ORIGINAL ARTICLE

A Campaign to Improve Practices of Infection Prevention at Small Shops of Essential Items During the Time of Covid 19 Pandemic

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ABSTRACT

Objective: To determine the effect of masks distribution and awareness pamphlets on practices of social distancing and infection prevention at small shops of essential items during the time of COVID 19 Pandemic

Methodology: This was a quasi-experimental study in which three cycles of observations were carried out at 120 small shops of essential items before, immediately, and two weeks after the intervention during weekdays and weekends. Interventions introduced included the distribution of masks and awareness pamphlets on physical distancing and infection prevention and an educational session with shopkeepers. The main outcome measures were practices of shopkeepers and customers related to wearing masks properly and maintenance of distance of at least three feet. The outcome indicators were compared using the Cochrane Q test. Ê

Results:
Before the intervention on weekdays, only 4.1% of shops had any system of hand hygiene which increased to 19.6% immediately post intervention but reduced to 0% two weeks after the intervention. The practice of wearing a mask with nose covered increased from 13.2% before the intervention to 62.3% immediately after the intervention, however, it dropped to 30.8% two weeks after the intervention. Comparison of distance maintenance between the customers showed that none of the customers maintained three feet distance between themselves before the intervention, which improved to 9.5% immediately after the intervention but reduced to 1.8% two weeks after the intervention.Ê

Conclusion: Practices of infection prevention at small shops were found to be poor, which showed temporary improvement post-intervention. Sustained regulatory and educational measures are needed to improve the practices.

Key words: Covid-19 Pandemic, infection prevention practices, small shops, distance maintaining, wearing masks

INTRODUCTION

COVID 19 outbreak has taken the world by storm since it started in Wuhan, China at the beginning of the year 2020[1]. The infection is highly contagious--one person can infect 3 to 3.5 others leading the World Health Organization to change their declaration of COVID-19 from a global public health emergency to a pandemic on 11th March 2020. The disease's potential to spread rapidly has changed lifestyles throughout the world[2]. Recent report of WHO published on 3rd April, 2022 shows 489 million people have been infected globally and almost 6 million confirmed deaths to date[3].

The high rate of spread is believed to be from person to person by contacting each other, through respiratory droplets while sneezing, singing, breathing and coughing, and even through touching contaminated surfaces or objects and then touching one's mouth, nose or eyes. Moreover, the virus can also be transmitted in poorly ventilated indoor settings and because of long-range airborne transmission as aerosol, it can remain suspended in the air and travel farther than conversational distance[4]. The infection has caused a global shutdown of markets and businesses and

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Hira Tariq, Uzma Qadri, Athar Hussain, Shiraz Shaikh, Umm-e-Rabab, Lubna Mazharullah, et al.

countries that have been more stringent on lockdowns and following protocols of social distancing, have been more successful in reducing the number of cases and deaths[5,6]. After four months of lockdown, almost all countries regardless of where they were in terms of controlling the infection, have reverted to normalcy with essential preventive measures. This includes Pakistan where lockdown was gradually eased as it has been predicted that the infection may turn endemic for a long time to come[7]. Apart from the lockdown, many countries including Saudi Arabia, Pakistan, India, and other Asian regions also launched continuous educational campaigns to increase people's awareness and encourage adherence to the precautionary measures related to infection[8-10].

Although Pakistan is among the countries with low fatality rates, ensuring social distancing measures at points of high interaction between people is important to prevent a catastrophic rise in cases and deaths[11]. Grocery stores of vegetables, fruits, and general items are a major point of interaction between people and a necessity to meet the daily needs of life. It has been observed that preventive practices in these stores are poor due to low awareness, the low fatality of the outbreak, and apathy of people as seen when the markets reopened[12]. The study aimed to gather baseline information and current practices on social distancing at small grocery stores which are high points of contact between people and implement an awareness intervention to observe the change in practices.

METHODOLOGY

This quasi-experimental study was conducted from September 2020 to December 2020 in Karachi, Pakistan. Ethical approval letter with reference No: JSMU/IRB/2020/-344 was issued by Internal Review Board of Jinnah Sindh Medical University before commencement of data collection.

