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ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF MASK WEARING – AN OBSERVATIONAL STUDY

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ABSTRACT
COVID-19 is a respiratory disease caused by the SARS-CoV-2 virus and on March 11, 2020, the World Health Organization (WHO) declared it as a pandemic. Use of different types of face masks had been very useful in controlling the transmission. The study was planned to assess the knowledge, attitude and practice of wearing face masks among students and general population using a questionnaire based observational study. A total of 981 people took part in the research. The average age of the participants was 15-42 years (range=15-60), with 722 (73.7%) men and 258 (26.3%) women. All the participants of our study, 981 (100%) were graduates**.** Majority of the participants (32.3%) accepted that it is necessary to use mask when talking at crowded place.The statistics show that out of 981 respondents,80.6 % believe it is necessary to use a mask in the current situation and 19.4 % believe it is not necessary to use a mask in the current circumstance. 76.1 % of the respondents correctly applying a face mask and 23.9 % incorrectly applying a face mask.Participants reported difficulty mainly in breathing, talking, and recognising faces, among other things, which are all substantial sources of discomfort for the participants.The reports show that the knowledge about wearing mask was good among the study population. More awareness must be generated among the community on the proper steps of wearing and disposing off a face mask to limit the spread of COVID-19.

KEY WORDS: KAP, Wearing Mask, COVID-19, SARS CoV-2, Questionnaire, observational study.

INTRODUCTION
The SARS-CoV-2 virus causes COVID-19, a respiratory ailment that the World Health Organization (WHO) proclaimed a pandemic on March 11, 2020.[3] The disease has now spread to 219 nations worldwide, forcing the World Health Organization to designate it a pandemic. There have been approximately 120 million positive COVID-19 cases worldwide as of March 2021, with over 2.5 million fatalities and over 4 million vaccine doses administered.[1,2,3]

Preventive methods include masks, hand hygiene, a physical distance of at least 1 meter, adequate ventilation in indoor circumstances, and monitoring. To prevent SARS-CoV-2 transmission from person to person, contact tracing, quarantine, isolation, and other infection prevention and control (IPC) procedures are all required.[4,5]

In order to minimise the risk, the public is required to follow accepted infection control practises[6]. Self-isolation, the use of alcohol-based hand sanitizer, or hand-washing with soap are examples of community-based approaches., restriction of movements with lock down measures, sanitization of surfaces, and use of non-medical face coverings.[7,8]

Health officials recommended that the public use face masks or coverings to reduce the risk of transmission, with authorities requiring their use in certain environments, such as public transportation, stores, schools (including high, colleges, and universities), police stations, and other public places, in collaboration with the government. To avoid a scarcity of medical-grade face masks such as respirators, health experts have urged that they be prioritised for use by medical professionals. Meanwhile, the general population is advised to use cotton masks.[9, 10, 11]

The major advantage of everyone wearing a face mask is that the number of coronaviruses (or influenza viruses) released into the environment by those with the infection is reduced, thereby reducing its spread through droplets.[9] There are different types of face masks in use by the community, and these include N95, surgical masks, and cloth masks.[12]

Despite widespread implementation, the effectiveness of various non-pharmaceutical interventions [13] results in substantial heterogeneity in the acceptance of these interventions at the individual and community level [14], including the use of face masks and respirators. [15]

Meanwhile, there is increasing evidence that cloth face coverings help prevent people who have COVID-19 from spreading the virus to others [16].A comprehensive viewpoint from statewide mandates and the CDC's recommendations on face coverings in response to COVID-19.

They must be prioritised for front-line medical staff who are at high risk of the disease due to fit testing, educational requirements, and supply chain difficulties.[17] Consequently, cloth face coverings and surgical masks (collectively known as "face masks") have been recommended as an alternative for the general public. [18] These masks are intended to serve as a mechanical barrier that prevents the spread of virus-laden droplets expelled by the user. [19] During the on-going COVID-19 pandemic, recommendations and common practices regarding face mask use by the general public have varied greatly. [20, 21]

As a result, the current study aimed to assess students' and the general population's knowledge, attitude, and practise of wearing face masks. The outcomes of the study may help to reconsider the guidelines and the various awareness measures to be taken in this regard.

