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An Assessment on the Awareness and Education among General Public: Concerning Rational Use of Face Masks during the COVID-19 Pandemic

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ABSTRACT

The pandemic of novel coronavirus disease 2019 (COVID-19) is an ongoing latest threat to global health. This raising disconsolate situation of global threat for coronavirus and personal risk of acquiring disease can be altered by individual protective and preventive measures. The main aim and objective of current research article is to assess the knowledge on rational face mask use among general public and to understand the deviations of the factors during COVID-19 pandemic. A descriptive, cross-sectional web-based online survey was conducted among the general public in India during April 2020. A total of 124 participants took part in the survey**.** Self-prepared and self-validated 19 item survey questionnaire was used to assess the study outcomes which were shared out randomly among the public using Google document forms through social media networks. The results were analyzed using Statistical Package for Social Sciences. Descriptive statistics were used in representing the study characteristics. The majority of the participants fall under the age category < 25 years. The educational qualification of the study participants depicts that majority of them were paramedics (51.6%) followed by graduates (13.7%), students (12.1%) and post-graduates (5.6%). The majority of the study participants (98.3%) wear mask while going out. Inference: It is obvious that majority of people have enough knowledge towards appropriate use of PPEs and only minor-moderate people are probably liberated to make errors which itself can be a massive peril. Although the results are appealingly good and satisfying, the safety of the individual is imperative and mistakes pile up affecting the entire community due to the lack of education and awareness. A preparedness plan for epidemic and pandemic situations is to be conceived by authority members in collaboration with experts of the concerned field.

INTRODUCTION

The pandemic of novel coronavirus disease 2019 (COVID-19) which is an ongoing latest threat to global health, was initially recognized in Wuhan, China, in December 2019 and has since spread worldwide[1]. Though initial investigations reported the spread of animal to human transmission, later investigations have declared the human-human transmissions as well through close contact with an infected person and even from coughing and sneezing since the virus generally spreads via airborne droplets[2,3].

As of 03rd May 2020, 10:00CEST, currently 3,349,786 confirmed cases in at least 185 countries and territories, including some 238,628 deaths have been reported globally in which US has topped the list regarding the number of confirmed cases[4]. Presently, there is no confirmation from Randomized Clinical Trials (RCTs) that any potential therapy improves outcomes in both suspected and confirmed COVID-19 cases. Additionally, there are no clinical trial data supporting any prophylactic therapy. More than 300 clinical treatment trials all over the globe are underway including vaccines. Symptomatic treatment and oxygen therapy are the major treatment interventions for people with severe infection[5]. Further, on March 24, 2020, FDA began allowing to use convalescent plasma in patients with serious or immediately life-threatening COVID-19 infections which is also still considered experimental[6]. Thus, acquiring and adhering to the Universal Safety Precautions (USP) is the only preventive measure in controlling the widespread of COVID-19 across the globe in which Universal masking is one such way to reduce the transmission probability per contact in public, among other measures[2,7]. Face masks are one of the well-known public interventions as a self-protective measure. In the early modern Europe, covering the nose and mouth had been traditionally been a part of sanitary practices against contagious diseases. Face masks which are used today in the healthcare as well as in the community, can be largely traced back historically to a more recent period when a new concept of contagion based on germ theory was applied to surgery. It was during the Manchurian plague of 1910-1911 and the influenza pandemic of 1918-1919, the utilization of mask to cover the mouth and nose (and beard) turned the face mask into a means of protecting healthcare workers and patients from infectious diseases outside of the procedure room. Although the use of masks was often controversial, mask wearing became mandatory for police forces, healthcare workers, and even residents in some US cities during the 1918-1919 influenza pandemic[8]. Public mask wearing is most effective at stopping the spread of the virus when the

