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Compliance with Social Distancing, Facial Mask, Sanitizer/Hand Washing against COVID-19

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ABSTRACT

Introduction
At the end of 2019, a novel coronavirus spread rapidly, resulting in a global pandemic. Many countries have employed various nonpharmaceutical interventions, including social distancing, mask use, and hand hygiene measures (SMS). Previous studies have reported that compliance with these preventive measures varied widely. So, this study was conducted to assess the compliance with social distancing, mask use, and sanitizer/soap use measures in Biratnagar.

Methods
This was a descriptive cross-sectional study conducted from September to November 2021 among 310 individuals at a hospital, supermarket, and vegetable market in Biratnagar. Using convenience sampling, mask use, social distancing, and hand hygiene was observed. Individuals not following SMS measures were asked about their reasons for non-compliance.

Results
Among 310 individuals, 84.19% used masks, but only 86.97% of them wore them correctly. Surgical masks were used by 93.1%, while 6.9% used cloth masks. Social distancing was followed by 20.96%, and 31.29% used hand sanitizer. Common reasons for noncompliance included discomfort with masks, cost of sanitizer, lack of handwashing facilities, absence of social distancing markings, and poor adherence by others.

Conclusion
Compliance of face mask was relatively high, while compliance with social distancing and sanitizer use was low highlighting the need for improved public awareness, better infrastructure, and stricter enforcement. In low-resource settings like Nepal, the continued promotion of SMS measures is essential for managing current health threats and preventing future outbreaks of respiratory illnesses.

Keywords
COVID-19; mask use; sanitizer use; social distancing

INTRODUCTION

COVID-19 virus is mainly transmitted through air which is responsible for spreading of the disease. One of the major routes of transmission of COVID-19 virus is primarily via droplets from speaking, coughing or sneezing. According to the WHO global strategy to respond to COVID-19, the goal of all countries is to control the pandemic by slowing down the transmission to reduce the immediate burden on health systems and to reduce the mortality. [1]

So, in the case of pandemic like Covid-19 the country relies on non-pharmaceutical measures such as Social distancing, use of mask and use of sanitizer/soap (SMS).[2] Previous studies have reported a wide range of compliance with preventive measures: mask usage ranged from 77% [3] to 94%[4], social distancing from 45.5% [5] to 72%[6], and hand hygiene practices (using sanitizer or handwashing) from 50.2%[5] to 74%.[6] Despite the extensive knowledge and researches about the efficacy and effectiveness of these measures, the application seems to be lacking at the basic level. People seem to ignore basic protocols. Hence we conducted this study to find out whether people living in Biratnagar have compliance about using mask, maintaining social distancing and using hand sanitizer in public places and reasons for noncompliance.

METHODS

It was a descriptive cross-sectional study conducted after receiving ethical approval from the NMC Research and Ethical Committee. Data were collected from individuals visiting Nobel Medical College, Bhatbhateni Supermarket, and a local vegetable market between September to November 2021. Convenience sampling was employed during business hours.

A total of 310 participants were included: 104 from the hospital, 103 from the supermarket, and 103 from the vegetable market. In the hospital setting, participants were evenly distributed across the outpatient department (OPD), outside the pharmacy, and the laboratory. Similarly, market participants were evenly divided between the supermarket and the vegetable market.

Participants were observed in real time at the respective sites. After observing, verbal consent was taken before collecting the data. Observations focused on individual compliance with Social distancing, Mask use, and Sanitizer/soap use (SMS) measures: specifically whether masks were worn or not, the type of mask used, proper usage techniques, maintenance of social distancing, and sanitizer/soap usage Individuals not following SMS measures were asked about their reasons for non-compliance. Data were recorded on a structured proforma and later entered into SPSS version 20 for analysis.

RESULTS

In this study. 310 individuals were included from 10 study sites (Table 1).

Table 1. Study sites for the compliance with social distancing, facial mask, sanitizer/hand washing against COVID-19

Study sites	Number
Hospital OPDs	3
Hospital Pharmacy	3
Hospital Labs	2
Bhatbhateni Supermarket	1
Local vegetable market	1

Mean age was 37.34± 9.72 years. The minimum age was 20 and maximum age was 58. There were 135 female participants and 175 male participants.

Out of the 310 participants observed at the hospital, supermarket and vegetable market, 84.19% (261) were found to wear the mask while 15.81% (49) of the participants were not wearing the mask.

Out of entire mask users (261), 93.1%(243) were found to have used surgical mask followed by 6.9% (18) using masks made of cloth (Figure 1).

Out of 261 people who were wearing mask, only 86.97% (227) were found to be wearing mask correctly, 13.03%(34) were found to be using mask incorrectly especially wearing mask on the chin or below the nose, hanging the mask on the neck or hand, also people wearing mask without pressing the strips of the mask with the shape of the nose.

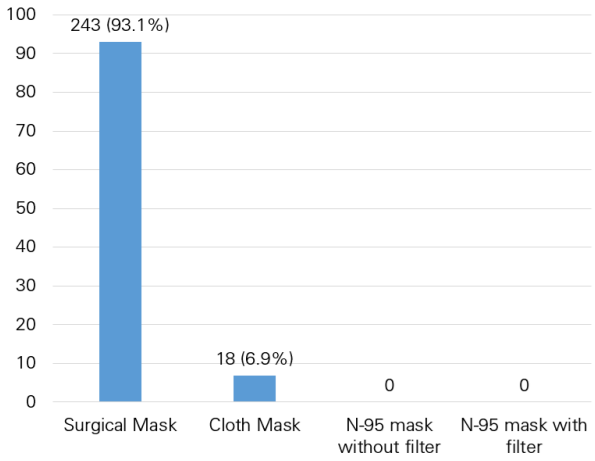

Figure 1. Types of mask used

Table 2. Reasons of non-compliance for sanitizer use

Sanitizer use	Number (%)
I am always clean	0
Out of habit	38 (17.84%)
By oversight/negligence	0
My hands do not get dirty	0
There is no water everyday	0
Sanitizer is expensive	109 (51.17%)
There is no place to wash my hands	56 (26.30%)
There is no risk because I am resistant	10 (4.70%)
	213

Despite there was no marking for social distancing, among the 310 participants, 20.96% (65) were found to be following the social distancing.