METHOD

A Questionnaire Based observational study was conducted among students and general public after getting the informed consent. The questionnaire included both open and closed ended questions and the responses were collected by sharing the questionnaire through various social media and e-sources. The questionnaire had four main themes: demographics, which included gender, age, state of residence, educational qualification, and occupation; knowledge about mask usage during the COVID-19 pandemic; attitudes toward mask usage during the COVID-19 pandemic; and practises relevant to mask usage during the COVID-19 pandemic.

RESULTS

Demographic characteristics

The study drew a total of 981 participants. The average age of the participants was within the range=15-60, with 722 (73.7%) men and 258 (26.3%) women. The majority of the participants in our study, 981 (100%) were graduates**.** For obtaining information, the participants were requested to complete a standardised questionnaire that was pre-validated by two independent reviewers whose replies were not included in the study.

Table: 1 Demographic Characteristics.

S.NO	VARIABLE	FREQUENCY
1	Sample size	981
2	Age group in years	
	15 to 28	445
	29 to 38	253
	39 to 48	222
	48 and above	61
3	Gender	
	Male	722
	Female	258
4	Education level	
	B. pharmacy	174
	Physiotherapy	54
	B.N.Y.S	70
	Health science	75
	Siddha	35
	Nursing	62
	Others	252
	Engineering	259

The study instrument was structured as a multiple-choice questionnaire during the interview, with correct and incorrect responses to choose from.

The questionnaire consisted of 21 questions based on WHO recommendations for wearing a face mask (KAP) (knowledge, attitudes, and practises), and it targeted several key constructs: During the COVID-19 pandemic, six questions focused on socio demographics (age, gender, occupation, educational level, marital status, and domicile), while others focused on illness spread, symptoms, and strategies to limit infection by wearing face masks (Table 2). There are three questions regarding how to use face masks to prevent the spread of COVID-19, as well as three questions about how people act and feel about using face masks to prevent the spread of COVID-19. Participants who answered correctly more than 50% of the time received a good score, while those

who answered incorrectly less than 50% of the time received an unsatisfactory score.

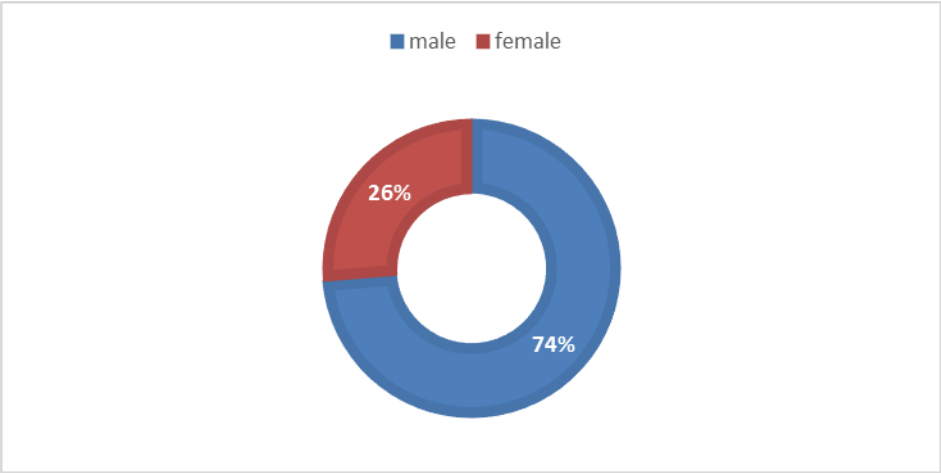

Figure :1 Genderwise distribution of the participants.

The figure-1 shows the genderwise distribution of the participantsof the observational study. Out of the 981 individuals, the majority were male (73.7%) and the remaining were female (26.3%).

Table 2: Questions on knowledge towards the use of face mask to limit the spread ofCOVID-19.

