

Assessment of facility availability and public adherence to COVID-19 preventive measures at different settings in Galle district, Sri Lanka

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Nithin Ranawakaa

Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

E-mail: ranawakanithin@yahoo.com

N.H. Welikumburab

Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

Nithin Ranawaka; No 123, Andadola, Wathugedara, Sri Lanka

ABSTRACT

Introduction and Objectives

COVID-19 is an infectious disease caused by newly discovered coronavirus. Preventive measures such as Hand hygiene, maintaining social distance, and using personal protective equipment, are the main strategies for limiting the spread of disease. The main objective of this study is to assess facility availability and adherence to those preventive measures in Galle district, Sri Lanka.

Methods

A descriptive cross-sectional study was conducted. Study had 3 parts, 1) observation for facility availability, 2) observation and 3) questionnaire for adherence. Direct, structured observation has been conducted. Ten divisional secretarial areas selected randomly, each area supermarket, bank, bus stand, dress point, general goods store selected (total 50) randomly for observation. Quota sampling used for select individuals to observation and questionnaire.

Result

Data collected from 50 places and 384 people. Majority of places had a handwashing facility (82%) clean (97.5%) running water (74%) soap (92.6%) and posters requesting to wear masks (72%). Facilities enhance social distance, poster on correct hand washing technique not displayed (86%) in most of the places. Majority of the study population adhered to hand washing (69.27%) and wore face masks (90.36%), Yet, the majority didn't maintain the social distance (63.02%). Self-declared adherence was good (53.91%) in the majority of the study population.

Discussion and Conclusions

It is necessary to give attention to display posters on handwashing, correct technique of handwashing, and social distancing in crowded places. Poorest adherence revealed to maintain social distancing.

Keywords: COVID-19, facility availability, adherence, Preventive measures, Hand washing, Social distancing

1 INTRODUCTION

COVID-19 is an infectious disease caused by newly discovered Coronavirus. It was responsible for the outbreak start from Wuhan, China which has quickly spread worldwide. It is necessary to adhere to preventive measures to control COVID-19.

2 BACKGROUND

COVID 19 can affect people in different ways, some may be asymptomatic, most of the infected people develop mild to moderate respiratory symptoms, some may develop Severe Acute Respiratory Disease (1). The World Health Organization (WHO) declared it as a Public Health Emergency of International Concern (2). According to the WHO Coronavirus (COVID-19) dashboard on 28 March 2021, there were over 126.35 million confirmed cases and 2.76 million deaths have been reported due COVID 19 (3). In Sri Lanka up to date (28/03/2021), there were total 91839 COVID-19 cases confirmed and 559 death have reported (4).

Incubation period of COVID 19 virus is 2 to 14 days. Reverse Transcriptase Polymerase Chain Reaction test used to screen and diagnose the disease. The virus is spread by droplets. Virus spread can occur mainly in three ways, by direct spread (diseased person to healthy person by talk, sneeze or cough), or by inhaling (from the retained virus in the air), or by contaminated surfaces (when touching the surface and face) (5).

It is necessary to adhere to the COVID-19 preventive measures to minimize the spreading of disease among the community. To ensure adherence to COVID-19 preventive measures in crowded or public places (such as supermarkets, banks, bus stands, dress points, general goods stores) it is necessary to provide certain facilities (such as a sink with clean water supply, soap, sanitizers, audio/ visual messages, spatial changes to ensure social distancing) to customers/ users by owners or in charge of such places. In this study “Facility availability” term used as a general term to mean availability of those certain facilities described above.

Several vaccines have been approved for COVID-19. Most of the countries start immunization programs for their population (6), (7). Sri Lanka also started an immunization program from February 2021 (8). Though, preventive measures, early screening, diagnosis, isolation, and supportive treatment are important strategies to face COVID 19 pandemic. Preventive measures are the main strategy for limiting the spread of disease. Sri Lanka adopts and promoted World Health Organization recommendations (9) which include, Hand hygiene (clean hands regularly with soap and running water or clean hands with 70% alcohol-based hand sanitizers), maintain social distance (1 to 2 meter), avoid going to crowded places, use Personal Protective Equipment (PPE), avoid touching mouth nose and eyes, follow good respiratory hygiene (covering mouth and nose when cough or sneeze, dispose used tissues and wash hands) Self-isolation or stay home when having respiratory symptoms like cough, headache, mild fever.

