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ORIGINAL ARTICLE

MASK UTILIZATION AND PHYSICAL DISTANCING PRACTICES AS A PREVENTIVE RESPONSE TO COVID-19 AT A TERTIARY HOSPITAL, ETHIOPIA

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ABSTRACT

Introduction: *The impact of COVID-19 has influenced every society in the globe since it was declared as public health emergency of international concern. The recommendation to prevent the transmission includes proper hand hygiene, proper physical distancing and face mask utilization in public places.*

Objective: *To assess the practice of face mask utilization and proper physical distancing in patients and attendants visiting Tikur Anbessa Specialized Hospital Out-patient waiting areas.*

Methods: *Institution-based cross-sectional survey was conducted. All patients and attendants visiting the out-patient waiting areas of Tikur Anbessa Specialized Hospital were the source population. Anonymous non-participatory observation data collection using a pretested checklist was used. Excel and SPSS softwares were used for data management and analysis. Descriptive analysis was used to present data.*

Result: *A total of 3816 individuals were observed in the study. Among them 53.2% were female. Proper face mask utilization was practiced almost universally, 93.4%. Proper physical distancing was practiced in 48.3% of them. The presence of individual enforcement, the daily patient load and the capacity of the waiting areas were influencing the practice of proper physical distancing.*

Conclusion: *Proper mask utilization among individuals visiting out-patient waiting areas of Tikur Anbessa Specialized Hospital is close to universal relative to physical distancing. Overcrowding and lack of sustainable enforcement of good practices lead to low practice of proper physical distancing.*

Key words: *COVID-19, mask utilization, physical distancing, Tikur Anbessa Specialized Hospital, Ethiopia*

INTRODUCTION

Since the director-general of WHO declared the novel corona virus out break a public health emergency of international concern (PHEIC), WHO's highest level of alarm, COVID-19 has affected the day to day activity of every society in every country in every continent (1, 2). Globally, as of Aug. 24, 2020, COVID-19 has infected more than 23 million people and killed more than 800 thousand people (3). In Africa, as of Aug. 24, 2020, COVID-19 has infected more than 11 million patients and has killed more than 27 thousand (3). Ethiopia is not also spared from COVID-19. Ethiopian Ministry of health has reported that there are more than 40 thousand infected patients and more than 680 dead (4). Total number of COVID-19 confirmed patients at Tikur Anbessa Specialized Hospital (TASH) has passed 280 (5).

There is no anti-viral curative therapy to date. However, there are preventive measures recommended for the general public that would halt the transmission and spread of the virus. The advices of the World Health Organization (WHO) for the general public were maintaining a 1 meter distance, cleaning hands regularly and thoroughly, following good respiratory hygiene by wearing a fabric mask or medical mask and covering ones mouth and nose with bent elbow or tissue while coughing or sneezing (6). The centers for disease control and prevention (CDC) also recommends the general population to wash their hands often, to avoid physical proximity less than 6 feet or 2 meters, to wear a mask outdoors, to cover sneezes and coughs and to monitor daily health (7).

On a study conducted in China, use of face mask, covering coughs and sneezes with soft-tissue or if unavailable using flexed elbow to cover, regular hand hygiene with water and soap or alcohol (>60%) based sanitizer, and avoiding contact with infected individuals or maintaining appropriate physical distance were the recommendations (8). The Ethiopian government also declared a state of emergency for the prevention of the wide spread of the transmission. The directive of the proclamation involves actions such as prohibiting all gatherings more than four persons, wearing masks or scarves and the like (9). In a survey conducted online among Chinese general public, almost all individuals wore masks in public places (98.0%) (10). Similarly, a cross-sectional study among Health Care Workers in Pakistan showed that mask using among public gatherings is very high (93.9%) (11).

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Whereas in an institution-based cross-sectional study done in eight teaching hospitals of Ethiopia, the practice of facemask usage was 67.3% and the practice of physical distancing was a staggeringly low (22.4%) among health care workers (12). Likewise, the practice is even worse among health center visitors in Jimma; proper physical distancing (1 meter distance between individuals) was practiced only in about one third of the participants (33.6%) and mask usage was even lower (14.2%) (13).

