudes and practice of healthcare workers regarding COVID-19 was found to be dependent upon education levels and work experience [2].

A cross-sectional study was designed to assess the knowledge, practices, and attitudes of healthcare professionals conducted for the evaluation of knowledge, attitude, and practice in relation to disposal of infectious waste among various strata of operation room personnel. A questionnaire with relevant and standardised questions was prepared for the study. Loopholes were found in the knowledge as well as disposal practices among all the designations of operating room personnel with regards to infectious waste management and disposal. Therefore, it was concluded that there's a need for standardised training and education of all operation room personnel about appropriate practices of infectious waste disposal [3].

A cross-sectional study was designed to assess the knowledge, practices, and attitudes of healthcare professionals in regard to infectious waste management at Ain Shams University Hospitals, Cairo, Egypt. This study involved the participation of 110 physicians, 151 nurses and 89 housekeepers. All the participants were made to answer using pre-designed standardised questionnaire. The study revealed some interesting facts. Housekeepers seemed to have more information than physicians or nurses regarding laid out hospital policies for waste disposal. However, but less so about specific details of disposal. Housekeepers also had the highest overall scores for attitudes to waste disposal among the 3 groups. Significantly more nurses had satisfactory practice scores (84.0%) than did physicians (67.3%) (housekeepers were not assessed). Training and duration of work experience were not significantly associated with knowledge, attitude and practice scores, except for nurses with longer work experience, who were more likely to have satisfactory knowledge about waste disposal than less experienced nurses [4].

Interim guidelines for infection prevention and control were formulated by summarizing WHO guidance on water, sanitation and health-care waste management relevant to bacteria, fungi and viruses, including coronaviruses. WHO laid out guidelines for the benefit of water and sanitation workers as well as healthcare professionals for safe sanitation and hygiene practices. Well laid out of guidelines for sanitation, hygiene and infectious waste disposal are absolutely essential for protection prevention of outbreaks of infectious disease, like

COVID-19. Ensuring strict adherence to WHO's waste management practices would go a long way in preventing cross transmission of the virus, thereby, slowing down the spread of Covid-19[5].

A cross-sectional study was conducted to assess the knowledge as well as the training of private hospital cleaners in Etiosa, Nigeria. A total of 135 patients were assessed using a standardized questionnaire administered by an interviewer. Information was taken regarding the demographics, knowledge and practice of private hospital cleaners in Etiosa in Nigeria. Analysis of the data was done by applying the Chi-square test. Eight one percent of the hospital workers had received training. Forty-nine per exhibited sound knowledge whereas 90% self-reported good practice. Statistical analysis showed a significant negative association between training and knowledge ($\chi^2 = 11.1$, $P < 0.01$). There was no significant association between knowledge and practice. This group of cleaners reported good practice but knowledge was negatively associated with training. The study concluded that a knowledge gap exists due to below par training, thereby, increasing the probability of occupational risks in these hospital cleaners. The study, therefore, advises development of appropriate training mechanisms to prevent suboptimal practices in order to prevent cross transmission of infections [6].

A cross-sectional study was conducted to determine the knowledge levels, attitudes and practices towards the pandemic of COVID-19 among the general populace of Malaysia. Data was collected from 4,850 Malaysian residents between 27th March and 3rd April 2020 with the help of an online survey. The survey collected the information regarding the demographic distribution, knowledge, attitudes and practices in relation to the pandemic of Covid-19. Statistical analysis was done with the help of chi-square tests, t-tests and ANOVA. 80.5% respondents exhibited positive knowledge with regards to the Covid-19. The respondents held a positive view towards the successful control of COVID-19 (83.1%), the ability of Malaysian government to defeat the disease (95.9%) and the handling of the pandemic crisis by the Malaysian government (89.9%). Most of the participants were taking precautions such as avoiding crowds (83.4%) and practising proper hand hygiene (87.8%) with extreme alacrity. The respondents, however, seemed averse to wearing the facemasks (51.2%). The results of the study laid down the importance of repetitive education from governmental

sources. The need to have structured, easy to understand health education programs cannot be discounted [7].

A study was conducted to assess knowledge, attitude and practice among Healthcare professionals in Pakistan regarding the pandemic of COVID-19. The study was conducted during a one-month period (MARCH, 2020). An online survey was sent out to healthcare professionals. The questionnaire collected information regarding the demographics, knowledge, attitude, and practice of the healthcare professionals. A total of 414 individuals participated in the study. Statistical analysis was done with the help of by SPSS software. Most of the healthcare professionals exhibited sound knowledge (93.2%, n=386), positive attitude and good practice regarding the pandemic of COVID-19. The factors impacting the knowledge and good practice were perceived to be age and experience of the professional. Healthcare workers in the country of Pakistan on the whole showed optimal knowledge, as well as positive attitude and good practice [8].

The pandemic of COVID-19 is an extremely contagious infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which first emerged as a type of pneumonia in the city of Wuhan in Hebei province of China. The infection eventually spread around the world and was termed as a pandemic by the WHO in March, 2020. Bats as well as pangolians have been alleged to be the possible primary source of the virus based on the genomic analysis of the SARS-CoV-2. The mechanism of transfer to humans is unknown, however, human to human transmission has been confirmed by studies of various of hues. As of now, there's no clinically approved antiviral drug or vaccine available. This review article, gives salient features about the emergence of this novel corona virus as well as the pathogenicity of COVID-19 infection. This article also provides an insight into developing an effective vaccine as well as different medications that might have a role in the the resolution of infection leading to complete recovery [9].

CHAPTER 3:

3.1 METHODOLOGY:

The methodology of this study can be understood by following components:

RESEARCH QUESTION:

a. What is the present status of Knowledge, attitude and Practices of the ward boys and sweepers post training on COVID-19 and infection prevention protocols to prevent its spread in the community?
b. What improvements can be done in the training material and methodology to improve the knowledge, attitude and practices of the hospital sanitation staff that will be serving a corona virus positive patient in future?

STUDY DESIGN:

A Descriptive Cross-sectional Study was conducted to assess the knowledge, attitude and practices. 40 subjects fulfilling the inclusion criteria were selected for the study.

STUDY SETTING:

The study has been conducted at District Lakhimpur Kheri, Uttar Pradesh, India.

The assessment has been done for the ward boys and sweepers hired as government employees and were previously posted at various Community and Primary Health Centre's. They are now posted, in pre-decided order, at L1 facility for COVID-19 patients.

DURATION OF STUDY:

The study was conducted by collecting primary data and analysis for 60 days from 25-03-2020 to 25-05-2020 as and when the trainings for different teams were conducted.

SAMPLING TECHNIQUE:

Convenience Sampling done to select the sample size as the responses of only those sanitation staff was recorded who were available out of the sample frame of all the sanitation staff who were chosen to be a part of the team and trained for the same.

SAMPLE FRAME AND SIZE:

a. Sample frame has been taken out all the sweepers and ward boys posted at various CHC's, PHC's and District Hospitals. The sample frame constitutes of only those ward boys and sweepers who were chosen to be a part of the team. This makes the sample frame to be 99.
b. A total of 40 respondents were chosen from the sample frame for the study, according to the inclusion and exclusion criteria.

INCLUSION CRITERIA:

a. Ward boys and sweepers that have been chosen to be the team members who will be posted at L1 facility for COVID positive patients.
b. The sanitation staff that has received COVID-19 training.
c. The sanitation staff who agreed to respond to the OSCE and Questionnaire.

EXCLUSION CRITERIA:

1. Medical Officer's, Staff nurses, Pharmacists and Lab technicians of the same teams.
2. Those ward boys and sweepers who have not been chosen as team members posted at any COVID facility in the district.
3. Untrained ward boys and sweepers who are team members but could not attend the main training session that was given for the team members.
4. The sanitation staff who did not consent to respond to the OSCE and questionnaire.

DATA COLLECTION AND THE TOOLS USED:

- The survey instrument consists of two main tools:

a. **OSCE Checklist**: It is a checklist that is used to assess the practices of the sanitation staff on Hand washing, use of face masks and Preparation of 1% chlorine solution. All the indicators are assessed based on the various steps involved in it. The hand washing indicator has a total of five steps and accounts for 10 marks. Similarly, the indicator on Use of Face mask has a total of seven steps accounting for 10 marks. And lastly Preparation of 1% Chlorine solution has six steps accounting for six marks.

b. **Questionnaire**: The questionnaire consists of 14 questions that helped in assessing the Knowledge and Attitude of the sanitation staff regarding COVID-19. Each question has multiple options and one correct answer.

Data Collection Method:

a. The data was collected through a structured phone interview where both the tools were used in an organized manner and the participants were briefed about the purpose of the study.
b. The responses were as it is marked and rated in the questionnaire and OSCE as given by the respondents.
c. The data was collected after 3-5 days of the training session. This was done to assess the effectiveness of the training given to them.
d. In the OSCE Checklist, Hand washing and Use of face mask was filled for the sweepers but for the ward boys Preparation of 1% chlorine solution was also done. The reason for the same is that the ward boys have been assigned the duty of preparing the solution at the facility.

Limitations:

a. The data was collected over the phone due to the difficulty in movement amid the lockdown situation in COVID-19.
b. Many sanitation staff did not have network coverage issues due to as the network towers were not present in their areas and hence they could not be connected and included in the study.

ANALYSIS TOOL:

For this study collected data were analyzed using MS-EXCEL has been used to analyze the data and relevant graphs have been made that will help is assessing the knowledge, attitude and practices of the hospital sanitation staff.