To facilitate and encourage adherence to WHO recommended preventive measures there should be health educational posters, audio, video, and necessary facilities like hand hygiene amenities, soap, clean water, alcohol-based hand sanitizers in public places. There should be frequent observational

audits to assess the preparedness for preventive measures and check whether the public adheres to the preventive measures. According to the result of the study, reinforcement measures can be taken to increase facility, preparedness, and adherence to COVID 19 preventive measures. If the general population neglects the preventive measures, spread of COVID 19 will aggravate and Sri Lanka health sector may not tolerate the pandemic situation. Hence this is a timely need study for Sri Lanka.

Study carried out in Turkey, describe the main COVID 19 preventive and control measures in the community such as quarantine, avoid crowd, hand hygiene, isolation, personal protective equipment, school measures, social distancing, and workplace measures (10). A study done in Somalia showed a substandard level of compliance to COVID 19 preventive measures and determined high adherence scores in the female gender, being a healthcare worker or student, getting COVID-19 information from official sources and having postgraduate education (11). Factors such as Being a male, active smoking, and believing that COVID 19 is not more severe disease was also associated with non-adherence to COVID 19 protective measures (12). Research done in Brazil revealed that 98.7% of participants practiced regular handwashing, 92.6% of participant adhered to social distancing, and 45.5% participant used a face mask when going outside (13). Observational compliance audit done in Ghana selected transportation stations revealed that 80% of transportation station have adequate facility to hand hygiene, over 90% of the stations, face masks were either not worn or only worn by a few passengers (14).

There are 25 districts in Sri Lanka. Galle district has a higher population density compared to most of the other districts in Sri Lanka (15). Due to high population density and feasibility, Galle district was selected for the study.

The main aim of this study was to assess the facility availability for COVID-19 preventive measures in different settings and to assess public adherence to COVID-19 preventive measures at different settings in Galle district, Sri Lanka.

3 METHODOLOGY

A descriptive cross-sectional study was conducted. Study had 3 parts, 1) observation for facility availability of selected study settings, 2) observation for adherence to COVID-19 preventive measures by the citizen of the selected areas, 3) an interviewer-administered questionnaire for self-declared adherence to COVID-19 preventive measures. The direct, structured, disguised observational technique used for observation. There are 19 divisional secretarial areas in Galle district. Ten areas have been selected for study randomly. Each area, one supermarket (food city), one government bank, main bus stand, one dress point, one general good store has been selected randomly for observation (total 50 data collecting points/stations). The study was conducted from 1st of February 2021 to 1st of March 2021. Study population consisted of selected data collection stations for observation and age more than 18

years citizens who live in selected study settings for interviewer-administered questionnaire and for observation. Sample size calculated by the formula for infinite population by Lawanga and Lemeshow. Total sample size was 384.

Initially data collection points observed for facility availability for COVID 19 preventive measures such as availability of poster, audio, or video on preventive measures, availability of facilities such as hand washing infrastructure, soap, hand sanitizers, etc... Data will be collected according to the observational questionnaire. Quota sampling method used for select individuals for observation. Individuals who are going to enter to data collection station (6 to 8 subjects from each station) observed for adherence to the COVID 19 preventive measures such as usage of handwashing facility, usage of hand sanitizer, maintain social distance etc... The quota sampling method used for Data collection for interviewer-administered questionnaire on sociodemographic characteristic and self-declare adherence to COVID 19 protective measures from individuals who are coming out from the data collection stations. (6 to 8 subjects from each station).