Tikur Anbessa Specialized Hospital (TASH) has structured an Emergency Operation Center (EOC) for Prevention and control of COVID-19 in the institution (5). Under the EOC, Infection Prevention and Control (IPC) committee works to establish the practices of proper hand hygiene, proper physical distancing and proper respiratory hygiene in the hospital compound. The aim of this study is to evaluate the effectiveness of these actions by assessing the practice of mask utilization and proper physical distancing. We also describe the difference of practices in different waiting areas of the hospital.

PATIENTS AND METHODS

Study Design and Study area: the study involved institution based cross-sectional survey at Adult Outpatient waiting areas of Tikur Anbessa Specialized Hospital (TASH), Addis Ababa, Ethiopia. The hospital is a tertiary care facility and the largest referral public hospital of the country. There are 51 outpatient clinics where specialty, subspecialty and superspecialty services are delivered to half a million population annually. The management of TASH has organized Emergency Operation Center for the purpose of halting the transmission and spread of COVID-19. Different committees have been organized such as Infection Prevention and Control (IPC) committee. Face mask utilization and proper physical distancing enforcements were in practice by the committee.

Study period: the study was conducted from June 22 to August 24, 2020 on a weekly based schedule. Weekly data collection on Monday's was identified on the basis of peak patient flow, as evidenced from the hospital's health management information systems. ***Source and study population:*** among all patients and attendants, visiting the adult out-patient waiting areas of TASH from June to August, 2020, those visiting on Mondays and who appear to be above 14 were included in the study.

Data collecting instruments: Anonymous non-participatory observation data collection using a pretested checklist was used.

Well trained observers who were acquainted with the acceptable definitions of proper mask utilization and proper physical distancing, as proposed by WHO, were employed. The Observers, blending among the patients and attendants, collected the data using the checklist. The checklist includes the date of observation, time of observation, total number of observed individuals in each Out-patient waiting areas (groups), sex in the groups, proper physical distancing in the group, proper mask utilization in the group and the presence of sneezing or coughing in the group.

The observation sites were various out-patient waiting areas: Cardiac and Neurology Clinics, Out - Patient Laboratory, Surgery and Gynecology Clinics, GI and Chest Clinics, Ortho (Pediatrics Clinic), Diabetes (Endocrine Clinic), Oncology, Infectious Disease Clinic, and ANC. The observers studied and recorded their observation on all patients and attendants who are waiting at the out-patient waiting areas. The duration of observation was for about 15 minutes in each waiting area, on each observing day.

Operational definition

Proper physical distancing is a distance between two individuals, which can allow at least two individuals to pass through, which roughly correlates with the set point defined by WHO as 1meter apart. (6) Proper mask utilization is any medical, non-medical, respirator or cloth mask, which covers the nose, mouth and chin of an individual. (6)

***Data management and analysis*:** the check list was pretested for appropriateness. There was also daily review for completeness, accuracy, consistency and clarity of data. The data collectors were well acquainted with the operational definitions and the checklist. The data was entered into SPSS version 20 and analyzed using descriptive data and pictorial presentation.

Ethical consideration: Since it was an observational study, conducted at a public setup, there was no breach of privacy and confidentiality. This was a covert research with no direct involvement with patients and human kind, proper ethical clearance from the college IRB was found not necessary.

RESULTS

Characteristics of study subjects: A total of 3816 individuals were observed in the study. Among them 1786(46.8%) were male and 2030(53.2%) were female (Table 1).

Table 1: Total number of individuals observed in sex and in waiting areas, Tikur Anbessa Specialized Hospital, 2020

Out-patient Waiting Areas	Male (%)	Female (%)
Cardiac and Neurology Clinics	258(44.2)	326(55.8)
Out- Patient Laboratory	152(48.1)	164(51.9)
Surgery and Gynecology Clinics	279(50.5)	273(49.5)
GI and Chest Clinics	168(50.9)	162(49.1)
Ortho (Pediatrics Clinic)	137(39.5)	210(60.5)
Diabetes (Endocrine Clinic)	96(46.2)	112(53.8)
Oncology	375(50.6)	366(49.4)
Infectious Disease Clinic	260(53.6)	225(46.4)
ANC	61(24.1)	192(75.9)
Total	1786(46.8)	2030(53.2)

Proper mask utilization: A total of 3566 (93.4%) individuals had proper mask utilization. There was comparable utilization in various out-patient waiting areas, with the least being applied at lab waiting area (86.1%) and highest being utilized at ANC waiting area (96.4%) (Figure 1).