The intervention comprised distribution of surgical masks i.e. one box or 50 masks per shop and awareness pamphlets on practices of social distancing and infection prevention at small shops. The shopkeepers were also given brief sessions on importance of infection prevention practices. Three cycles of observations were carried out in six different towns of Karachi, before, immediately, and two weeks after intervention. From each town, five streets were chosen and four shops were observed in each street including a general store, vegetable and fruit shop, meat shop, and medical store accounting for 20 shops in each town. Two observations were carried out at each shop in the evening of weekday and the afternoon of Sunday in each cycle. Six data collectors were hired to fill the checklist in six different

towns. Checklist comprised information of shop, type of shop, system of maintaining a distance of three feet in the shop, system of hand hygiene before entering the shop and practices of physical distancing and infection prevention of shopkeepers and their clients. The surveys were conducted one week before the intervention, immediately after the intervention, and two weeks after the intervention. The observations were recorded during peak rush hours of 5 pm-8 pm during weekdays and 11 am-2 pm on Sundays. Data collection was supervised by the Principal Investigator and forms were checked for completeness. A total number of 120 shops were covered in each phase of the study.

Ethical approval was obtained from the Institutional Review Board of Jinnah Sind Medical University. SPSS version 22 was used to analyze data. The practices of shopkeepers and customers .i.e. maintenance of at least three feet distance between shopkeepers and customers, wearing mask and wearing mask properly with nose covered were compared before, immediately after, and two weeks after the intervention using Cochrane Q Test. A P-value of <0.05 was considered significant.

RESULTS

Table 1 shows the comparison of mechanism of physical distancing and infection prevention at different shops. Before the intervention on weekdays, only 4.1% of shops had any system of hand hygiene at their shops which increased to 19.6% immediately after the intervention but reduced to 0% two weeks after the intervention. Similarly, only 8.3% shops had any system for maintaining distance of three feet at the baseline which increased to 25% after the intervention but reduced to 6.6% two weeks after the intervention.

Table 2 shows a comparison of practices of shopkeepers during three phases. The practice of wearing a mask with nose covered increased from 13.2% before the intervention to 62.3% immediately after the intervention, however, it dropped to 30.8% on observation two weeks after the intervention on weekdays. Trend was similar for weekends as well. Comparison of distance maintenance among the shopkeepers during three phases showed that only 4.7% shopkeepers maintained 3 feet distance from their clients before the intervention which improved to 13.8% immediately after the intervention but reduced to 1.1% two weeks after the intervention on weekdays.

The practices of customers are compared in **Table 3**. The practice of wearing a mask with nose covered increased from 26.8% before the intervention to 61.8% immediately after the intervention, however, it dropped to 35.5% on observation two weeks after the intervention on weekdays. Trend was similar for

weekends as well. Comparison of distance maintenance between the customers during three phases showed that none of the customers maintained three feet distance between themselves before the intervention which improved to 9.5% immediately after the intervention but reduced to 1.8% two weeks after the intervention on weekdays. Similarly, distance maintenance practice between customers and shopkeepers showed that only 9.2% maintained distance of at least three feet which improved to 30.8% immediately after the intervention but reduced to 15% two weeks after the intervention on weekdays.

Table 1: System of Hand Hygiene and Distance Maintaining in the Observed Shops During Three Phases (n=120)

	Pre-Intervention	Immediate after Intervention	One Week Post Intervention	P- Value
DAY 1 (120 shops)				
Hand Hygiene System on Shops	5 (4.1%)	23 (19.6%)	0 (0%)	<0.001
System of Maintaining Three Feet Distance	10 (8.3%)	30 (25%)	8 (6.6%)	<0.001
DAY 2 (120 shops)				
Hand Hygiene System on Shops	3 (2.5%)	6 (5%)	0 (0%)	0.34
System of Maintaining Three Feet Distance	10 (8.3%)	22 (18.3%)	4 (3.3%)	<0.001

DAY 1: Weekdays, DAY2: Weekends

Table 2: Comparison of Practices of Shopkeepers of Wearing Mask and Maintaining Three Feet Distance During Three Phases of the Study