Among the 310 participants, 31.29% (97) of participants were using sanitizer.

Out of 213 people who were not using sanitizer,

Table 3. Reasons of non-compliance for mask use

Sanitizer use	Number (%)
I don't want to wear	10 (20.41%)
Uncomfortable	30 (1.23%)
Masks are expensive	5 (10.20%)
I don't wear them all the time	4 (8.16%)
	49

we found out that 38(17.84%) gave reason for noncompliance with sanitizer use to be out of habit. 109 (51.17%) people said that sanitizer is expensive. 56 (26.30%) said there is no place to wash hands and 10 (4.70%) said there is no risk because they are resistant to COVID-19. (Table 2)

Out of 49 people who did not use mask, 10 (20.41%) said that they don't want to wear mask, 30 (61.23%) said they are uncomfortable on wearing mask, 5 [10.20%] said masks are expensive and 4 (8.16%) said they don't wear them all the time. (Table 3).

Table 4. Reasons of non-compliance for social distancing

Sanitizer use	Number (%)
There are no set markings	45 (18.37%)
I don't think it is necessary	0
I forget every time I go out	76 (31.02%)
I like talking with people in close distance	0
Other people are not following	124 (50.61%)
	245

Out of 245 people who did not followed social distancing, 45 (18.37%) gave the reason of no set markings, 76 (31.02%) said that they forget every time they go out, 124 (50.61%) people said that other people are not following. (Table 4).

DISCUSSION

The unprecedented outbreak of COVID-19 placed a substantial burden on global health, with 768 million confirmed cases and nearly 7 million deaths worldwide, including over 1 million cases and more than 12,000 deaths in Nepal (WHO). In response, the Government of Nepal implemented preventive strategies such as awareness campaigns on social distancing, mask use, and hand hygiene.

Among the 310 participants, a high prevalence (84.19%) of mask use was observed, especially in hospitals and supermarkets where entry protocols likely enforced compliance. This rate is consistent with previous studies in urban centers of Nepal (72.6%) [7]and internationally (e.g. India 86.7%[8], California 88.5%[9]), suggesting that urban populations, especially those near medical institutions, may have higher awareness and adherence. The predominance of surgical mask use (93.1%) over other types such as N95 was variable with other studies done in Nepal which could be attributed to cost, comfort, and accessibility factors particularly relevant in Terai which is tropical region of Nepal.

However, compliance with social distancing (20.96%) and sanitizer use (31.29%) was notably low, especially in local vegetable markets and hospitals. This contrasts with higher adherence seen in other studies in Kathmandu (70.92%)[7] and India (83%).[10] Several factors may explain this: lack of physical infrastructure (e.g., floor markings), absence of enforcement, public fatigue, and a false sense of security following vaccination. The absence of publicly available hand sanitizers and the cost associated with their personal purchase could also limit their use, especially among economically disadvantaged groups.

The implications of these findings are critical. While mask usage remains relatively high, low adherence to social distancing and hand hygiene suggests significant gaps in public health preparedness. These basic, cost-effective interventions such as Social distancing, Mask use, Sanitizer use remain essential not only during pandemics but also for preventing the spread of future respiratory infections, including seasonal influenza or other novel pathogens. Public health strategies must go beyond awareness campaigns and incorporate environmental design (e.g., visible markings, sanitizer stations) and policy enforcement to support long-term behavior change.

Furthermore, the study highlights the importance

of health education and awareness among people, especially in post-vaccination periods where overconfidence may set in. These insights are particularly valuable for policymakers and public health officials. However, this study has certain limitations. It was conducted following the second wave of COVID-19, a period during which perceived risk may have decreased due to the availability of vaccines. Additionally, the sample size was small and limited to a specific urban setting, which may limit the generalizability of the findings.

Even though COVID-19 cases has been seen rarely nowadays, it can be seen in future because of the mutation of the virus, so these SMS measures can be applied during those times. In low income country like Nepal, immediate ways to control pandemics or epidemics are very difficult due to lack of resources and coordination, so during these times SMS measures can be very helpful to control the spread of infection. These simple measures can not only be applied in COVID-19, but also can be applied in any respiratory borne diseases. So SMS measures can be very useful not only for present but also for future.

CONCLUSION

Compliance of face mask was relatively high, while compliance with social distancing and sanitizer use was low highlighting the need for improved public awareness, better infrastructure, and stricter enforcement. In low-resource settings like Nepal, the continued promotion of SMS measures is essential for managing current health threats and preventing future outbreaks of respiratory illnesses.

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CONFLICT OF INTEREST

The author(s) declare that they do not have any conflicts of interest with respect to the research, authorship, and/or publication of this article.

AUTHOR CONTRIBUTIONS

- Dr. Jyoti Kayastha- research design, literature review, data collection and analysis, manuscript preparation
- Dr. Prakash Kayastha- research design, literature review, manuscript preparation
- Dr. Rabin Nepali- research design, literature review, manuscript preparation
- Dr. Usha Kayastha- research design, literature review, manuscript preparation

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