Interviewer administered questionnaire consisted of information about socio-demographic characteristics and self-declared adherence to COVID-19 preventive measures

Observational questions covered the main two areas ((1) Observation item in data collecting stations for assess the facility availability to COVID 19 preventive measures, (2) Observation of adherence to COVID 19 preventive measures. Each area sub divided into 3 areas (A- Preparedness for hand hygiene facility, B- Social distancing, C- Personal protective equipment)

Data entered to excel sheet, then exported to SPSS software after collection. Categorical data summarized by frequency and proportions. Continuous data summarized by mean and standard deviation. Public adherence to COVID-19 preventive measures assessed by 10 interviewer-administered questionnaires. If answer always- 2, Occasionally- 1 and never- 0 points allocated. Total marks calculated and marks ranged from 0 to 20. If total marks 16 or above 16 considered as adherence good, marks 12 to 16 considered as satisfactory, and below 12 considered as poor. Ethical clearance obtained from Postgraduate Institute of Medicine, University of Colombo.

4 RESULT

Data was collected from 50 data collecting points, 384 people for the observational checklist and 384 people for the interviewer-administered questionnaire which cover all 10 divisional secretarial areas.

Table 1 - Observational item in data collection station for assess facility availability to COVID-19 preventive measures on hand hygiene

| Observation item | Frequency | Percentage |
|--|-----------|------------|
| 1) Poster with information on hand hygiene | | |
| a) Not displayed at all | 21 | 42 |
| b) Displayed in some areas | 24 | 48 |
| c) Displayed in most areas | 05 | 10 |
| 2) Poster explaining correct hand washing technique | | |
| a) Not displayed at all | 43 | 86 |
| b) Displayed in some areas | 04 | 08 |
| c) Displayed in most areas | 03 | 06 |
| 3) Audio announcement about hand washing | | |
| a) No announcement at all | 40 | 80 |
| b) Announcement made only once or rarely | 8 | 16 |
| c) Announcement made several times | 2 | 04 |
| 4) Availability of at least one hand washing facility | | |
| a) Available | 41 | 82 |
| b) Not available | 09 | 18 |
| 5) Running water available for hand washing place | | |
| a) Available | 37 | 74 |
| b) Not available | 11 | 22 |
| 6) Available water visibly clean | | |
| a) Yes | 40 | 97.5 |
| b) No | 01 | 02.5 |
| 7) Soap (solid/liquid) is available for handwashing | | |
| a) Yes | 38 | 92.6 |
| b) No | 03 | 07.4 |
| 8) Availability of hand sanitizers | | |
| a) Available | 34 | 68 |
| b) Not available | 16 | 32 |

According to table 1, 58% of stations display posters with information on handwashing, 14% of stations display the correct way of handwashing and 20% of stations announce information about handwashing. The majority of stations made facilities to wash hand for their customers (82% of stations installed handwashing facilities, 74% of stations had running water facilities, among them 97.5% places provide visibly clean water, 92% stations provide soap and 68% stations provide sanitizers).

Table 2 - Observational item in data collection station for assess facility availability to COVID-19 preventive measures on social distancing

| Observation item | Frequency | Percentage (%) |
|---|-----------|----------------|
| 9) Visible/recognizable communication, message on social distancing | | |
| a) Not displayed at all | 28 | 56 |
| b) Displayed in some areas | 14 | 28 |
| c) Displayed in most areas | 08 | 16 |
| 10) Infrastructure or spatial changes to ensure social distancing | | |
| a) Available | 21 | 42 |
| b) Not available | 29 | 58 |

There are only 44% of stations displayed Visible/recognizable communication, message on social distancing, and only 42% stations have had infrastructure or spatial to ensure social distancing (table 2)

Table 3 - Observational item in data collection station for assess facility availability to COVID-19 preventive measures on personal protective equipment

| Observation item | Frequency | Percentage (%) |
|--|-----------|----------------|
| 11) Poster, audio, or video message of use personal protective equipment | | |
| a) Available | 36 | 72 |
| b) Not available | 14 | 28 |

According to table 3, 72% of stations had Poster, audio, or video message or use personal protective equipment.