CHAPTER 4:

4.1 RESULTS

A total of 40 respondents participated in the study. Out of the total the average age was 32 years. (Range 20-45 years, SD= 6.4). All the respondents were Male as only the male sanitation staff was chosen for the teams.

Assessment of Knowledge:

QUESTIONS	CORRECT	INCORRECT
How does Corona virus spread?	60% (n=24)	40% (n=16)
Who are the high risk contacts?	25% (n=10)	75% (n=30)
What is the Incubation period for the Covid-19?	43% (n=17)	57% (n=23)
What precautions you would take to prevent the transmission of the infection from the suspect/ confirmed cases to you?	62.5% (n=25)	37.5% (n=15)
When should a provider wash hands	20% (n=8)	80% (n=32)
For what purposes 1% bleach solution is to be used?	55% (n=22)	45% (n=18)
How frequently the wards and the surroundings of the hospital should be cleaned?	80% (n=32)	20% (n=8)
How frequently the bed linen should be changed in the wards?	72.5% (n=29)	27.5% (n=11)
You have used gloves and used IV lines, in which color coded bin the used PPE be discarded?	47.5% (n=19)	52.5% (n=21)
Where should the biomedical waste be stored?	82.5% (n=33)	17.5% (n=7)

Table 4.1: Percentage of respondents for both correct and incorrect answers.

A total of 10 questions were used to assess the knowledge on Corona virus and Infection Prevention.

- On assessing their knowledge about the means of corona virus spread and around 60% gave the correct answer mentioning both direct and indirect causes. After bifurcating the result, it was seen that around 66% of ward boys gave the correct answer as compared to sweepers where only 56% answered correctly.
- Second question was asked to assess their knowledge about the high risk contacts who can infected by corona virus and around 75% of the respondents did not mention all the factors. Around 83% sweepers gave the incorrect answer.

- The third question was asked to assess their knowledge on the Incubation period of corona virus and only 43% said 5-14 days, which is the correct answer.
- Fourth question was based on their knowledge regarding the various precautions one should take to prevent the transmission of virus from a suspected/positive patient and around 62.5% of the respondents gave the correct answer. On bifurcating ward boys had more clarity as 73% of them gave the correct answer.
- Fifth question was an important one to assess their knowledge on frequency of hand washing and only 20% of the total respondents gave the correct answer. Most of them missed the step of washing hands before touching a patient and before performing aseptic procedure.
- Sixth question was asked to assess their knowledge on use of 1% bleaching solution and only 55%of the respondents answered correctly while others 2-3 items that have to be cleaned using the solution. On bifurcation, sweepers had poor knowledge as compared to ward boys.
- Seventh question was asked to determine their take on the frequency of cleaning of wards and other surroundings. Majority (80%) of the respondents gave the correct answer.
- Eighth question was about the frequency of change of bed linen in wards. Majority of the respondents (72.5%) gave the correct answer that the linen should be changed every 3-4 hour.
- Ninth question was asked to assess their knowledge on the type of dustbin in which the used PPE and IV line should be discarded. Around 52.5% of the respondents were confused and gave the wrong answer. On bifurcation it was seen that both the ward boys and sweepers did not remember the bin colour in which they are supposed to discard.
- Last question was asked to assess their knowledge on the storage of discarded bio-medical waste.

Assessment of Attitude:

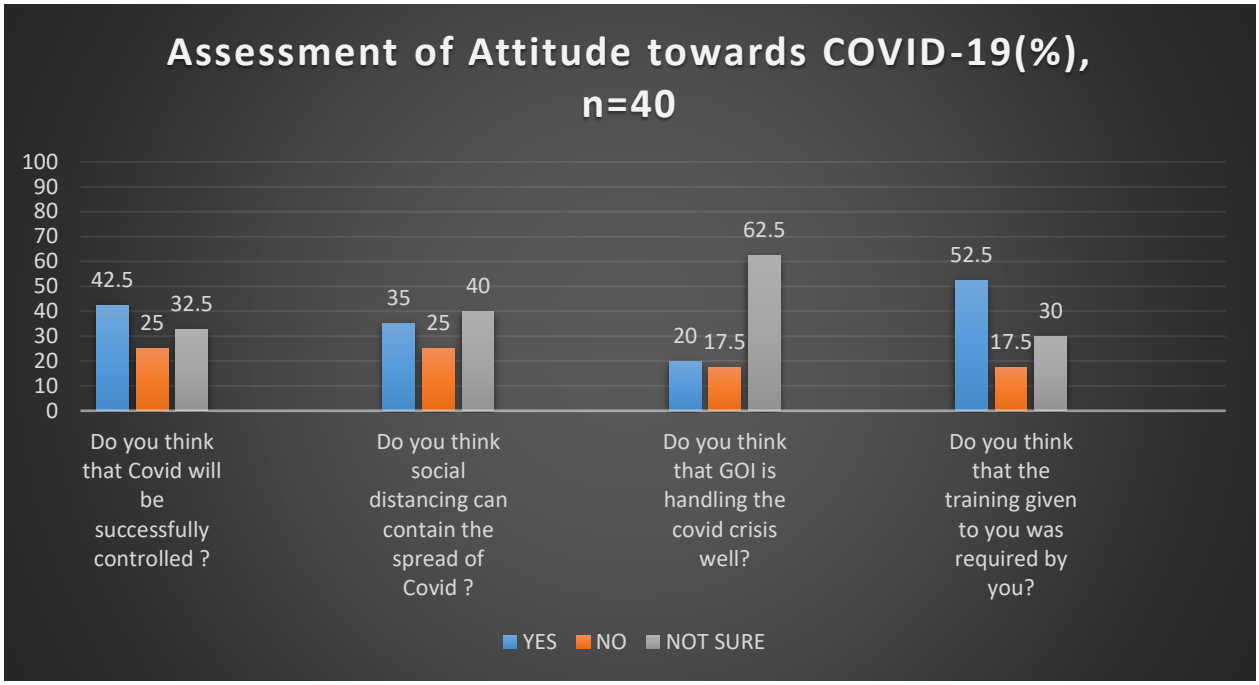


Figure 4.1 Assessment of attitude of Sanitation staff towards COVID-19

- Participants were asked four questions to assess their attitude towards corona virus. The first question asked if they think that COVID-19 will successfully be controlled and out of total 40 respondents 42.5% said yes, 25% said no and around 32.5% were not sure. When bifurcated majority of both sweepers and ward boys believe that COVID-19 can be successfully controlled.
- The second question asked whether they think that social distancing can contain the spread of corona virus. Here 40% of the total respondents were not sure while 35% agreed that social distancing might control the spread.
- Third question asked whether they agreed that the Government of India is handling the COVID crisis well. Majority of participants (68%) were not sure while only 20% agreed. Around 17.5% disagreed as they that the government can handle the situation in a better way.
- Fourth question asked the participants whether they think that the training given to them was required or not. More than half of the respondents (53%) said yes while around 30% were not sure about it. After bifurcation, more number of ward boys were not sure whether they required the training session on COVID-19.

Assessment of Practices:

Practices towards COVID-19 through Infection Prevention were measured using an OSCE Checklist on Hand washing and wearing of face mask by both sweepers and ward boys. Another indicator i.e. preparation of 1% chlorine solution has been asked to the ward boys as they have been given the responsibility to do the same at the L1 facility. Each factor has steps involved and the respondents were asked to describe the process that they would follow, as shown during the training session.

The analysis has been divided for the same in under three measures i.e. number of respondents scoring less than 50%, 50%-80% and more than 80%.

Hand washing:

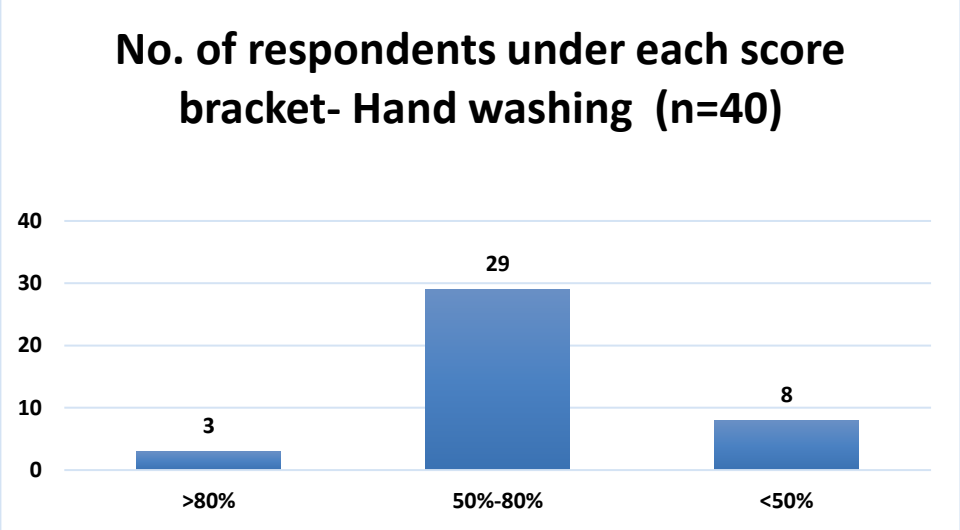


Figure 4.2 Score of Handwashing

As depicted by the graph shown, majority of the respondents lie in the score bracket of 50%-80%. Only 3 respondents could score more than 80% marks when asked about their practice of hand washing. Amongst both, sweepers and ward boys, majority is between the said bracket score.