compliance is high. In this way, the decreased transmissibility could reduce the death toll and economic impact and the cost of the intervention is also low as well[7]. The use of face masks among public has become ubiquitous in almost all countries. However, there's a vital distinction between absence of proof and proof of absence. Evidence that face masks will give effective protection against respiratory infections within the community is scarce, as acknowledged in recommendations from the United Kingdom and Germany. However, face masks are widely employed by medical staffs as a part of droplet precautions once caring for patients with respiratory infections. It would be rational to recommend vulnerable people avoid crowded areas and use surgical face masks rationally when exposed to insecure areas[9]. In this crucial time of COVID-19, the concerned behind hood factors of face mask among general public are inappropriate use of face mask such as not changing it during intervals, touching the mask while wearing and removing it, reusing the single use mask can decrease the protective effect and can ultimately pose greater risk for infection[10]. Also, WHO affirms that incorrect use of face masks might actually increase the chance of being infected, rather than decreasing. Hence, precise use of facemasks among general public is ought to be one of the essential approaches in flattening the curve. In this thrash situation, the present research describes the effect of health education among general public on face mask use and disposal which can tangentially affect the risk of acquiring infection. Thus, this is the only remedy via which we can improve health outcomes of public especially during epidemics and pandemics.

MATERIALS AND METHODS

The main intention of the survey was to assess the awareness and education among general public concerning the rational use of face masks during the COVID-19 pandemic. The data collection was done between the months of April and May 2020. The study was a descriptive, cross-sectional study design and was conducted in the form of a web-based online survey.

DEVELOPMENT AND CONTENT OF SURVEY QUESTIONNAIRE: A self-administered questionnaire consisting of 19 questions were developed from literature reviews and by utilizing and World Health Organization (WHO) course materials. The questionnaire was comprised of two sections in which (A) Demographic information and (B) Rational use of face masks with particular interest towards re-usage of the disposable masks, amount spent in masks, hygiene practice and precautions to be followed during mask usage.

RELIABILITY AND DISTRIBUTION OF THE QUESTIONNAIRE: Assessment of reliability of the questionnaire was done through a pilot study pre-tested among 30 random samples for clarity, acceptability and relevance before the survey by considering the pre-test results for better comprehension after which the survey questionnaire was distributed through the use of social media such as WhatsApp, Facebook, Instagram, Gmail and Telegram using the google forms.

SAMPLING METHOD: Since this is an online web-based survey with its exploratory nature, a non-probability sampling method with an invitation online sampling technique is utilized.

STATISTICAL ANALYSIS: IBM Statistical Package for Social Sciences (SPSS) Subscription Build 1.0.0.0 1327 (64-bit edition) was used for data management and analyses. Descriptive statistics on sample characteristics were computed for frequency distributions. The chi-square test was used to assess the association among the variables and a p-value of <0.05 was considered statistically significant.

RESULTS

Out of 124 participants who filled out the survey, a total of 121 participants have given their consent of willingness and completed the survey with a response rate of 97.6%. The mean age of the study participants was 22.49 ± 5.724 in which majority of the participants fall under the age category < 25 years. The distribution of sex was equal among the participants. The variables age and gender are represented in Figure 1. The educational qualification of the study participants depicts that majority of them were paramedics (51.6%) followed by graduates (13.7%), students (12.1%) and post-graduates (5.6%). The educational qualification of the participants is detailed in Figure 2. All the other demographic factors are illustrated in Table 1.

Table No. 1: Demographic characteristics of study participants (N=121)

VARIABLES	PARTICIPANTS (N)	PERCENTAGE (%)
Age		
Mean age ± S.D 22.49 ± 5.724		
< 25 years	105	86.8%
25-45 years	14	11.6%
>45 years	2	1.7%
Sex		
Male	60	49.6%
Female	61	50.4%