Variables	Pre-Intervention Day 1 (n=219) Day 2 (n=235)	Immediate Post Intervention Day 1 (n=239) Day 2 (n=216)	One Week Post Intervention Day 1 (n=224) Day 2 (n=214)	P-Value
Wearing Mask				
· Day 1	59(26.9%)	182 (76.2%)	91(41.1%)	<0.001
· Day 2	62(26.4%)	155 (71.8%)	82(38.3%)	<0.001
Wearing Mask with Nose Covered				
· Day 1	29(13.2%)	149(62.3%)	69(30.8%)	<0.001
· Day 2	30(12.8%)	117(54.2%)	60(28.0%)	<0.001
Type of Mask				
Day 1				
No mask	160(73.1%)	57(23.8%)	133(59.4%)	
Cloth mask	19(8.7%)	27(11.3%)	28(12.5%)	<0.001
Surgical mask	38(17.4%)	139(58.2%)	62(27.7%)	
N95 mask	02(0.9%)	16(6.7%)	01(0.4%)	
Day 2				
No mask	172(73.2%)	61(28.2%)	132(61.7%)	
Cloth mask	18(7.7%)	20(9.3%)	31(14.5%)	<0.001
Surgical mask	45(19.1%)	129(59.7%)	49(22.9%)	
N95 mask	0(0.0%)	06(2.8%)	02(0.9%)	
Maintenance of Physical Distance				
Day 1				
Close to each other with physical contact	17(26.6%)	6.2%(04)	20.7%(19)	
Close to each other without physical contact	20(31.2%)	43.1%(28)	42.4%(39)	0.02
At least one feet distance	24(37.5%)	24(36.9%)	33(35.9%)	
At least three feet distance	03(4.7%)(03)	09(13.8%)	01(1.1%)	
Day 2				
Close to each other with physical contact	14(18.9%)	4.2%(03)	20.7%(17)	
Close to each other without physical contact	28(37.8%)	47.9%(34)	58.5%(48)	
At least one feet distance	24(32.4%)	22(31.0%)	17(20.7%)	<0.001
At least three feet distance	08(10.8%)	12(16.9%)	0(0%)	

DAY 1: Weekdays, DAY2: Weekends

Table 3: Comparison of Practices of Customers during Three Phases of the Study

Variables	Pre-Intervention Day 1 (n=385) Day 2 (n=292)	Immediate Post Intervention Day 1 (n=319) Day 2 (n=291)	One Week Post Intervention Day 1 (n=310) Day 2 (n=288)	P-Value
Wearing Mask				
Day 1	154(40.0%)	218(68.3%)	46.1% (143)	<0.001
Day 2	123(42.1%)	188(64.6%)	50.3% (145)	<0.001
Wearing Mask Nose Covered				
Day 1	26.8% (103)	197(61.8%)	110(35.5%)	<0.001
Day 2	39.4% (115)	161(55.3%)	113(39.2%)	<0.001
Type of Mask				
Day 1				
No mask	232(60.3%)	31.7%(101)	53.9%(167)	
Cloth mask	35(9.1%)	17.6%(56)	14.8%(46)	<0.001
Surgical mask	98(25.5%)	39.5%(126)	25.5%(79)	
N95 mask	13(3.4%)	7.5%(24)	1.9%(06)	
Other (Abaya/Burqa/Handkerchief)	07(1.8%)	3.8%(12)	3.9%(12)	
Day 2				
No mask	142(48.6%)	103(35.4%)	143(49.7%)	
Cloth mask	61(20.9%)	46(15.8%)	50(17.4%)	<0.001
Surgical mask	72(24.7%)	110(37.8%)	72(25.0%)	
N95 mask	10(3.4%)	23(7.9%)	08(2.8%)	
Other (Abaya/Burqa/Handkerchief)	07(2.4%)	09(3.1%)	15(5.2%)	
Maintenance of Distance between Customers				
Day 1				
Close to each other with physical contact	11(15.3%)	05(5.3%)	10.5%(12)	
Close to each other without physical contact	32(44.4%)	42(44.2%)	42.1%(48)	0.012
At-least one feet distance	29(40.3%)	39(41.1%)	52(45.6%)	
At-least three feet distance	0(0%)	09(9.5%)	02(1.8%)	
Day 2				
Close to each other with physical contact	05(9.4%)	04(6.9%)	18(9.7%)	
Close to each other without physical contact	22(41.5%)	28(48.3%)	93(50.3%)	0.50
At-least one feet distance	19(35.8%)	21(36.2%)	65(35.1%)	
At-least three feet distance	07(13.2%)	05(8.6%)	4.9%(9)	
Maintenance of Distance between Customers and Shopkeepers				
Day 1				
Close to each other with physical contact	11(9.2%)	02(1.7%)	24(20.0%)	
Close to each other without physical contact	35.8%(43)	21(17.5%)	20(16.5%)	<0.001
At-least one feet distance	45.8%(55)	50.0%(60)	58(48.3%)	
At-least three feet distance	9.2%(11)	30.8%(37)	18(15%)	
Day 2				
Close to each other with physical contact	18(15.0%)	05(4.5%)	16(13.3%)	
Close to each other without physical contact	23(19.2%)	26(21.7%)	49(40.8%)	<0.001
At-least one feet distance	65(54.2%)	63(52.5%)	42(35.0%)	
At-least three feet distance	14(11.7%)	26(21.7%)	13(10.8%)	