S.NO	QUESTIONS	YES (%)	NO (%)	I Don't know (%)
01	Are you affected by COVID- 19(previously/ current)	25.3% (243)	74.4% (733)	-
02	How many types of mask you know?	77.5% (760)	22.5% (221)	-
03	Which mask is the best to protect you from COVID-19 pandemic?	85.1% (835)	14.9% (146)	-
04	Do you know about valve in N95 mask?	66.9% (651)	33.1% (322)	-
05	Which is the most important time to use mask?	87.9% (863)	12% (130)	-
06	Do you believe that it is really necessary to wear mask in current situation of COVID 19 Pandemic?	80.6% (791)	19.4% (190)	-
07	Do you think that cloth face mask is as effective as a regular surgical mask?	65.1% (639)	34.9% (342)	-
08	Are you confident enough to know the correct step of wearing a face mask	76.1% (747)	23.9% (234)	-
09	Do you reuse the mask once wore	61.5% (603)	38.5% (378)	-
10	For proper wearing to which extent do you need to cover face with mask	91.7% (899)	8.4% (82)	-
11	How do you remove your mask before eating?	75.5% (735)	24.5% (238)	-
12	Can wearing surgical mask protect you from COVID 19?	78.8% (773)	21.2% (208)	-
13	How long can you wear a surgical mask?	69.4% (681)	30.6% (300)	-
14	During clinics if there is a need to talk to the patient, will you remove your mask?	53.8% (523)	46.2% (450)	-
15	Have you been maintaining social distance even while wearing mask?	46.3% (454)	31.9% (313)	21.8% (214)
16	Does wearing mask help to reduce the spread of corona virus?	36.9% (362)	16.7% (164)	46.4% (455)
17	Does wearing a mask make you less likely to follow	44.4%	31.4%	24.3%

	social distancing guideline?	(430)	(304)	(235)
18	Telling someone else to put on are wear a mask?	76.4% (749)	23.6% (232)	-
19	When at a store do you comfortable, less comfortable or in different if employees wearing mask?	29% (282)	56.7% (551)	14.3% (139)
20	When at a store do you comfortable, less comfortable or in different if employees wearing mask?	46.3% (454)	21.8% (214)	31.9% (313)

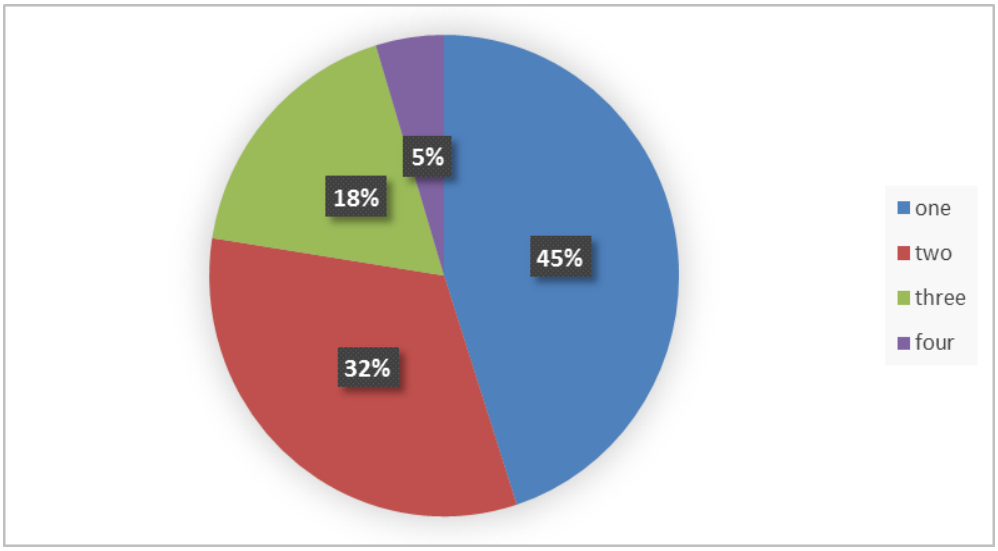

Figure: 2 Types of mask known.

As indicated in the figure-2, most of the people (45%) were aware about three type of masks only. Whereas, 318 respondents (32.5%) accepted to know about four different types of masks.