Table 4 – Observation of adherence to COVID-19 preventive measures in different settings

| Observation item | Yes | | No | |
|---|-----------|------------|-----------|------------|
| | Frequency | percentage | frequency | percentage |
| Usage of handwashing facilities | 266 | 69.27 | 118 | 30.73 |
| People used soap during hand washing | 202 | 75.94 | 64 | 24.06 |
| Usage of sanitizers | 169 | 44.01 | 215 | 55.99 |
| People are maintaining social distance 1 to 2 meter | 142 | 36.98 | 242 | 63.02 |
| People wear face mask | 347 | 90.36 | 37 | 09.64 |
| People wear face mask in correct way | 294 | 84.73 | 53 | 15.27 |

Majority (69.27%) used to wash their hands before entering the study places and among them 75.94% of people used soap to wash hand. 90.36% of people used a face mask, 84.73% of people among them wore a face mask the correct way. Though, only 36.98% of people tried to maintain social distance (Table 4)

Table 5 – Socio Demographic information of the participant

| | Frequency | Percentage |
|-----------------------------|-----------|------------|
| Age | | |
| 18-37 | 127 | 33.07 |
| 38-57 | 152 | 39.58 |
| 58-77 | 104 | 27.08 |
| 78-97 | 01 | 0.27 |
| Gender | | |
| Male | 218 | 56.77 |
| Female | 166 | 43.23 |
| Marital status | | |
| Married and living together | 292 | 76.04 |
| Single/Separated/Widowed | 92 | 23.96 |
| Ethnicity | | |
| Sinhalese | 238 | 61.98 |
| Tamil | 63 | 16.41 |
| Muslim | 71 | 18.49 |
| Burger | 08 | 2.08 |

| | | |
|---------------------------------|-----|-------|
| Others | 04 | 1.04 |
| Religion | | |
| Buddhism | 204 | 53.12 |
| Hindu | 52 | 13.54 |
| Islam | 71 | 18.49 |
| Christian | 54 | 14.06 |
| Others | 03 | 0.79 |
| Highest educational achievement | | |
| No schooling | 05 | 1.30 |
| Up to O/L | 74 | 19.28 |
| Up to A/L | 203 | 52.86 |
| Diploma/Graduate/ Postgraduate | 102 | 26.56 |
| Living environment | | |
| Urban sector-residential area | 227 | 59.11 |
| Urban sector-slum area | 17 | 4.43 |
| Rural sector | 103 | 26.82 |
| Estate sector | 37 | 9.64 |
| Employment status | | |
| Employed | 231 | 60.16 |
| Unemployed | 153 | 39.84 |
| Average monthly income | | |
| No income | 116 | 30.20 |
| 0 - 50000 | 108 | 28.12 |
| 50000 - 100000 | 106 | 27.61 |
| More than 100000 | 54 | 14.07 |
| current state of using alcohol | | |
| Yes (Using) | 126 | 32.81 |
| No (Not using) | 258 | 67.19 |
| Current state of smoking | | |
| Smoking | 57 | 14.84 |
| Non-smoking | 327 | 85.16 |

Majority of the study population included the 38 to 57 years age group, the majority were Sinhalese, Buddhist, study up to A/L, living in urban sector residential area, nonalcoholic and nonsmoking (table 5).

Table 6 Self-declared adherence to COVID-19 preventive measures at different settings

| Question | Always | | Occasionally | | Never | |
|--|-----------|------------|--------------|------------|-----------|------------|
| | Frequency | Percentage | Frequency | Percentage | Frequency | Percentage |
| In recent days, have you tried to avoid crowded places? | 83 | 21.61 | 254 | 66.15 | 47 | 12.24 |
| In recent days, have you tried to refrain from shaking hands, touching your face by hands? | 177 | 46.10 | 175 | 45.57 | 32 | 08.33 |
| In recent days, have you tried to avoid people with respiratory symptoms like | 284 | 73.96 | 89 | 23.18 | 11 | 02.86 |