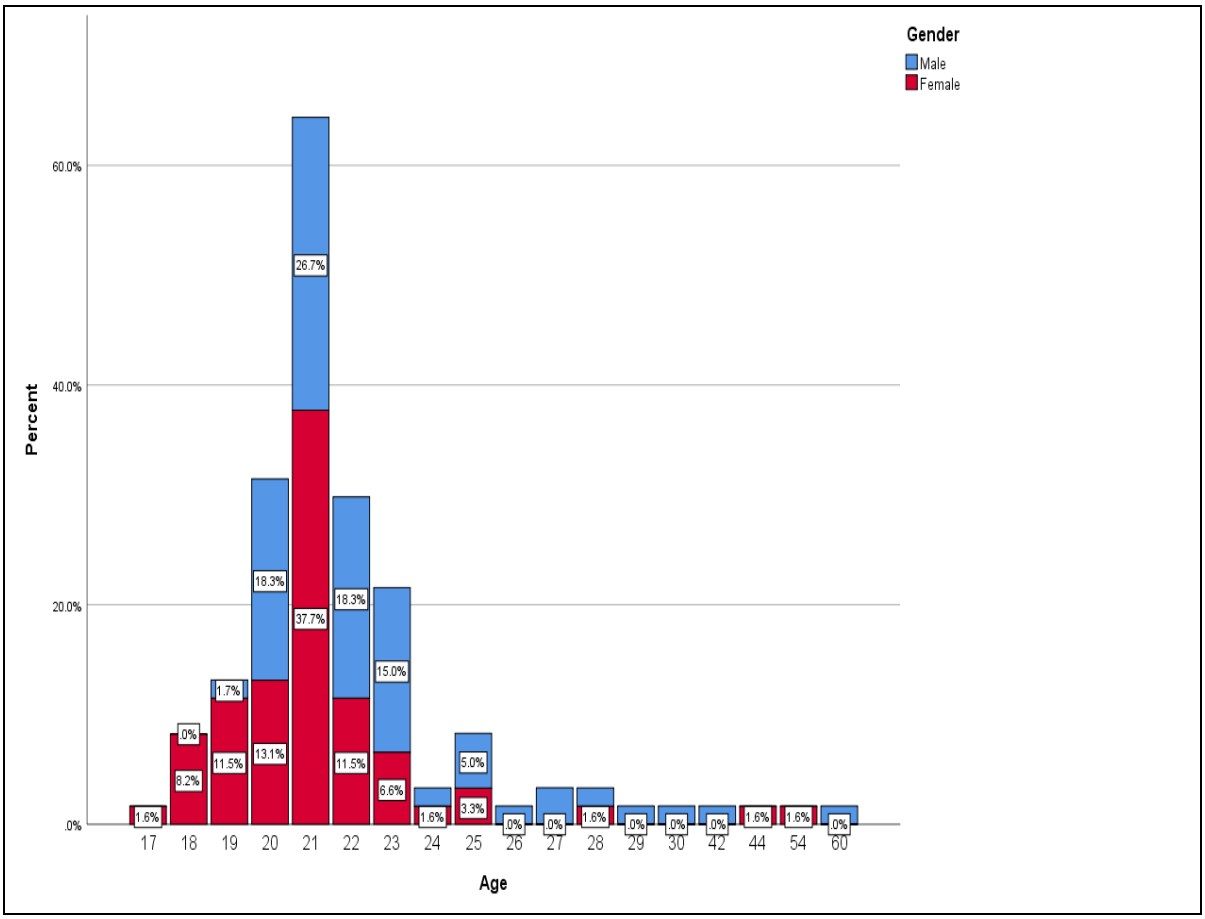

Figure No. 1: Demographics, age and gender of the study participants. (N = 121)