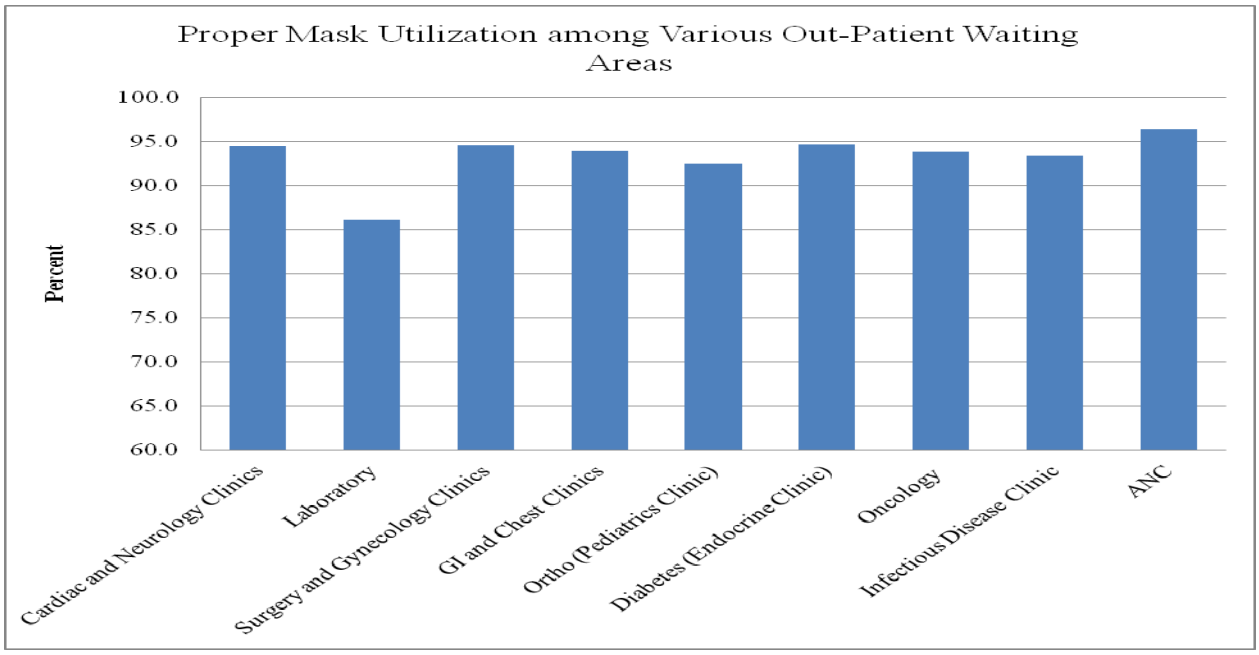

Figure 1: Proper mask Utilization among various out-patient waiting areas, Tikur Anbessa Specialized Hospital, 2020

Proper Physical Distancing in a Group: Out of 3816 individuals, 1842(48.3%) of them had kept proper physical distances. In comparison, the most implementation of proper physical distancing was noted at diabetes waiting area (91.3%).

In the other out-patient waiting areas, there was relatively less proper physical distancing observed, ranging from 23.3% at the ANC OPD to 58.2% at Surgery and Gynecology clinics waiting areas (Figure 2).