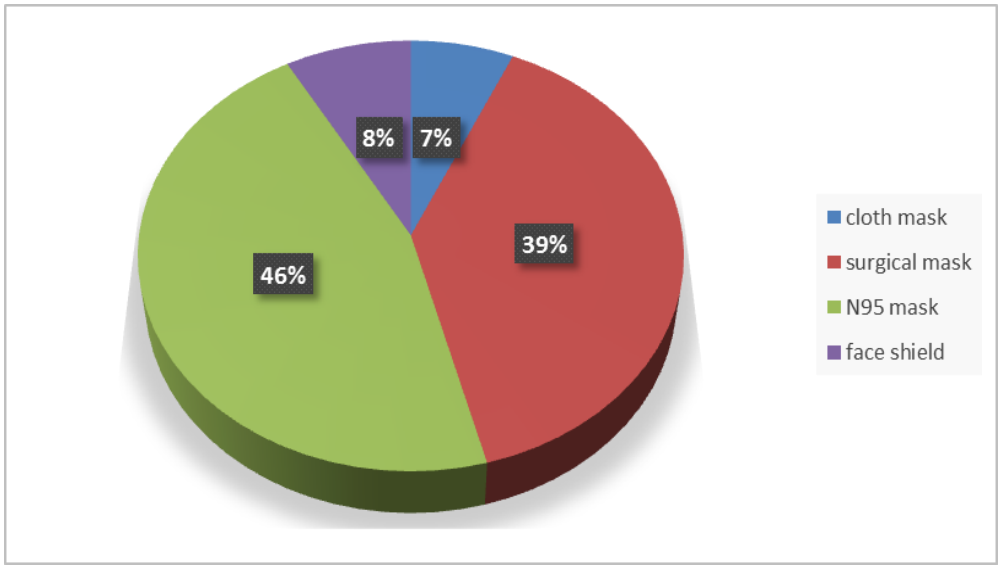

Figure: 3 Best mask to protect from COVID-19.

Out of 981 respondents,450 members(45.9%)believed that N95 mask sure the best fit to protect COVID 19 infection while 384 members responded better protection is given by surgical mask.

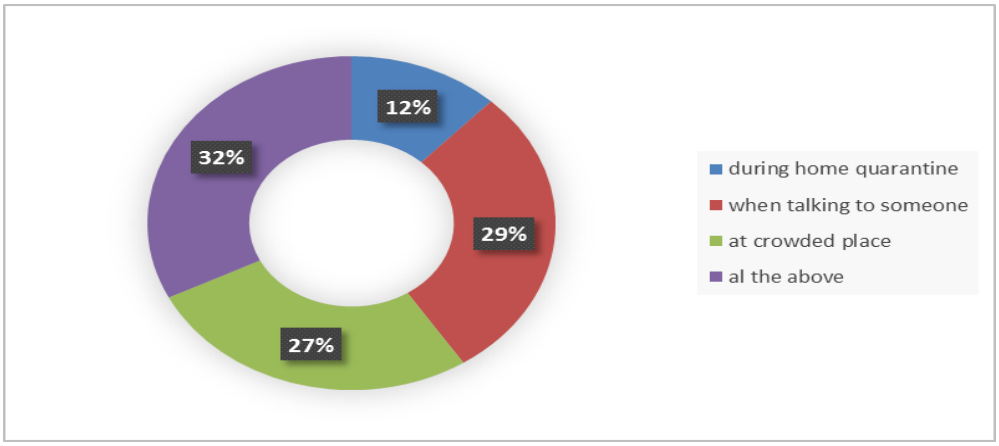

Figure: 4 important time to use mask.

Majority of the participants (32.3%) accepted that it is necessary to use mask when talking to others and while at crowded place. The results were in concurrence with previous study reports showing 98.2% people agreed to wear face mask in public place and 83.4%believed that face mask can protect againstCOVID19.

