

Compliance with Social Distancing, Face Mask and Sanitizer Use Measures against COVID -19 in Kathmandu Valley

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ABSTRACT

Background: The novel coronavirus has caused significant global impacts and is still continuing. Social distancing, the use of face mask and sanitizer (SMS) measures have become the prominent security measures to diminish the COVID-19 transmission. Hence, this study aims to assess the general public's compliance towards SMS measures set by the Government of Nepal against COVID-19 in Kathmandu Valley.

Methods: This cross-sectional study was conducted in selected public places of Kathmandu valley, Nepal employing an observational checklist from 5-6 August 2020. The practice of using facemask and its types were observed at the individual levels (malls, groceries, shops and 30 vehicles). The practice of SMS was studied in 23 public places that included banks, hospitals, vegetable markets, shopping malls, temples, restaurants and public buses.

Results: A total of 23 public places and 4502 individuals were included in the study. More than two-third (72.6%) participants were observed using mask. Among the mask users, 27% did not follow the appropriate technique. Maintaining social distance of 2 meters was less followed by the people in the public places, hospitals and public vehicles. Only 37.5% institutions had set the marking of the social distance of 2 meters. Availability of hand washing facilities with soap or sanitizer was found less in the public places.

Conclusions: Overall, the compliance measures of SMS set by the Government of Nepal against COVID-19 were not followed appropriately. Efforts are needed to improve the proper practice of using the mask and conveying the SMS message by the Nepal Government which is important step for the prevention of COVID-19 in Nepal.

Keywords: COVID-19; hand washing; social distancing; uses of mask

INTRODUCTION

In the midst of pandemic and uncertainty caused by the COVID-19 worldwide, introducing non-pharmaceutical measures is crucial to reduce infection, since the world is racing towards potential vaccines and therapeutics for COVID-19 prevention and treatment.¹⁻⁴ There has been 298,915,721 confirmed COVID cases worldwide, with 5,469,303 deaths, and 11,604 deaths reported in Nepal till January 10, 2022.⁵ Moreover, various public health measures like personal hygiene, physical distancing and surface disinfection have established their relevance in preventing the spread of COVID-19.^{6,7} The Government of Nepal also adopted various preventive measures for the control of virus.⁸⁻¹⁰ Following the social distancing, mask use and sanitizer use (SMS) measures while visiting busy and public places can primarily serve as a means of source control in this pandemic.¹¹⁻¹⁵ Hence, this study

aims to assess the compliance of public places and general public towards SMS measures devised by the Government of Nepal against COVID-19 at individual as well as public mass level in Kathmandu valley, Nepal.

METHODS

A descriptive cross-sectional study was conducted at individual level and institutional level by using an observational checklist. Non-probability sampling was used to select the public places. Thus, convenience sampling was employed at the time of data collection. General population available at the selected public places at the time of observation was the study participants. The data was collected for two days (5th and 6th August, 2020). Mostly data were collected at a time of respective business hour in public places of Kathmandu valley by segregating individual and mass levels.

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For individual level, general public at public buses, vegetable markets and shopping malls; and for the public mass level, public places like vegetable markets, shopping malls, temples, buses, restaurant/hotels and hospitals were selected. Data enumerators observed whether the masks were used or not, type of the mask used and the techniques of wearing mask by sitting at the public entrance point (public bus, shopping malls including Bhat-Bhateni shopping center, and vegetable market). At public mass level practice of social distancing, use of mask and use of sanitizer was observed.

Ethical approval was obtained from the Ethical Review Board (ERB) of Nepal Health Research Council prior to conducting the study (ERB no: 568-2020). The observation check list was validated with various experts of medical field. Obtained data was entered; cleaned and data analysis was performed in Statistical Package for the Social Sciences Version 16.0

RESULTS

A total of 23 public places and 4502 general publics were observed during this study.

Table 1. Observed public place.

Public place	Number
Vegetable markets	2
Shopping malls	4
Hospitals	4
Banks	4
Government offices	2
Temples	2
Restaurants	2
Bus parks	3
Total	23

Table 1. illustrates the observed public places where observation was focused on 23 public institutions based on the practice of social distancing, use of mask and use of sanitizer.

Table 2. General public observed in different setting.