| | | | | | | |
|---|-----|-------|-----|-------|----|-------|
| cough, sneeze, fever? | | | | | | |
| In recent days, have you tried to maintain 1-2 m distance from each other in public places? | 229 | 59.63 | 93 | 24.22 | 62 | 16.15 |
| In recent days, have you washed your hands regularly? | 245 | 63.80 | 121 | 31.51 | 18 | 04.69 |
| In recent days, have you used hand sanitizer regularly? | 113 | 29.43 | 196 | 51.04 | 75 | 19.53 |
| In recent days, have you worn a face mask when you go in to public or crowded places? | 328 | 85.42 | 56 | 14.58 | 00 | 00 |
| Do you wash or change your mask after every use? | 180 | 46.87 | 193 | 50.27 | 11 | 02.86 |
| do you refrain from work and crowded places if you have fever, sore throat? | 302 | 78.65 | 73 | 19.01 | 09 | 2.34 |
| Do you wear/carry minimal accessories when you go out? | 153 | 39.84 | 186 | 48.44 | 45 | 11.72 |

As shown in Table 6, the majority of people occasionally tried to avoid crowded places (66.15%), always tried to refrain from shaking hands, touch face by hands (46.10%), always tried to avoid people with respiratory symptoms like cough, sneeze, fever (73.96%), always tried to maintain 1-2 m distance from each other in public places (59.63%), always tried to washed your hands regularly (63.80%), occasionally tried to use sanitizers regularly (51.04%), always wore face mask when going to public/crowded places (85.42%), occasionally wash or change mask (50.27%), always refrain from work and crowded place if they have fever, sore throat, occasionally tried wear minimal accessories when going out (48.44%).

Table 7 – Categorization of adherence to COVID-19 preventive measures

| Category | Frequency | Percentage |
|--------------|-----------|------------|
| Good | 207 | 53.91 |
| Satisfactory | 121 | 31.51 |
| Poor | 56 | 14.58 |

As indicated in table 7, the majority of the study populations' (53.91%) adherence to COVID-19 preventive measures were good and only 14.58% of the populations' adherence was poor.

5 DISCUSSION

Even though there are many vaccines available for COVID-19, adherence to preventive measures is also very important to control outbreak (6). Our result showed that the majority of places have handwashing facility (82%) with clean (97.5%) running water (74%) and soap (92.6%) (table 1) and most of the places found to have a poster with message to wear a mask (72%) (table 3) before entering the places. Posters about hand washing were available in 58% of places, though, posters on the correct technique of handwashing were not displayed (86%) in most of the places (table 1). Facilities that enhance social distance were not available in most of the places (table 2). This is much better than in some other countries according to the results of studies (14). According to guidelines of the ministry of health Sri Lanka, it is necessary to provide handwashing facilities and other facilities to customers to adhere to COVID-19 preventive measures (5).

According to the result of observation of public adherence to COVID-19 preventive measures, the majority of the study population adhere to hand washing (69.27%) and wearing face masks (90.36%) Majority wore face masks the correct way (table 4). Yet, the majority didn't maintain the social distance. Research done in Brazil found that adherence to hand washing and maintain social distancing was better in Brazil than in Sri Lanka, but 45.5% wore face masks compare to 90.36% in our study (13). A study done in Congo reveals adherence to COVID-19 preventive measures poor than our study population (16).

Self-declared adherence was good (53.91%) for the majority of the study population, satisfactory for 31.51% of the population, and poor in 14.58% of the population. Most of the people declared that they have adhered to preventive measures in recent days. Our study population adherence to preventive measures better than most other places in the world (17), (18),(19).

Even though we can satisfy about Sri Lankan context of facility availability and adherence to COVID-19 preventive measures (observed and self-declared), continuous improvement should be done to battle COVID-19 pandemic. It is necessary to give attention to display posters or messages on handwashing, correct technique of handwashing, and social distancing in crowded places. Poorest adherence revealed to maintain social distancing; therefore, it is necessary to enforce people to adhere to social distancing by health messages, provide facilities like spatial changes.

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DECLARATIONS ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

The research proposal was approved by the Ethics Review Committee of the Post Graduate Institute of Medicine, University of Colombo, Sri Lanka. Written informed consent was taken before the interview.

CONSENT TO PUBLISH

Administrative authorities consented the collection and publication of data. All authors read the manuscript and agreed to publish.

CONFLICT OF INTEREST

Investigators do not have any conflict of interest to declare.

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