DAY 1: Weekdays, DAY2: Weekends

DISCUSSION

The findings of this study show that mechanisms of infection prevention which include a system of maintaining hand hygiene and maintaining distance were found in the range of 2.5% to 8.3% of shops. Similarly, the practice of maintaining at least three feet distance at shops ranged from 4.7% to 10.8% among the shopkeepers and 0% to 13.2% among the customers at baseline. These numbers are strikingly similar to a study in India[13]. The practices of maintaining distance showed slight improvement post-intervention and returned to baseline levels on observation two weeks after the intervention. This shows that market surveillance of observation of SOPs was extremely weak and shops were allowed to operate without observance of SOPs of infection prevention. While awareness campaigns may result in short term behaviour change, strict market surveillance is needed for a sustained effect.

Although the mass media awareness messages on infection prevention continuously run on television and social media, the practices of wearing masks properly with noses covered by shopkeepers and customers ranged from 12.8% to 39.4%. This finding is similar to a recent study in India where the use of masks among the shopkeepers was also found to be very low i-e 14%[13]. Low usage of masks among shopkeepers was also reported in a study from Kathmandu, Nepal[14]. Other studies on general public in India and US have shown up to 90% wearing masks[15,16]. However, both were self-reported surveys and could therefore depict a different picture than directly observed behaviours. The usage of masks increased to 54.2% to 62.3% immediately after the intervention, however this change was short-lived as the observations two weeks after the intervention showed a decline to either baseline levels or to numbers which were slightly better than pre-intervention. This shows that easy availability of masks at points of contact increases their usage whereas people do not buy masks in the long run possibly due to financial constraints.

Based on the findings of the study, following recommendations are made. While educational campaigns may help in the short term, facilitation for adoption of behaviours can result in a sustained effect. This includes continuous provision of masks and sanitizers at contact points like small shops. After facilitation, second most important thing is surveillance for observance of infection prevention practices. The shops not following the practices can be initially warned and can be fined on non-compliance post warning.

Moreover, educational and facilitation intervention in this study was carried out by medical students of a university which guides that the young force of university students can be utilized to carry out such campaigns and monitor the compliance.

This study has a few limitations. The study lacks a control group which could have provided a better picture of effectiveness of the intervention. Sample size is relatively low, however, data from six different towns was gathered to ensure that study captures variability according to different socioeconomic strata. In future, such a study may be conducted with cluster randomization and on a larger scale.

CONCLUSION

Practices of infection prevention at small shops were found to be poor which showed temporary improvement post intervention. They can be improved through sustained educational, facilitative and regulatory measures.

Conflict of Interest: The authors declare that they have no conflict of interest.

Authors' contribution: HT: Study design, data collection, analysis, writing of manuscript; UQ: Data collection, Data Entry, Review of manuscript; AH: Data collection, analysis, writing of manuscript; SS: Supervision in study design, methodology and analysis; UR: Worked on statistical analysis and data collection; LM: Data Collection and intervention material gathering; SZ: Data collection and data entry; LAB: Expert review and supervision in study design and implementation.

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