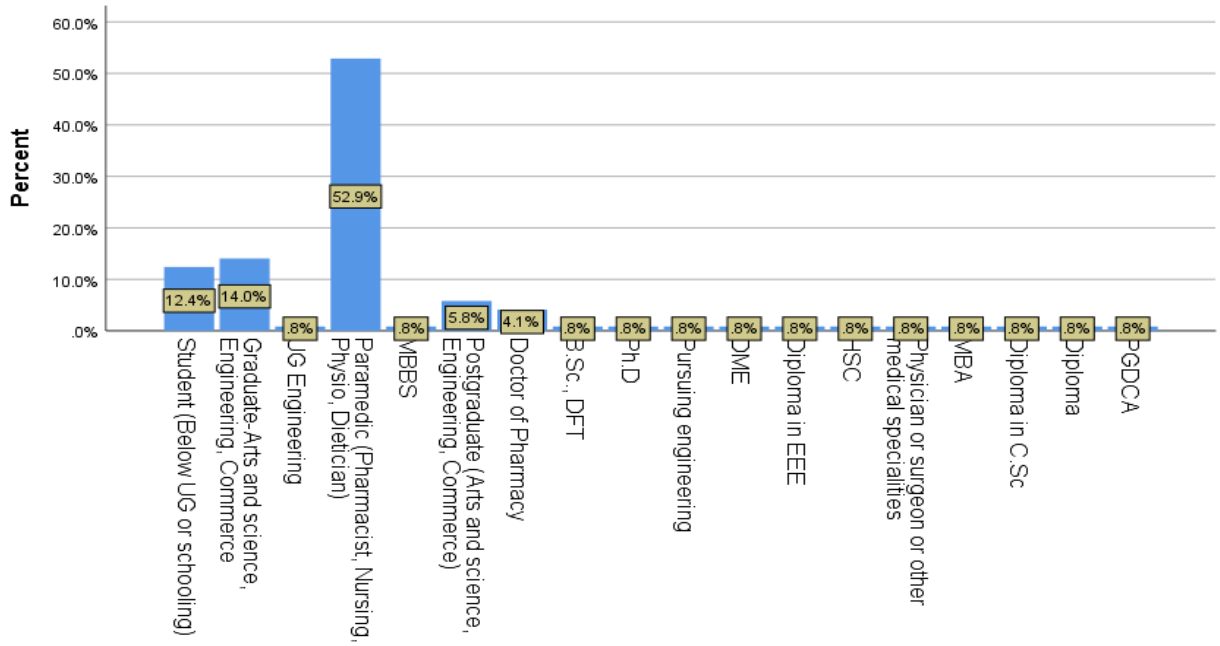

Figure No. 2: Educational qualification of the study participants (N = 121)

KNOWLEDGE REGARDING RATIONALE USE OF FACE MASKS:

The majority of the study participants (98.3%) wear mask while going out and the remaining 1.7% of people do not wear face masks while going out. This can be seen in two major ways, to begin with, people are negligent and irresponsible overspread and transmission of COVID-19 pertinent with face mask use; and secondly there comes the awareness of people over face mask use. They are not well aware on how face masks work and its implication during epidemics and pandemics. Even though WHO states that face masks cannot act as preventive equipment for healthy people, but in a case like this where people fail to understand the symptoms applicable for face mask use need to employ PPEs while going out to break the chain of transmission. Correlating this data with that of belief of face mask use in reducing the risk of COVID-19; it has been found that 37.2% people do not believe that face masks can prevent the transmission of COVID-19. This belief and lack of knowledge can be risky to terminate the pandemic. The rest of the responses on other questions are as listed below in Table 2. and the percentage of correct responses has been shown in Figure 3.

Table No. 2: Knowledge towards rational use of face masks among the study participants (N = 121)

Sr. No.	QUESTIONS	CORRECT ANSWER	CORRECT RESPONSE N (%)	INCORRECT RESPONSE N (%)
1.	Do you wear a mask while going out?	Yes	**119 (98.3%)**	**2 (1.7%)**
2.	Which type of face mask is considered as ideally protective for COVID-19?	N-95 face mask	**66 (54.5%)**	**55 (45.5%)**
3.	Do you touch the front side of the mask while wearing or removing?	No	**79 (65.3%)**	**42 (35%)**
4.	Do you reuse single use mask?	No	**97 (80.2%)**	**24 (19.8%)**
5.	Would you remove the mask to talk to someone?	No	**100 (82.6%)**	**21 (17.4%)**
6.	Do you wash your hands after discarding the mask?	Yes	**102 (84.3%)**	**19 (16%)**
7.	Do you believe wearing a mask actually reduces the chances of coronavirus spread?	Yes	**76 (62.8%)**	**45 (37.2%)**
8.	Use of face mask is not essential in which of the following groups?	People who are well	**30 (24.8%)**	**91 (75.2%)**
9.	To which extent of your nose do you wear the face mask?	Covering full nose	**10 (8.3%)**	**111 (92%)**