- **Use of Face Mask:**

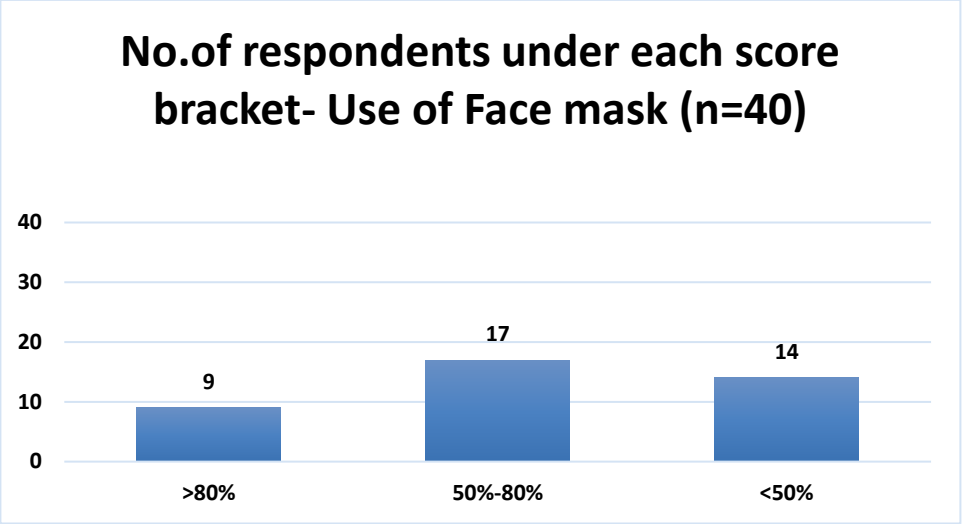


Figure 4.3: Score of Use of face mask

As depicted by the graph shown, a total of 14 respondents scored less than 50% marks as they missed steps while answering their process of using a face mask and only 9 respondents scored more than 80%.

- **Making of 1% Chlorine solution:**

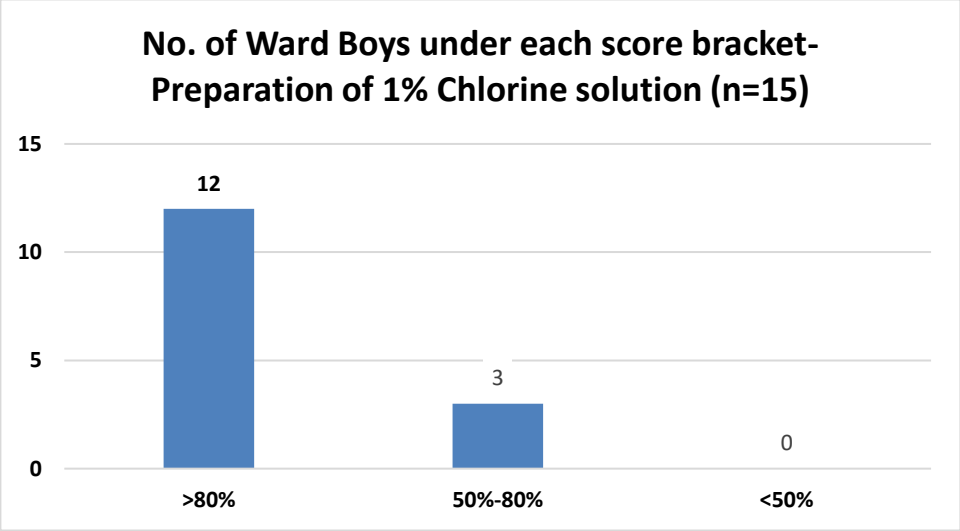


Figure 4.4: Score of making 1% Chlorine solution

In this indicator, the graph shows that majority (n=12) of the ward boys explained the process correctly.

4.2 DISCUSSION:

- Corona virus is a relatively new virus having devastating effects in a short span of time. In the times of unknown, government has to make sure that the patients receive best of care by following all the necessary protocols. This process clearly requires the team members to be well versed about the virus as well as the infection protocols they must follow. Here, role of the hospital sanitation staff becomes quite important in keeping the environment sanitized to prevent the further spread of infection.
- In terms of the knowledge of the sanitation staff, variation was seen in final marks received even after undergoing training. When asked about means of spread, the respondents missed the indirect spread through linen and other items that were used for or by the patients. Due to the similar reason, majority of the respondents were confused about high risk contacts. Their entire focus was only on the direct contacts and other factors, like contact with body fluids, close proximity, were missed. Details of Incubation period were also unclear in terms of number of days.
- Infection Prevention has always been emphasized, therefore hand washing and use of face mask was of main focus. The respondents were able to describe most of the steps but did not retain protocols of hand washing before touching the patient, and only focused what they had to do after coming in contact. Also, during OSCE, majority of them got less than 80% as they were missing out on a few steps like removal of ornaments before washing hands. Similarly, their practice of use of face mask did not reflect post training. Around 14 respondents scored less than 50% score as some very crucial steps were not mentioned by them during the interview such as washing hands before wearing a mask and removal of face mask by lace instead of the front part. This could be due to the wrong practices and the habitual nature that has been there for a long time.
- Bio-medical waste management is of utmost importance as that can effectively reduce the spread. Respondents were less confident on the color of dustbin in which used PPE has to be discarded. Most of them answered yellow but according to the guidelines it has to be discarded in the red bin.

Although, maximum correct answers were given about the storage of the discarded waste in BMW sheds.

- Knowledge on the use of 1% chlorine solution was retained amongst the ward boys as they have been preparing solutions during their routine work. But on assessment sweepers were lacking of that, specially missing out the cleaning of door handles and counter tops. Results of practice of preparation of 1% chlorine solution was good and the only 3 respondents who scored less than 80% did not mention the use of protective items such as apron and utility gloves before making the solution.
- The present study found that majority of respondents feel that the Government of India could handle the crisis in a better way. Dissatisfaction was seen in the respondents towards the policies followed by government. Many respondents were unsure about control of COVID-19 and that social distancing is a way to reduce the spread. This can also be related to low adherence to infection prevention protocols in the past specially in a rural setting.

CHAPTER 5:

CONCLUSION

In summary, the present study was able to provide a comprehensive examination of knowledge, attitude and practices of ward boys and sweepers who will be taking care of COVID positive patients. The amount of knowledge that they grasped is good considering that the staff attended only one training session initially, but further needs to be augmented. This will help in improved recollection and help in improving the practices in daily life.

In addition to the knowledge enhancement, Practices of the sanitation staff has to be of major focus. Thorough explanations and demonstrations have to be given and repeated for the hand washing practices so that they can be imbibed and then mimicked while actually performing their respective duties. Message regarding social distancing still needs to be put across as much as possible for the staff to actually accept the new way of living until these times end. Consistent messaging from the Government are key to aid public knowledge and understanding of COVID-19.

RECOMMENDATIONS:

Few recommendations were given to improve overall knowledge, attitude and practices of the sanitation staff. Repeat training sessions were suggested to the government officials as well as the organization.

As the training sessions consisted of many technical aspects in depth, for Medical officers and lab technicians, it was endorsed to conduct separate sessions for sanitation staff and other team members. This helped in improved concentration as more emphasis could be given on infection prevention.

Use of audio-visual aids were a challenge in the beginning, hence on behalf of IHAT it was suggested to initiate the concept of online meetings through various applications like Zoom and Cisco WebX. This concept was enthusiastically accepted by the government as this helped in conducting the meetings with ease and the respective audio-visual aids could also be played during the sessions. In certain cases, where the staff did not have access to a smartphone, the MOIC of a facility was instructed to the arrange the required medium.

Circulation of videos on hand washing and use of face mask through online platforms like Whatsapp, can be also done so that the staff has access to these important contents readily.

CHAPTER 6:

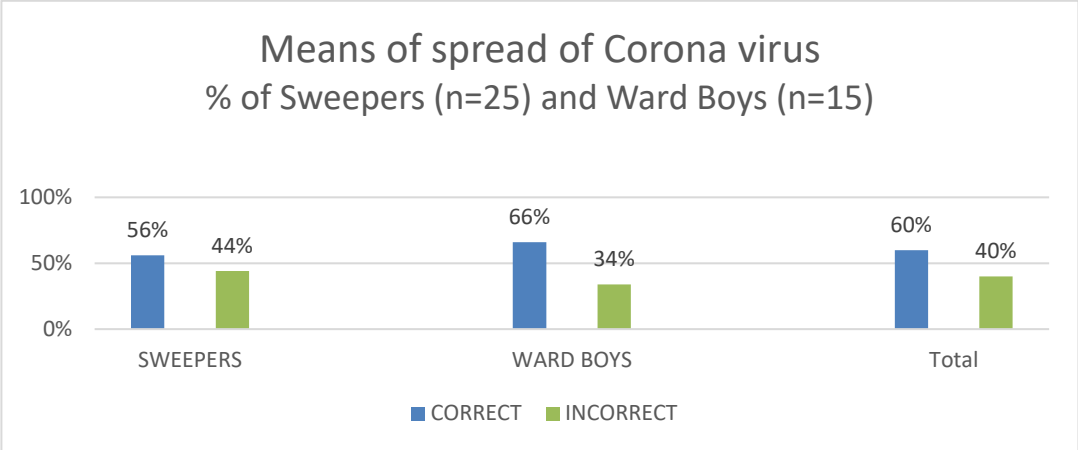
Bibliography:

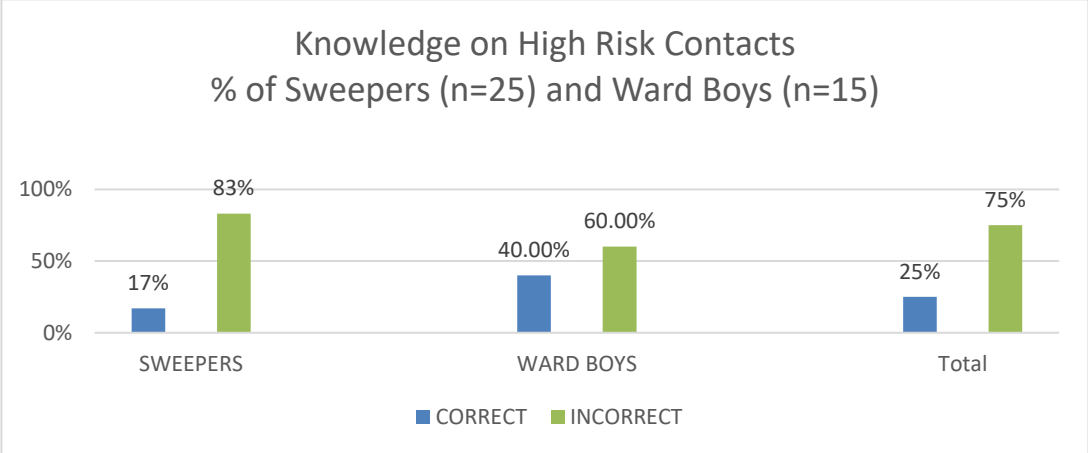
1. Kumar R, Samrongthong R, Shaikh BT. Knowledge, attitude and practices of health staff regarding infectious waste handling of tertiary care health facilities at metropolitan city of Pakistan. *J Ayub Med Coll Abbottabad*. 2013;25(1-2):109-112.
2. Zhang et al. Knowledge, attitude and practice regarding COVID-19 among healthcare workers in Henan, China. The Journal of hospital infection. Volume 105, Issue 2, P 183-187, June 01, 2020.
3. Aanandaswamy TC, Rajappa GC, Venkatachala N, Kamath R. Assessment of knowledge, attitude, and practices regarding biomedical waste management among operation room personnel in a tertiary care center. Journal of Anaesthesiology, Clinical Pharmacology. 2019 Jan-Mar;35(1):106-108.
4. Hakim S.A, Mohsen A, Bakr I. Knowledge, attitudes and practices of health-care personnel towards waste disposal management at Ain Shams University Hospitals, Cairo. Eastern Mediterranean Health Journal, Past issues, Volume 20, 2014.
5. Arduino M, Berendes D, Casanova L et al. Water, sanitation, hygiene, and waste management for the COVID-19 virus. WHO-UNICEF. April 2020.
6. C Nwankwo. Knowledge and practice of waste management among hospital cleaners, Occupational Medicine, Volume 68, Issue 6, August 2018, Pages 360–363
7. Azlan A.A, Hamzah M, Sern T. J et al. Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. Plos One, May 2020.
8. Saqlain M, Munir M et al. Knowledge, Attitude and Practice among Healthcare Professionals regarding COVID-19: A cross-sectional survey from Pakistan. Jounal of hospital infection, May 2020
9. Sheeren M, Khan S, Kazmi A, Bashir N et al. COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. Journal of advanced research, July 2020, Pages 91-98.

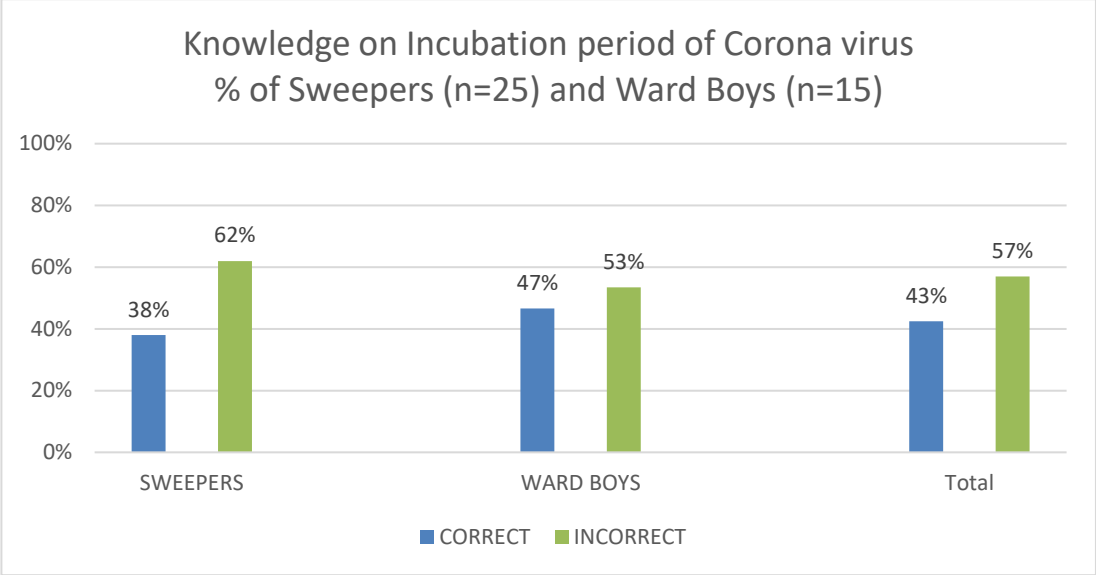
CHAPTER 7:

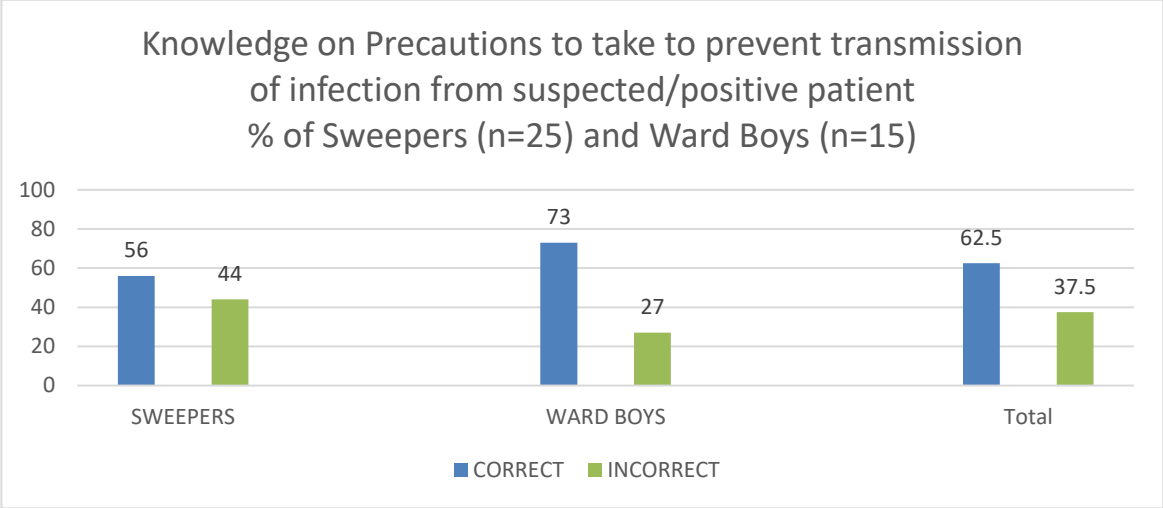
7.1 ANNEXURE- I

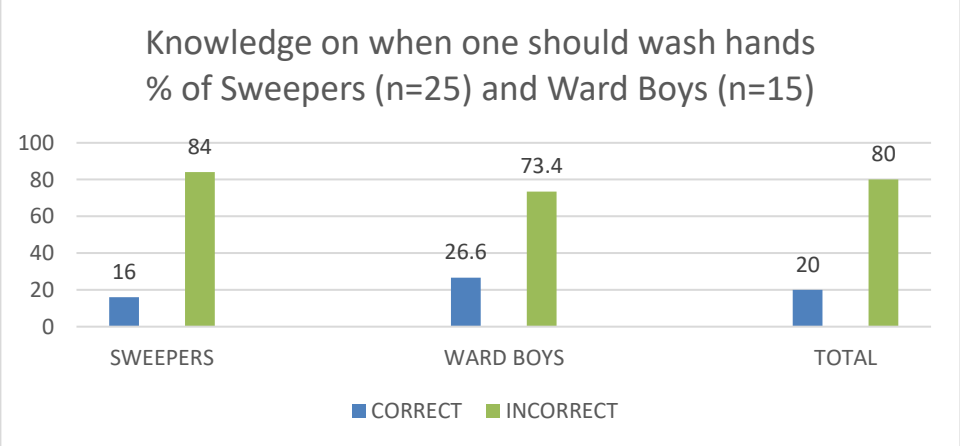
Assessment of Knowledge:

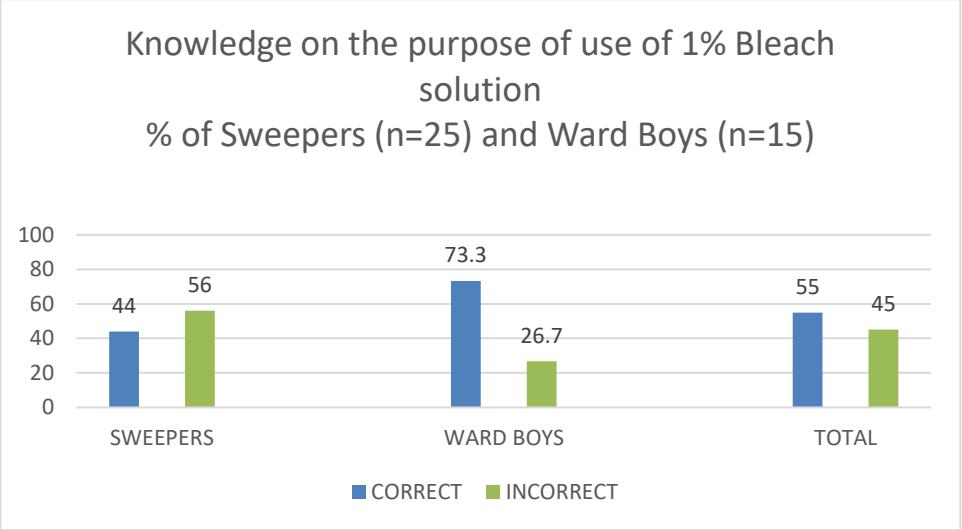


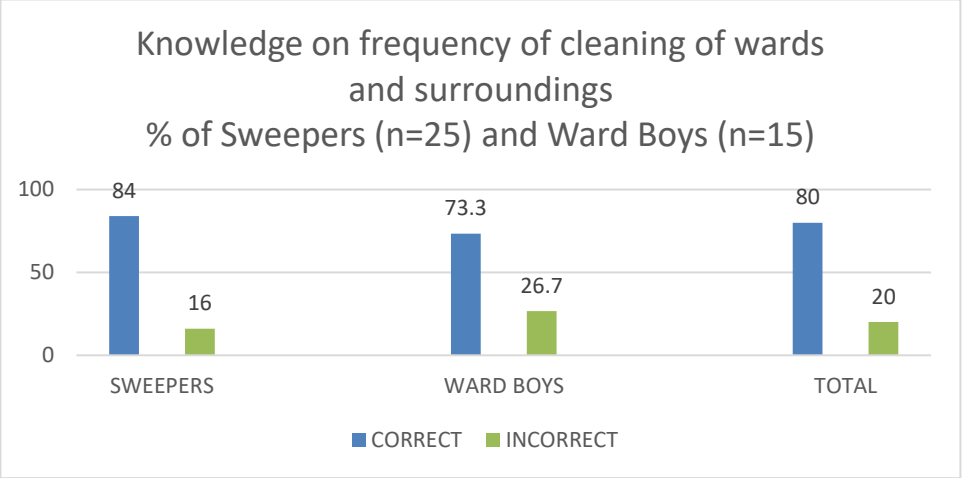


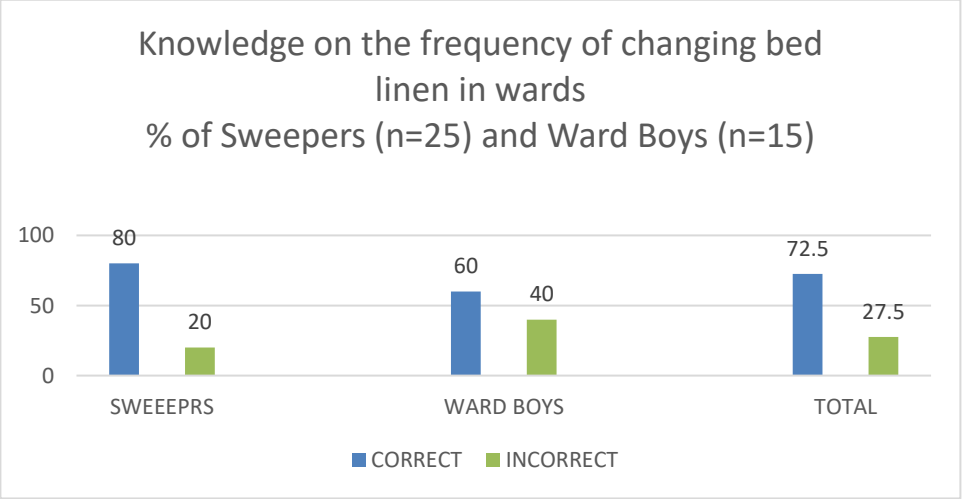

Knowledge on Incubation period of Corona virus
% of Sweepers (n=25) and Ward Boys (n=15)
100%
80%
60%
40%
20%
0%
38%
62%
47%
53%
43%
57%
SWEEPERS
WARD BOYS
Total
CORRECT
INCORRECT

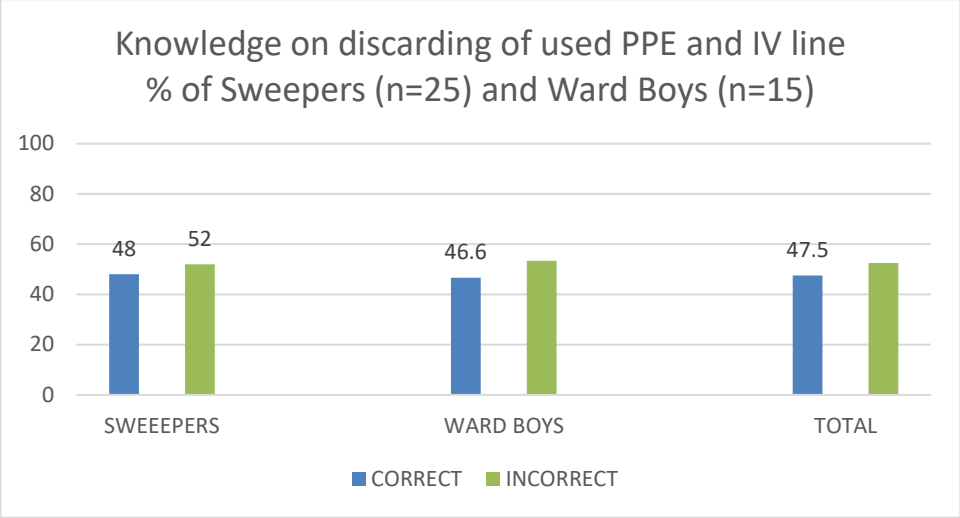

Knowledge on Precautions to take to prevent transmission
of infection from suspected/positive patient
% of Sweepers (n=25) and Ward Boys (n=15)
100
80
60
40
20
0
56
44
73
27
62.5
37.5
SWEEPERS
WARD BOYS
Total
CORRECT
INCORRECT

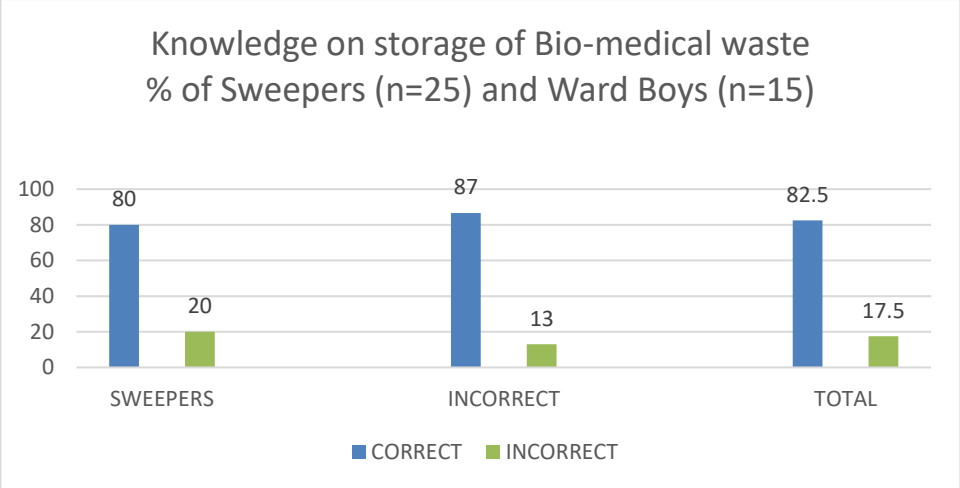

Knowledge on when one should wash hands
% of Sweepers (n=25) and Ward Boys (n=15)
100
80
60
40
20
0
16
84
26.6
73.4
20
80
SWEEPERS
WARD BOYS
TOTAL
CORRECT
INCORRECT


Knowledge on the purpose of use of 1% Bleach solution
% of Sweepers (n=25) and Ward Boys (n=15)
100
80
60
40
20
0
44
56
73.3
26.7
55
45
SWEEPERS
WARD BOYS
TOTAL
CORRECT
INCORRECT

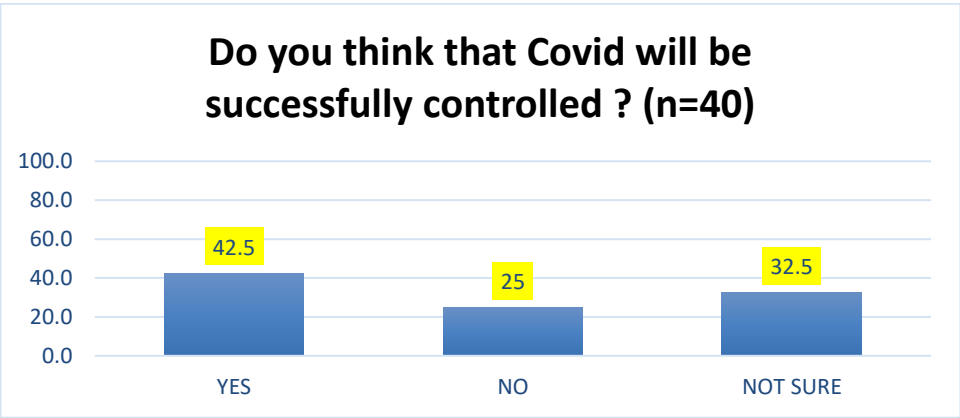

Knowledge on frequency of cleaning of wards and surroundings
% of Sweepers (n=25) and Ward Boys (n=15)
100
50
0
84
16
73.3
26.7
80
20
SWEEPERS
WARD BOYS
TOTAL
CORRECT
INCORRECT