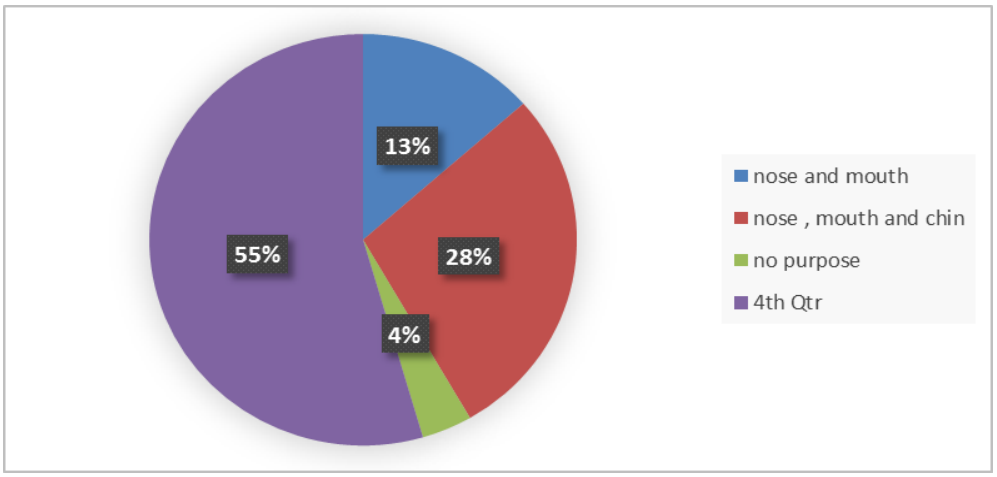

Figure: 5 Knowledge of Participants on Proper mask wearing.

608 participants were confident about the correct step of wearing a face mask. The result is supported by earlier study stating 60.1% participants having knowledge on the proper use of face masks.

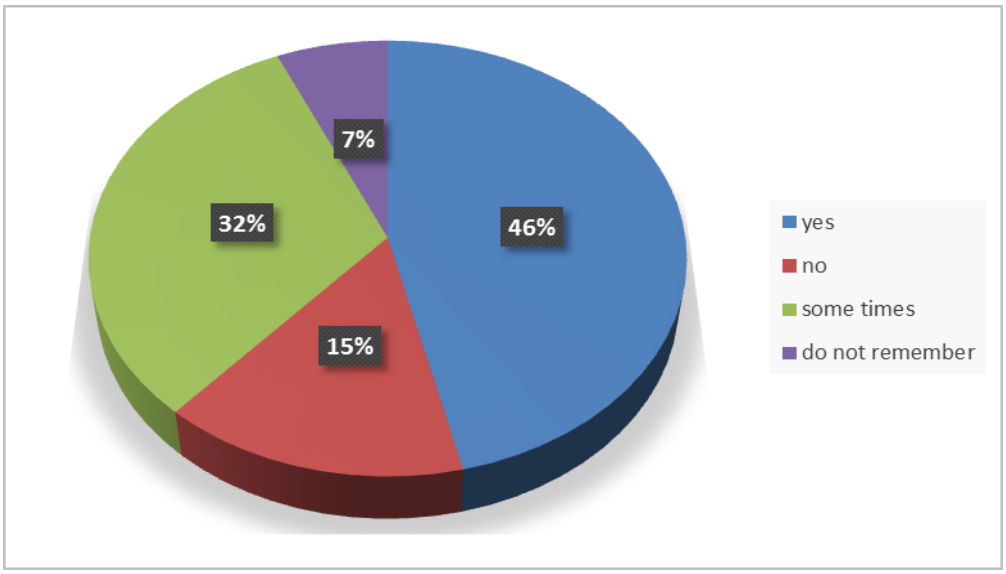

Figure: 6 Habit of maintaining social distance.

The figure indicates that majority of the respondents, 46.3% reported that they are maintaining the social distance even when they are wearing masks.

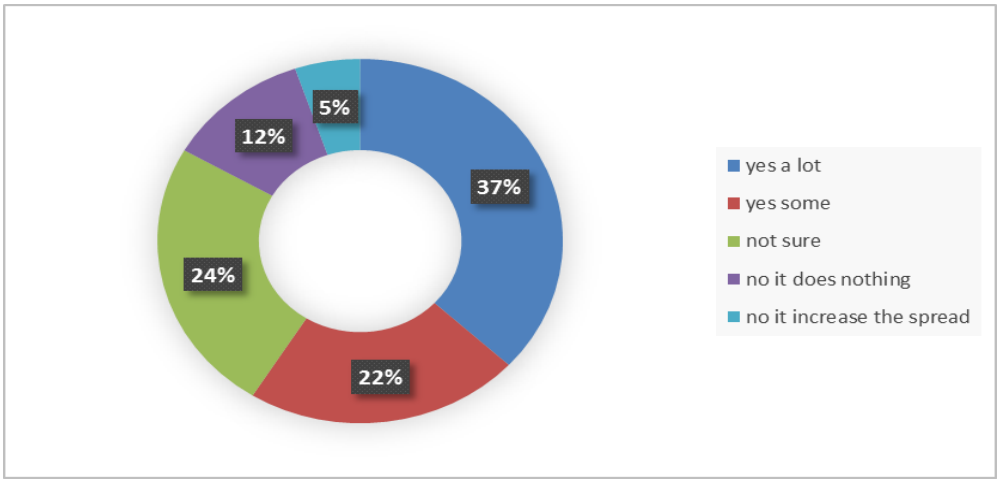

Figure: 7 Knowledge of Wearing mask.