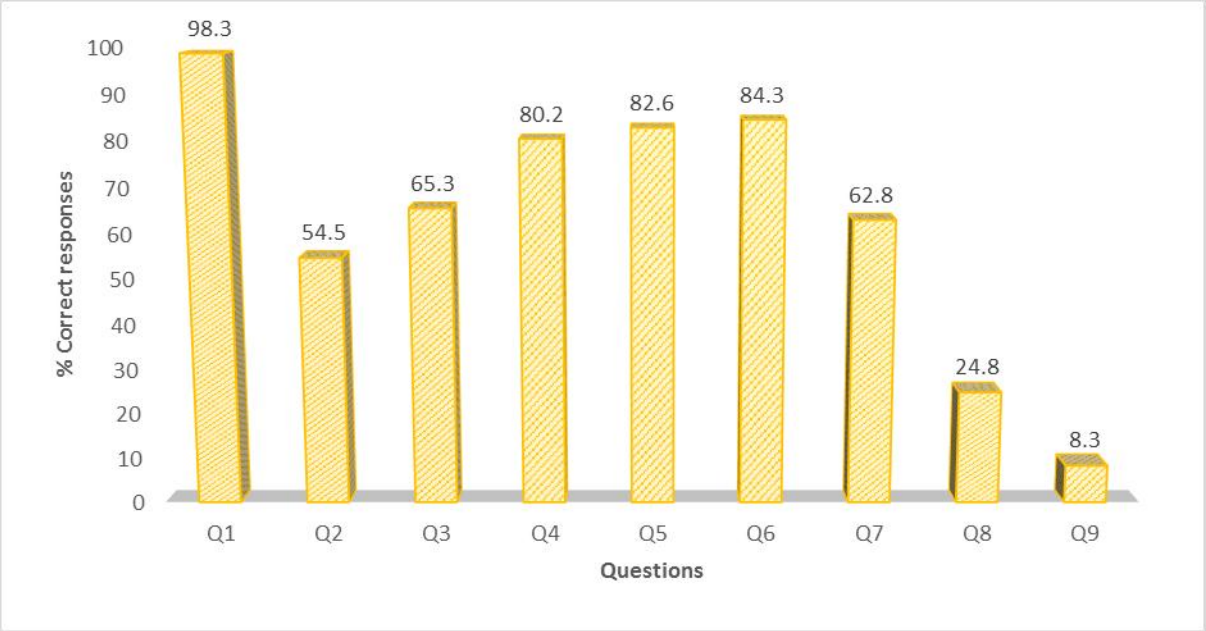

Figure No. 3: % Correct responses for the respective questions

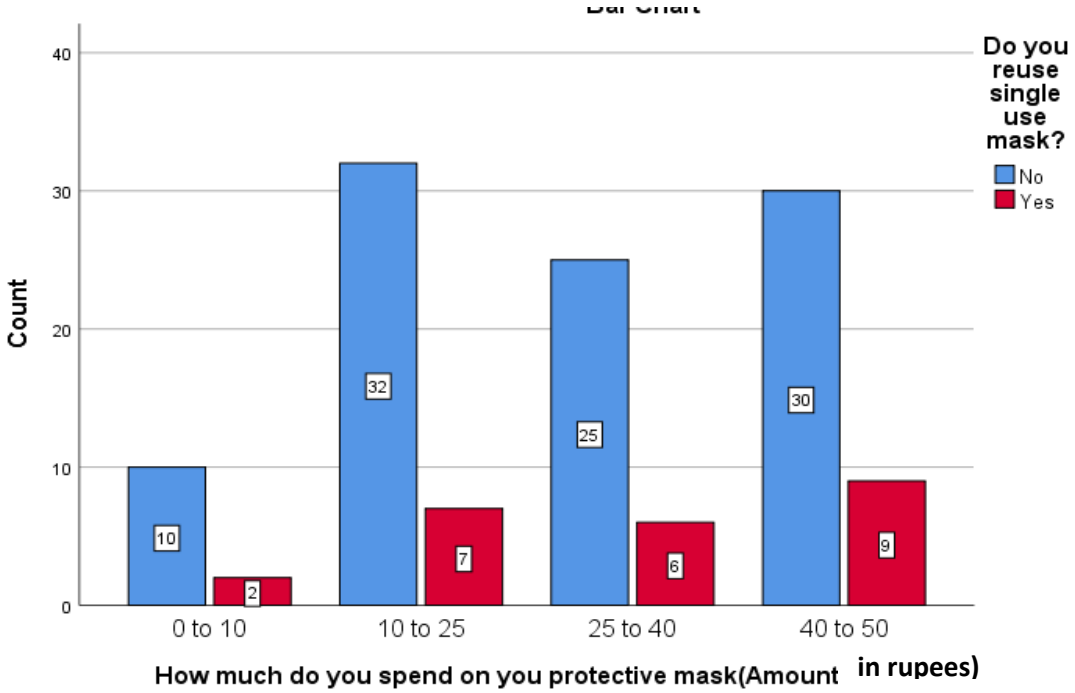

Figure No. 4: Price Vs Reuse of single use masks

People are still not out of this COVID-19 pandemic panic and have also started trying a couple of precautions namely face masks use and practicing hand hygiene. However, people are not aware of the proper techniques towards the use of PPEs, this can be a major drawback factor to increase the risk of infection. One of this is the inappropriate use of face mask; especially a common threat is re-using a single use mask. The so called Surgical or Medical masks available to general public are single use type i.e., they can be only used for a period of 6 – 12 hours. After which, there are techniques to remove and discard them, which only an average number of people are aware about. Taking a deeper and wider look at the causes influencing re-use of single use masks are not only limited to awareness and education rather is also associated with affordability of surgical masks among low socio-economic people. These people not only lack awareness on proper use of PPEs but also have lesser affordability, due to which they re-use the single use mask. Most of these category people work on daily wages and spending even INR 10 on per face mask can be too far above the ground for them. This re-use of single use mask makes the person prone to a variety of opportunistic infections. Considering these underlying parameters, the results are detailed in Figure 4. Implies that this aspect is practically significant and can exponentiate the probability of infection in the community sector.

DISCUSSION

The current study focuses on assessment of knowledge on rational face mask use among general public during COVID-19 pandemic. Our results have observed that the mean age of the study participants was 22.49 ± 5.724 in which majority of the participants fall under the age category < 25 years. The distribution of sex was equal among the participants. The educational qualification of the study participants depicts that majority of them were paramedics (51.6%) followed by graduates (13.7%), students (12.1%) and post-graduates (5.6%). The majority of the study participants (98.3%) wear mask while going out. The COVID-19 pandemic outbreak has been excruciating for all of us since it is rapidly spreading with no definite treatments available. The mortality rate is elevated and the reasons divulge is because of the shorter incubation period resulting in severe atypical pneumonia. This raising disconsolate situation of global threat for coronavirus and personal risk of acquiring disease can be altered by individual protective and preventive measures. Face masks are one of the well-known public interventions as a self-protective measure. In this situation where prevention by protective measures can be a major hope to revamp this condition, the proper