General public location	Number of participants
In public buses	255
In vegetable markets	2698
In shopping malls	1549
Total	4502

Table 2 depicts the observed number of participants using mask, types of masks they used and its using technique where most (2698) of the participants were observed in vegetable markets during respective business hours.

Table 3. Use of mask and its types.

Use of Mask (n = 4502)	Frequency	Percent
Mask used	3244	72.1
Mask not used	1258	27.9
Types of masks used at Individual level (Public places) n=3244		
Surgical mask	1831	56.7
KN5/ N95 mask without filter	139	4.2
KN5/ N95 mask with filter	733	22.5
Cloth mask	541	16.6

Out of 4502 individuals observed, majority of the participants (72.1%) had used the mask. Regarding the types of masks used, more than half of the participants (56.7%) had used surgical mask. Moreover, Participants wearing KN5/ N95 mask with filter were seen much higher (22.5%) than the participants wearing cloth KN5/ N95 mask without filter mask (4.2%). Almost 17 percent of the participants were seen wearing cloth mask only.

Table 4. Ways of using mask.

Techniques of using Mask in public places (n=2703)	Frequency	Percent
Mask used properly covering nose and mouth with air tight seal	1964	72.6
Mask used without pressing the strip of the mask with the shape of nose	219	8.1
Mask on the chin	342	12.6
Mask in the neck	170	6.2
Mask hanging in the hand	8	0.3

Table 4, shows the detail of mask-using practices. A total of 541 participants who used cloth mask were excluded when observing the ways of wearing mask. Therefore, 2703 participants were observed based on their ways of wearing different types of masks at public places. Majority of participants (72.6%) had worn the mask appropriately by covering their nose and mouth (air tight seal) while more than one quarter participants (27.3%) had worn the mask in inappropriate ways i.e. wearing the mask on the chin or below the nose, hanging mask on the neck and hand, and wearing mask without pressing the strips of the mask with the shape of the nose.

Table 5. SMS measures in various institutions and public buses (Information is not clear - try to rearrange).

SMS measures in various institutions and public buses	Frequency	Percent
Banks, Temples, Vegetable markets, Restaurants and Malls (n=16)		
Most customers wearing mask (surgical mask / N95 with filter)	16	100
Most staff wearing mask (surgical mask / N95 with filter)	13	81.2
Arrangement of Hand Washing or shop	8	50
Set marking for social distance (2meter)	6	37.5
Followed the rule of social distance (2 meter)	5	31.2
Public Buses (n=30)		
Use a mask by passengers (Surgical mask or N95 with filter)	36	86.6
Use of masks by bus drivers and co-drivers (Surgical mask or N95 with filter)	29	96.6
Sanitizer provided while entering the bus	14	46.6
Arrangement of sitting	13	43.3
Use sanitizers or wash their hands with soap at the time of selling goods to customers (n=6)		
Shopping malls	2	33.3
Vegetable market	0	0

Table 3 displays SMS measures at different institutional levels. During observation, majority of the participants (81.2%) from bank, temple, vegetable markets, restaurants and malls were wearing mask (surgical mask / N95 with filter).

The marking of social distancing (2m) was found to be set in more than one third (37.5%) of the institutions however, only 31.2 percent places had followed the rules of social distancing. Moreover, half of the places had the availability of the sanitizer or soap.

Also, about one third (33.3%) of the public in the shopping malls had used the sanitizers or wash their hands with soap while selling goods to the customers however those arrangements were not made available at vegetable markets.

Similarly, out of 30 public buses, social distance measures like arrangement made to seat only one person by leaving one seat was followed by less than

half (43.3%) of the public buses. Similarly, less than half (46.6%) of the public bus had the provision of sanitizer while entering the bus. Moreover, majorities (96.6%) of the bus driver and co-driver and the passengers had used the mask.

Table 6. SMS Measures in Private and Government Hospital (n=5).

SMS Measures	Frequency	Percent
Set marking for social distance (2meter) in front of OPD	4	80
Set marking for social distance (2meter) in front of Pharmacy	2	40
Set marking for social distance (2meter) in front of Ticket counter	1	20
Set marking for social distance (2meter) in canteen	0	0
Followed the rule of social distance	1	20
Most hospital staff wearing mask (surgical mask / N95 with filter)	5	100
Most clients wearing mask (surgical mask / N95 with filter)	5	100
Availability of the sanitizer or Soap	4	80

Out of 5 private and government hospitals, marking of 2m social distancing was found in front of OPD, pharmacy and ticket counter in 80%, 40% and 20% of hospitals. These arrangements were totally out of reach in the canteen areas. Only few of the hospitals (20%) followed the 2-meter social distancing. The availability of the sanitizer or soap was found strikingly higher (80%) in those observed hospitals.