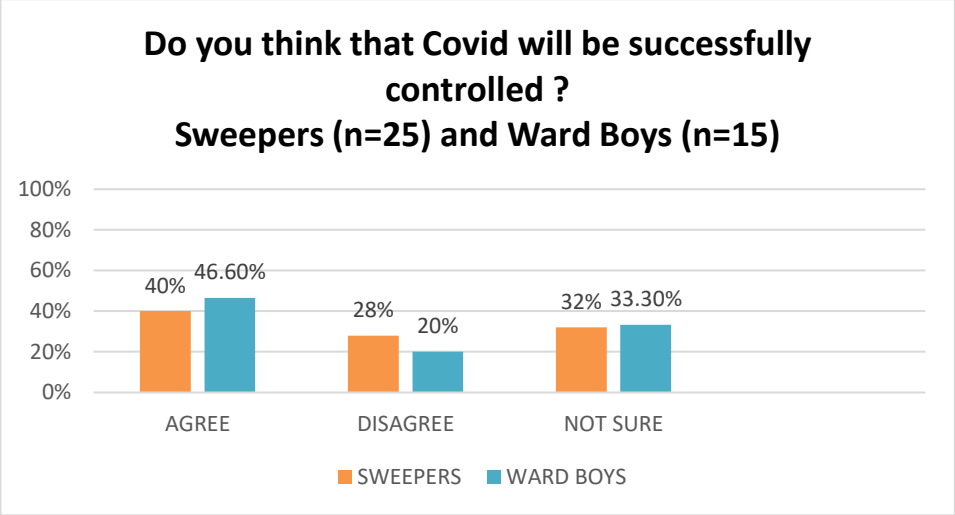

Knowledge on the frequency of changing bed linen in wards
% of Sweepers (n=25) and Ward Boys (n=15)
100
50
0
80
20
60
40
72.5
27.5
SWEEEPRS
WARD BOYS
TOTAL
CORRECT
INCORRECT

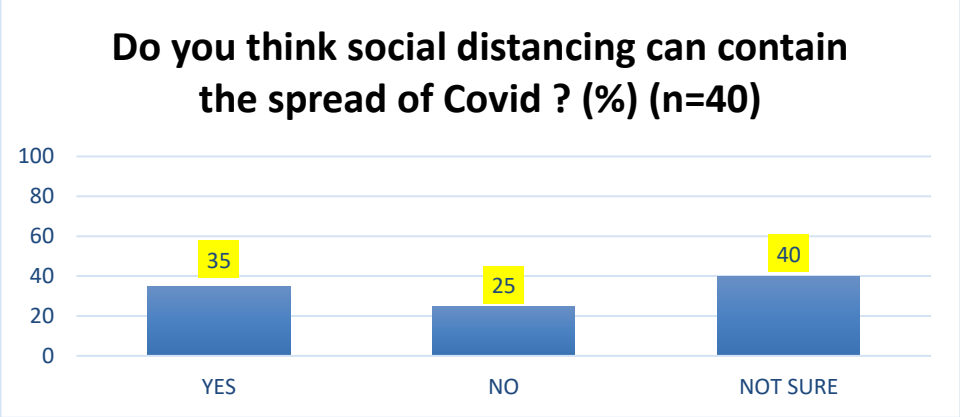


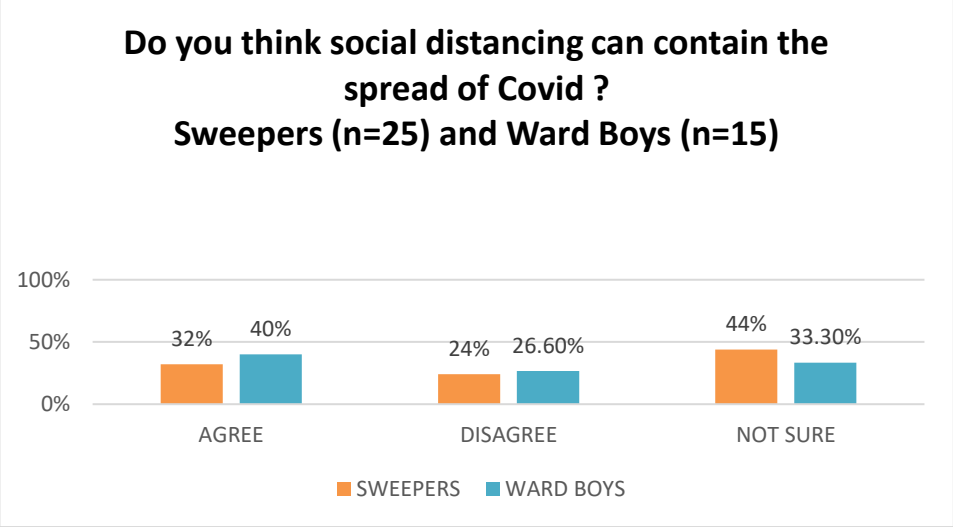


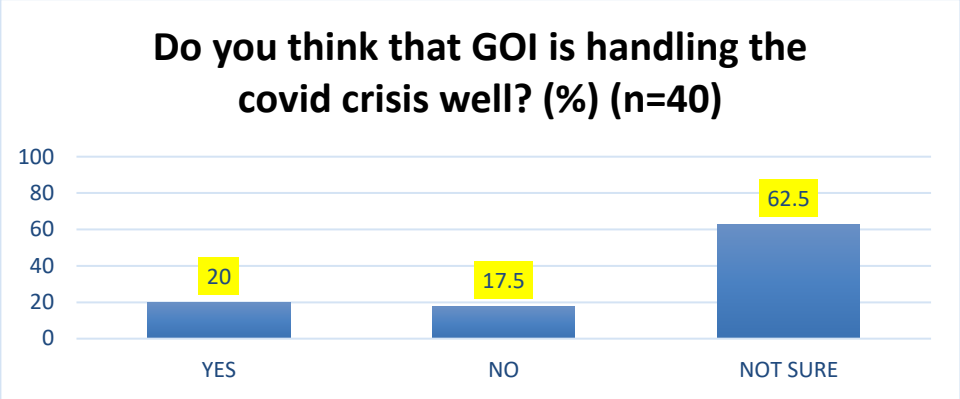
Assessment of Attitude:

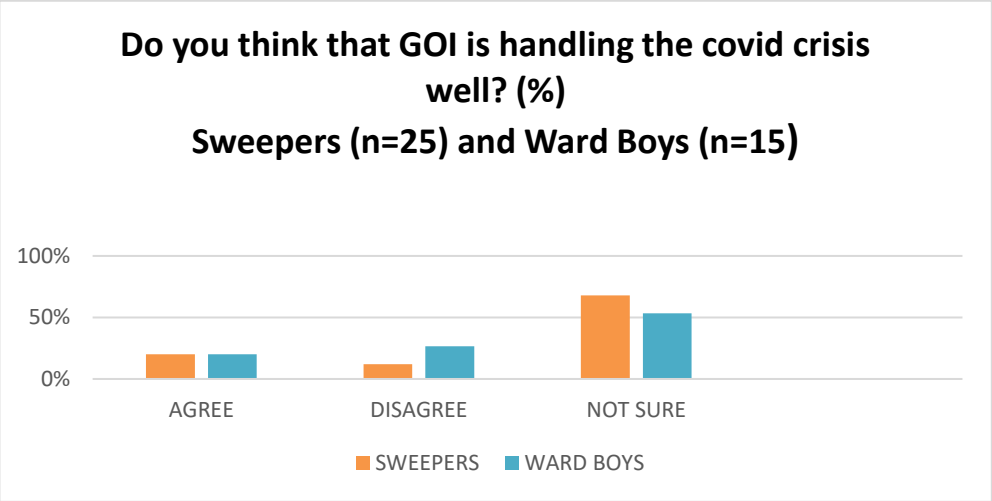


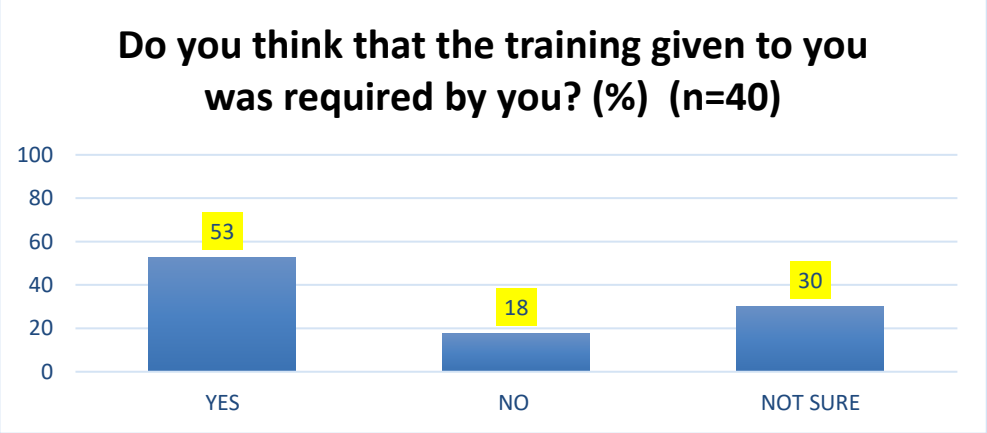

Do you think that Covid will be successfully controlled ?
Sweepers (n=25) and Ward Boys (n=15)
100%
80%
60%
40%
20%
0%
40%
46.60%
28%
20%
32%
33.30%
AGREE
DISAGREE
NOT SURE
SWEEPERS
WARD BOYS