use of face mask states that "for any type of mask; appropriate use and disposal are essential to provide efficient protection against infection and avoid any transmission of diseases" and have provided 7 point mask management techniques[11]. Especially in a situation where biomedical waste disposal can pose serious risk to humans, this inappropriate disposal of face mask by general public can cause harm and can increase the risk of community spread as it handled by sanitation workers without proper protective aids[12]. Removing a mask needs special attention to avoid hand contamination, and it may conjointly breed a false sense of security wherever we finish up ignoring or forgetting to follow smart hygiene. Yet in some elements of Asia everybody wears a mask by default - it's seen as safer and a lot of considerate. In Asian country, Hong Kong, Japan, Republic of Korea, Asian nation and Taiwan, the broad assumption is that anyone may well be a carrier of the virus, even healthy folks. Thus, within the spirit of commonness, one should wish to safeguard others from themselves. Some places take this concept terribly seriously: in some elements of China, one would be in remission or chastised for not carrying a mask. In Singapore, that want to discourage voters from carrying masks, it's currently mandatory to wear one outside or risk a fine of S$300 (£170, $210)[13]. However, there is no evidence that face mask use among healthy people can be beneficial; this contrast among countries implementing various ideas on face mask use could be made much more beneficial by providing proper education to general public. The measures taken to spread awareness about the proper use and disposal of face masks are relatively low compared to the spread of infection. Other challenges faced by general public include affordability and people who are not aware of the symptoms. Rumors spreading among the general public contaminate the awareness and knowledge causing fears and faults which are nonsensical and purposeless. Proper revisions about health care measures; not only for health care workers but also among the general public will substantially increase the health consequence thus improving the intensity of health forum which is a base for building our community. Therefore, it is important to develop a strong communication strategy to explain the population about the circumstances, criteria and reasons for decisions which will definitely pave a way for healthy discharge.

CONCLUSION

As the COVID-19 pandemic continues to inflict terror over the entire world, masks are being worn by the general populace dutifully. This compromises the safety of the individual and mistakes pile up affecting the entire community. From the above data obtained it is obvious

that majority of people have enough knowledge towards appropriate use of PPEs and only minor-moderate people are probably liberated to make errors. But understanding that, this minor-moderate scale errors itself can be a massive peril. Furthermore; as we can see, while correlating educational qualification with knowledge, paramedics were rarely to make mistakes. This can also be considered as a reinforcing method to educate general public. One way of educating the general public is by printed and other forms of media to publish awareness articles containing essential knowledge of the pandemic and prevention methods and through community pharmacies and clinics. Community pharmacy is the first and primary structure which acts as a bridge between general public and health care system. Instructions regarding proper use and disposal of preventive equipment (face masks) are to be published and broadcasted in public places and pharmacies. A preparedness plan for epidemic and pandemic situations is to be conceived by authority members in collaboration with experts of the concerned field. The preparedness plan is to be rehearsed and tested at intervals for a few years and tweaked according to the changing conditions. Even though the number of infections, deaths and recoveries depends on the demographics of the patients and the population a lot, the accurate use of masks largely helps to prevent the spread, break the chain, flatten the curve and relieve the health care system of the crippling burden of COVID-19 pandemic.

Awareness is the greatest agent for change!

LIMITATIONS:

We all have some negative sides! And research is no different!

Firstly, this study is limited to small sample size with low reliability and higher variability which affects the survey and, in this case, we were unable to prove the correlation between re-use of single use mask with that of the face mask price; we could clearly see parallel association between these two factors but the interpretation was insignificant statistically due to the lack of data. There arises a petite variation between statistical significance and practical significance. This is likely to be due to the reason that the study sample size is not large enough; there is some evidence of this effect, but the result has just slipped the statistical significance. Yet, there is an association existing between wearing a mask and the amount

spent on them ***p<0.001. Further, future studies should make sure to get enough response so that the data becomes compatible for analysis and providing better accurate results. Secondly, we were unable to progress the research due to insufficient data and short period of time and this was an obstacle for the scope of our analysis. There was only a small digit of researches available; thus, this lack of proper research was a problem in investigating the concepts. These deficiencies in future may be encountered by the use of different methods for data collection and reporting.

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CONFLICT OF INTEREST

There was no potential conflict of interest.

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