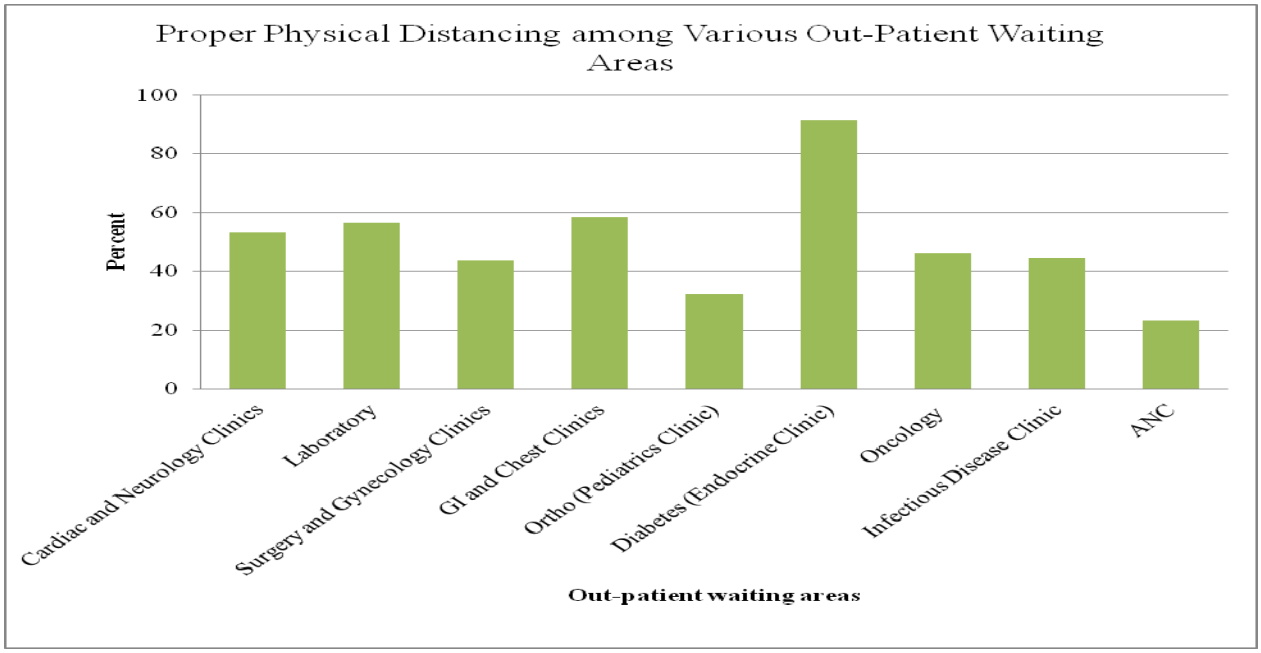

Figure 2: Proper physical distancing among various out-patient waiting areas, Tikur Anbessa Specialized Hospital, 2020.

Weekly trends of mask utilization and physical distancing: During the duration of the study, there was steadily a high proper mask utilization (i.e. > 90%) seen in all the weeks (Figure 3).

On the contrary, there was an overall non-uniform decline in proper physical distancing with peak being at weeks 2 & 3 (76.2% & 77.5% respectively) and the lowest applications being at week 8 (29.2%) (Figure 4).

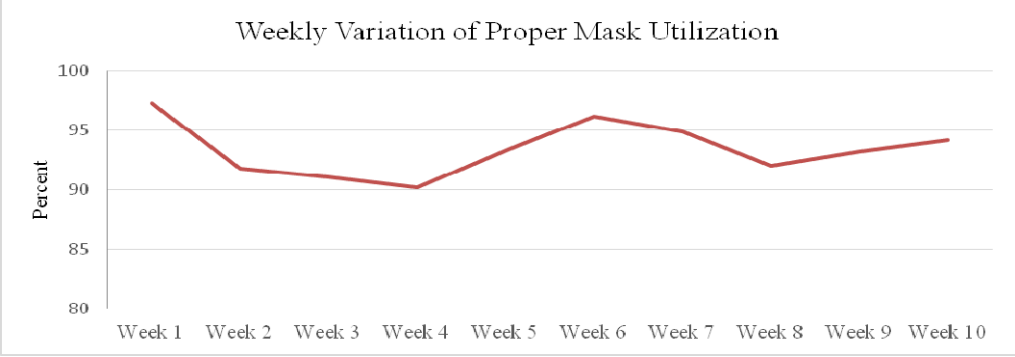

Figure 3: Weekly variation of proper mask utilization, Tikur Anbessa Specialized Hospital, 2020.