DISCUSSION

This study was conducted aiming at measuring the compliance of SMS measures in Kathmandu valley. Observational checklist was used to observe the use of sanitizer and mask and maintaining social distancing at 23 public places. Most of the observed public areas were small and most observations occurred in shopping mall or convenience stores. The findings revealed that substantial number of the participants were found wearing mask. Interestingly, improper way of wearing mask was more common. Furthermore, almost 57% of the participants were seen wearing surgical masks and the remaining were seen wearing KN95/N95 (with filter) masks, Cloth mask and KN95/N95 (without filter). The findings from the study done in United States which compared

COVID-19 growth rates before and after mask usage resulted in decline of COVID-19 cases by two-percentage over three weeks with mask mandate. As a result, the findings indicate that wearing a face mask in public could help to prevent the spread of COVID-19.¹⁶ Various mask materials have been compared in studies, and it has been concluded that any mask that covers the nose and mouth would be beneficial, as facemasks can also obstruct regular hand-nose contact. Surgical masks, on the other hand, are usually safer than cloth masks, and research has indicated that KN95 masks with valves should be avoided.¹⁷

Regarding the social distancing, this study revealed just a few places (37.5%) had set markings for the social distancing of two meters at the institutional level. However, only one-third of them (31.25%) followed the rules of social distancing. In addition, only half of the institutions had the facility of sanitizer or soap and water. Less than half (43.3%) of the observed vehicles had the arrangement of leaving one seat empty as a mark of social distancing. Early, decisive, rapid, coordinated, and systematic implementation of social distancing measures is likely to be more successful in slowing the spread of the virus than delayed actions, according to observational and statistical evidence from previous pandemics and from experiences with COVID-19 in China. It has been discovered that the number of COVID-19 cases could have been decreased by 66%, 86%, and 95%, respectively, if a variety of non-pharmaceutical strategies, including social distancing, had been implemented one week, two weeks, or three weeks earlier in China.¹⁸ Additionally, a greater physical distance (>1 or 2 meters) was linked to a lower risk of transmission.¹⁹

Our study revealed that majority of the hospital had the provision of soap or sanitizer also, about one-third of the sales people were using hand sanitizers or washing their hands with soap before selling at grocery stores and shopping mall. However, this practice was not followed in the vegetable markets. In support to our study, it has been revealed from the study done in US, Individual habits such as face coverings, hand sanitizing, and social distancing have been related to a lower risk of COVID-19 infection.¹⁹

In line with our study, a systematic review and meta-analysis which reviewed 172 observational studies done across 16 countries and six continents in health-care and non-health-care settings discovered transmission of viruses was lower with physical distancing of 1 m or more, compared with a distance of less than 1 m. Also revealed that the use of face mask could result

in a large reduction in risk of infection, with stronger associations with N95 or similar respirators compared with disposable surgical masks or similar.²⁰ face masks, and eye protection on virus transmission in health-care and non-health-care (eg, community

The finding from our study showed social distancing was unsatisfactory at business sectors and even hospitals. Therefore, strict physical distance provision is important to minimize the risk of transmission, although it is difficult to maintain social distance measure. Despite these findings, our study has few limitations. First, this study followed a cross-sectional observational study design. Therefore, causal inferences may not be established. Finally, the duration of the study was short and could therefore not capture compliance of participants throughout their journey.

CONCLUSIONS

More than one fourth of the participants in the public place did not follow the practice of using mask and more than a quarter participant among the mask users did not wear the mask properly with the airtight seal. Hand washing arrangements were available only in half of the public places. The marking for social distance was set by more than half of the public places, while the hospital marking varied within their places. Social distancing was less followed in different institutions Therefore; policies need to be developed to correctly upgrade the use of SMS measures by the public. Free facemask arrangement, hand-washing availability for visitors, social distancing measures are required in all centers, hospitals and public places that can expand public consistency with the correct practice of SMS measures.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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