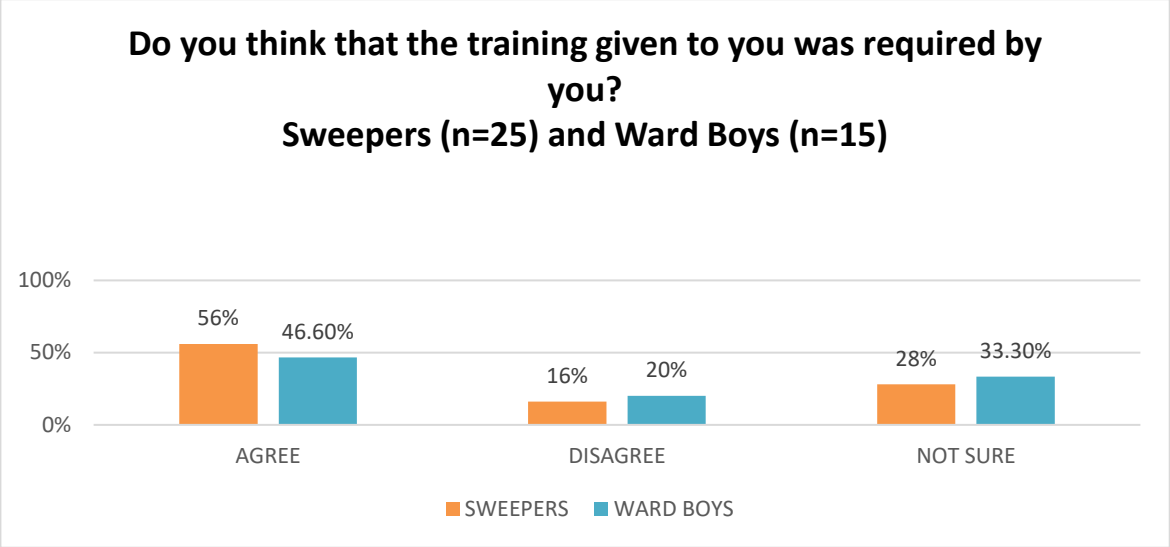

Do you think social distancing can contain the spread of Covid ? (%) (n=40)
100
80
60
40
20
0
35
25
40
YES
NO
NOT SURE


Do you think social distancing can contain the spread of Covid ?
Sweepers (n=25) and Ward Boys (n=15)
100%
50%
0%
32%
40%
24%
26.60%
44%
33.30%
AGREE
DISAGREE
NOT SURE
SWEEPERS
WARD BOYS

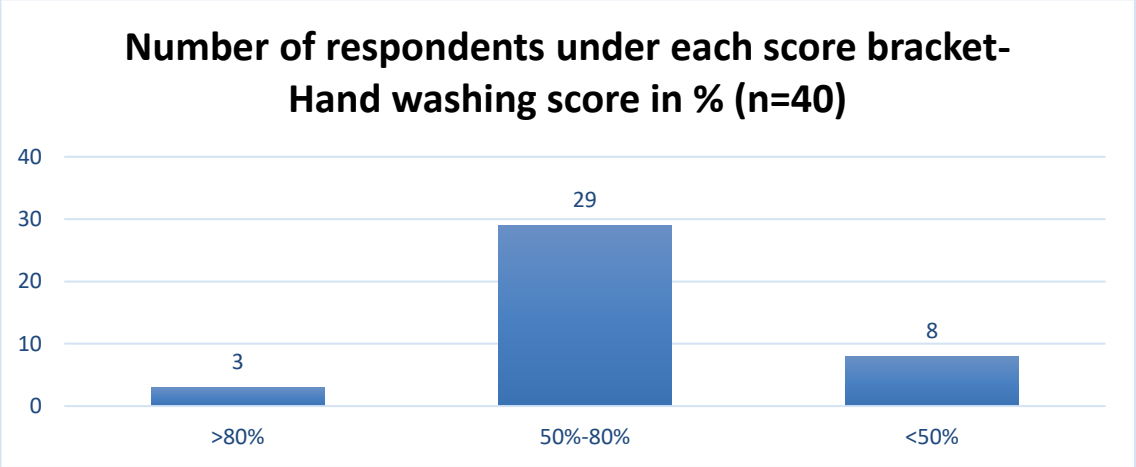

Do you think that GOI is handling the covid crisis well? (%) (n=40)
100
80
60
40
20
0
20
17.5
62.5
YES
NO
NOT SURE

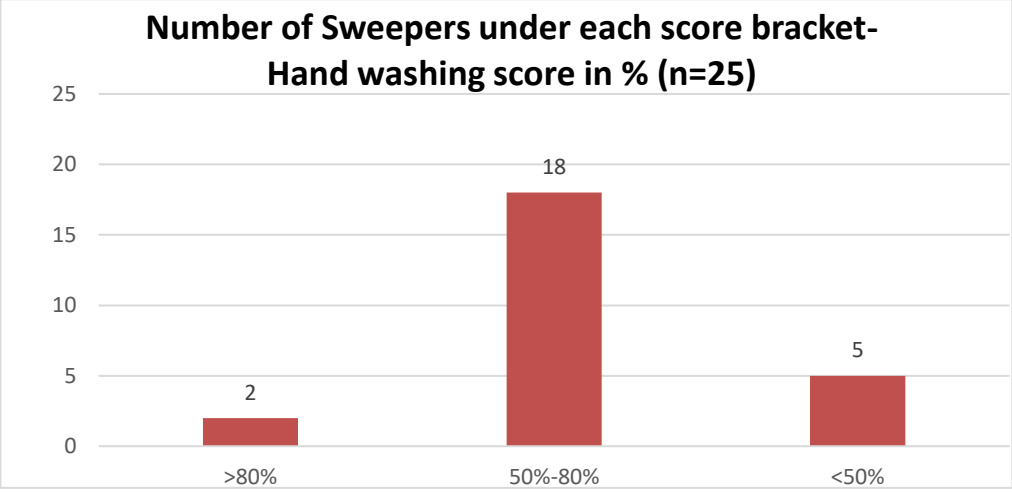

Do you think that GOI is handling the covid crisis well? (%)
Sweepers (n=25) and Ward Boys (n=15)
100%
50%
0%
AGREE
DISAGREE
NOT SURE
SWEEPERS
WARD BOYS

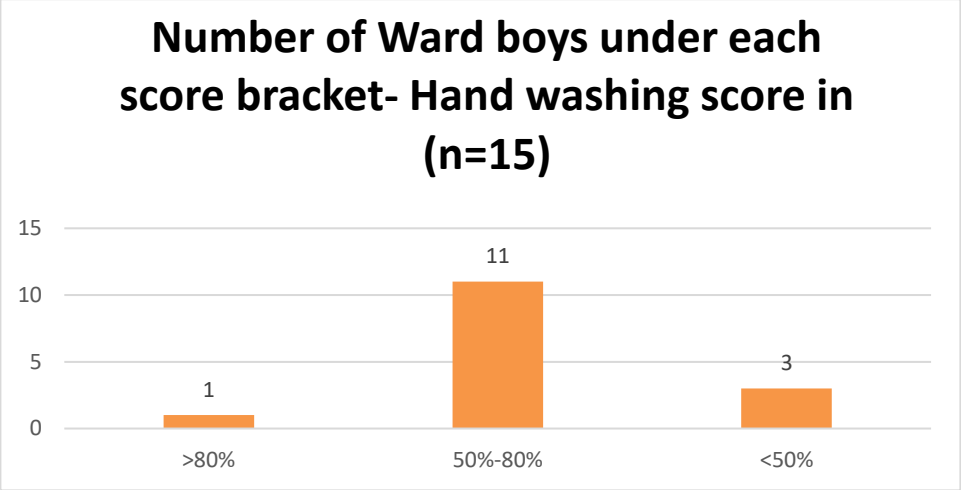

Do you think that the training given to you was required by you? (%) (n=40)
100
80
60
40
20
0
53
18
30
YES
NO
NOT SURE

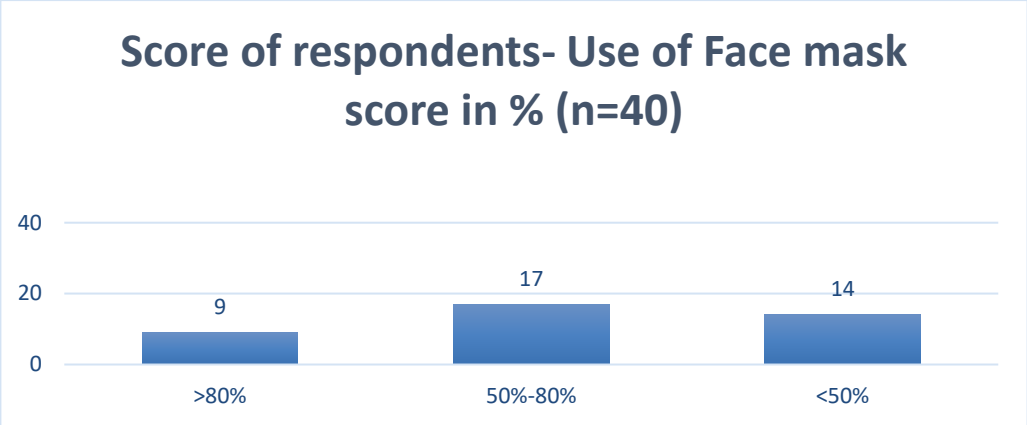


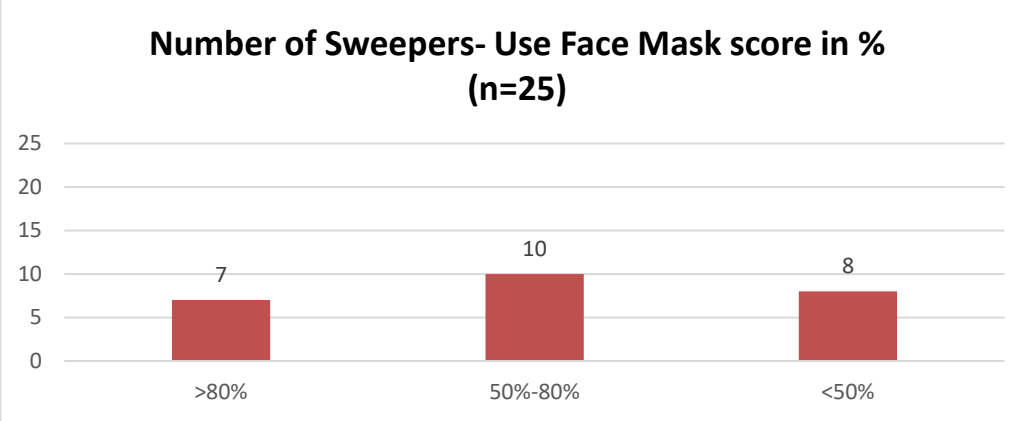
Assessment of Practices:

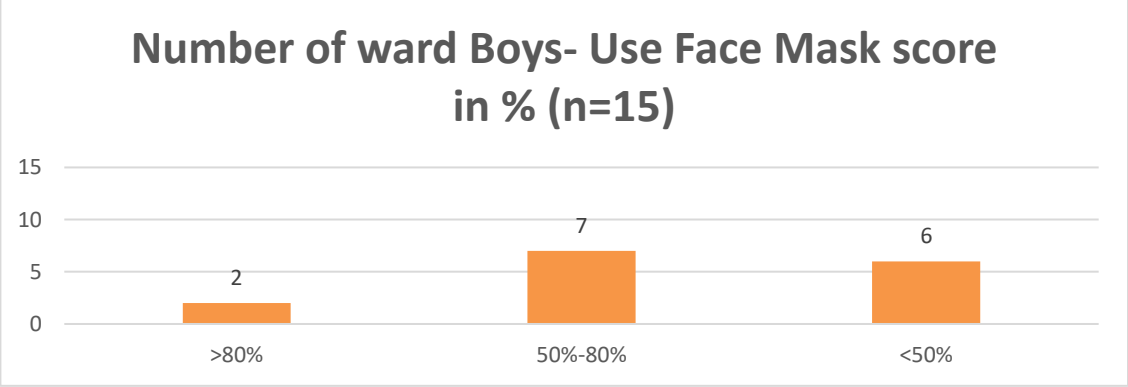


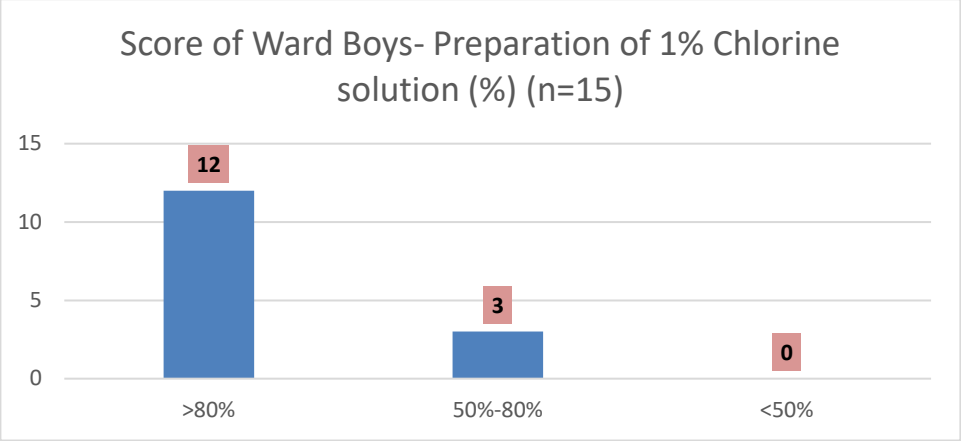



Number of Ward boys under each score bracket- Hand washing score in (n=15)
15
10
5
0
1
11
3
>80%
50%-80%
<50%


Score of respondents- Use of Face mask score in % (n=40)
40
20
0
9
17
14
>80%
50%-80%
<50%


Number of Sweepers- Use Face Mask score in % (n=25)
25
20
15
10
5
0
7
10
8
>80%
50%-80%
<50%


Number of ward Boys- Use Face Mask score in % (n=15)
15
10
5
0
2
7
6
>80%
50%-80%
<50%



7.2 ANNEXURE-II

OSCE Checklist and Questionnaire:

OSCE CHECKLIST FOR HAND WASHING

#	Steps	Score	Participant				
			1	2	3	4	5
1	Remove rings, bracelets, threads and watch.	1					
2	Wet hands in clean running water. Applies soap.	1					
3	Vigorously rub hands on both sides in following manner • Palms, fingers and web spaces • Back of hands • Knuckles • Thumbs • Fingertips and creases • Wrist and forearm up to the elbow	6					
4	Thoroughly rinse hands in clean running water.	1					
5	Allows air dry keeping the hands above waist level.	1					
	Total	**10**					

OSCE CHECKLIST: PREPARATION OF 1% CHLORINE SOLUTION

#	Steps	Score	Participants				
			1	2	3	4	5
1.	Keep the necessary items ready (plastic bucket and mug, wooden stirrer, tea spoon, bleaching powder in an airtight container, 1 litre water, plastic apron, utility gloves)	1					
2.	Wear plastic apron and utility glove	1					
3.	Take 1 litre water in a plastic bucket	1					
4.	Put 6 level tea spoonful of bleaching powder (30 gm) in the plastic mug and add little water to make thick paste	1					
5.	Add this paste to 1 litre water in the bucket to make 1 % chlorine solution	1					
6.	Stir the solution with a wooden stirrer – a milky white solution will appear. Keep it covered.	1					
	Total	**6**					

OSCE CHECKLIST FOR USE OF FACE MASK

#	Steps	Score	Participant				
			1	2	3	4	5
1	The participant washes his hand as per protocol	1					
2	Places the mask carefully to cover mouth and nose and tie securely to minimize any gaps between the face and the mask	2					
3	While in use, avoids touching the mask	1					
4	Removes the mask by removing the lace from behind while not touching the front	2					
5	Cleans the hands by using an alcohol-based hand rub or soap and water if visibly soiled after removal of the mask or whenever inadvertently touched a used mask	2					
6	Replaces the mask with a new clean, dry mask as soon as they become damp/humid	1					
7	Discards the single-use masks after each use and dispose-off them immediately upon removal	1					
	Total	**10**					

Questionnaire for COVID Facility Sanitation Staff

DISTRICT NAME _____

FACILITY NAME _____

NAME OF THE PERSON INTERVIEWED _____

DESIGNATION _____

DATE OF INTERVIEW _____

S. No.	Question	Response
1.	How does Corona virus spread?	Direct close contact with the patient: (≤ 1 meter distance), especially if the patient do not cover their face when coughing or sneezing. ..... A Indirect contact: touching contaminated surface like bedsheet, door handle or cloth without PPE and then touching one's mouth, nose or eyes ..... B ALL of the above)..... Y
2.	Who are high risk contacts in facility?	Touched body fluids of the patient (Respiratory tract secretions, blood, vomit, saliva, urine, faeces)..... A Had direct physical contact with the body of the patient including physical examination without PPE..... B Anyone in close proximity (within 3 ft) of the confirmed case without precautions. ..... C Touched or cleaned the linens, clothes, or dishes of the patient. D ALL of the above)..... Y
3.	What is the Incubation period for the Covid-19?	5-14 days..... A 5-28 days..... B Don't Know ..... C ALL OF THE ABOVE ..... Y
4.	What precautions you would take to prevent the transmission of the infection from the suspect/ confirmed cases to you?	Avoid close contact (less than 1 meter) with people suffering from any acute respiratory infections..... A Frequent hand wash ..... B Use of at least mask and gloves while handling waste and cleaning patient care area..... C ALL OF THE ABOVE ..... Y
5.	When should a provider wash hands	Before touching a patient ..... A Before clean/Aseptic procedure ..... B After body fluid exposure risk ..... C After touching a patient ..... D After touching patient's surroundings..... E ALL OF THE ABOVE ..... Y
6.	For what purposes 1% bleach solution (sodium Hypochlorite) is to be used by you?	Cleaning floor and tiles..... A Cleaning counter tops ..... B Cleaning door handles ..... B Cleaning bathrooms ..... C Cleaning objects contaminated with body fluids..... D Cleaning medical equipment..... E ALL OF THE ABOVE ..... Y

7.	How frequently the wards and the surroundings of the hospital should be cleaned?	Every 3-4-hour.....A Don't know.....B ALL OF THE ABOVE.....Y
8.	How frequently the bed linen should be changed in the wards?	With every shift of duty in 8 hours .....A Don't know.....B ALL OF THE ABOVE.....Y
9.	You have used gloves and used IV lines, in which color coded bin the used PPE be discarded?	Red bin.....A Yellow bin .....B Black bin.....C ALL OF THE ABOVE.....Y
10.	Where should the biomedical waste be stored?	Separately for each ward.....A At deep burial pit .....B BMW shed.....C ALL OF THE ABOVE.....Y
11.	Do you think that COVID-19 will be successfully controlled?	Yes No Not sure
12.	Do you think social distancing can contain the spread of COVID-19?	Yes No Not sure
13.	Do you think that GOI is handling the COVID-19 crisis well?	Yes No Not sure
14.	Do you think that the training given to you was required by you?	Yes No Not sure