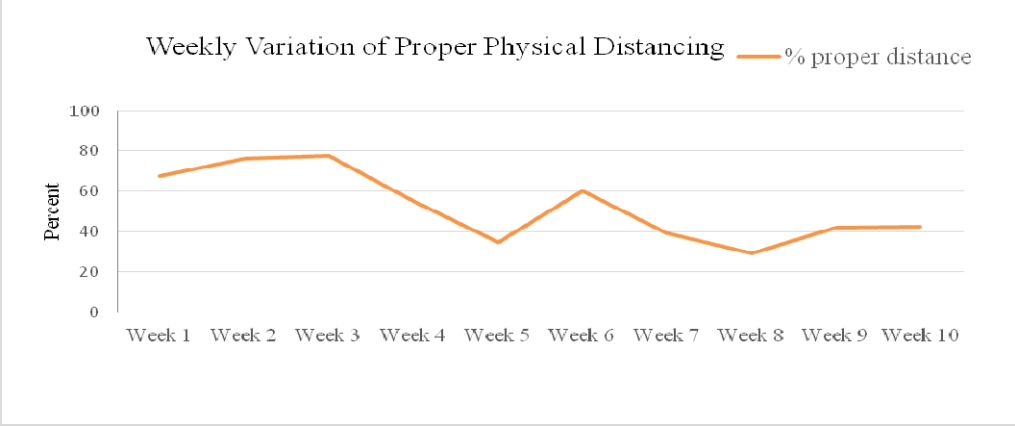

Figure 4: Weekly variation of proper physical distancing, Tikur Anbessa Specialized Hospital, 2020.

Additional Observations: There were no individuals who were sneezing or coughing during the data collection period.

DISCUSSION

Mask usage is almost universal (93.4%), which is comparable with studies conducted in China (98%) and Pakistan (93.9). (11, 12) But it is much better than the results obtained from a study in Jimma (67.3%). (10) This might be because of extensive enforcement of mask usage, the failure to abide leading to a fine and an imprisonment, by government bodies especially in Addis Ababa. (14)

In specific waiting areas, mask usage is not highly variable, most are >90%. The only exception is at Laboratory waiting area. This area is situated outside of the hospital building; this might be the reason for the decrement (86.1%) from other areas.

In the first three weeks of the study, physical distancing was relatively good (more than two third of observed individuals in the groups had proper physical distancing). This might be attributed to the low patient burden at those times (the total individuals observed was less than 300). In contrast in the last four weeks, physical distancing was poor (only about 40%). Almost certainly, this can be ascribed to the high patient flow and crowding (more than 450 individuals were observed in those weeks).

The other explanation, for the waxing and waning of proper physical distancing, might be the immense health education that was given at the first few weeks by mass media and the enforcement of proper physical distancing by guards. Within the fourth week, there was a public unrest, after the assassination of a well-known artist, which might have shifted the focus of the public from fear of COVID-19 to fear of turmoil. This was most likely reflected in the deterioration of proper physical distancing in the next consecutive weeks. The peak at week 6 happened probably because of the intervention of IPC team of the EOC-TASH in educating guards about the proper practice of physical distancing. But the improvement was not sustainable.

The impact of crowding was patent for the variation of proper physical distancing in different out-patient waiting area. The waiting area at diabetes OPD has the best proper physical distancing observed (91.35%). This is partly, if not mostly, because of the capaciousness of the area for the number of visiting individuals. On the contrary, ANC, which has a minute waiting area, has the least proper physical distancing (23.32%).

Limitation of the study: The study was only a snapshot of the practice at a certain point. It might not be able to say a lot about the practice of an individual in different circumstances. The key findings are only reflection of the study period as there could be uncertainties of performance without enforcement.

Conclusion: Proper mask utilization among individuals visiting out-patient waiting areas of TASH is close to universal. But overcrowding and lack of sustainable enforcement of good practices lead to low practice of proper physical distancing.

Recommendations: We recommend solving the overcrowding, for establishing proper physical distancing practice. This can be achieved by decreasing the total patient load of the institution and also by assigning enforcers of proper practices. We also recommend providing health education by placing posters about the methods of preventing COVID-19 transmission, such as proper physical distancing and proper utilization of masks.

We consider the government directives have helped in refining implementation of protective practices. We recommend policy makers to continue implementation of the directive until effective curative or preventive methods are available for Covid-19. We also recommend policy makers to decrease patient flow to tertiary health centers by strengthening the three-tier health care system and by allowing down referral system for patients who do not require tertiary care. This will consequently decrease the overcrowding noticed in tertiary hospitals besides providing optimal care for patients.

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Competing of Interest: There is no conflict of interest to declare.

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