Majority of the participants believe that wearing face mask is essential to reduce spread of COVID 19 pandemic which is supported by previous study reports showing 97.6% of the same.

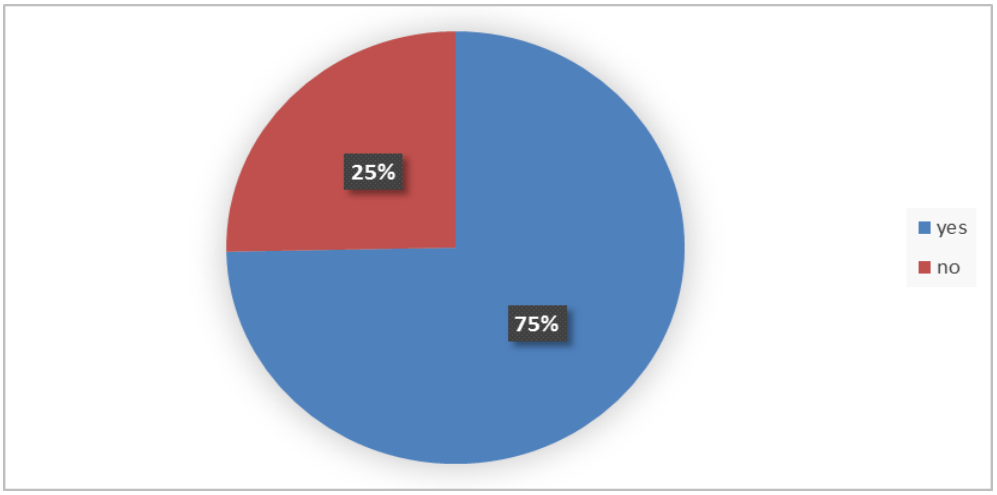

Figure: 8 Infected by COVID- 19.

The figure-8 depicts the participants who have been infected with COVID-19. Of the total 981 respondents, 74.7 % have been infected with COVID-19, whereas 25.3 % have not been infected with COVID-19.

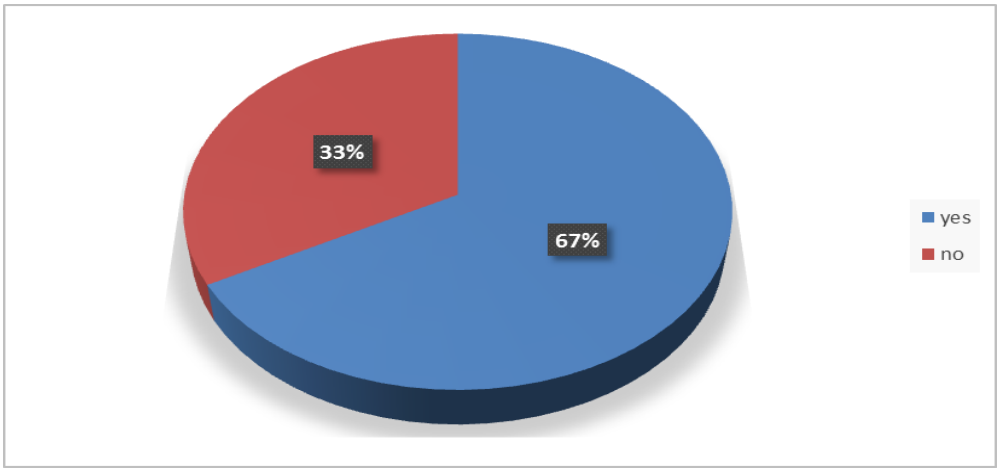

Figure: 9 Knowledge about N95 mask.

Participants were aware of the N95 mask valve, with a total of 973 responses indicating that 66.9% of participants were aware of the N95 mask valve and 33.1 % were unaware of the mask valve.

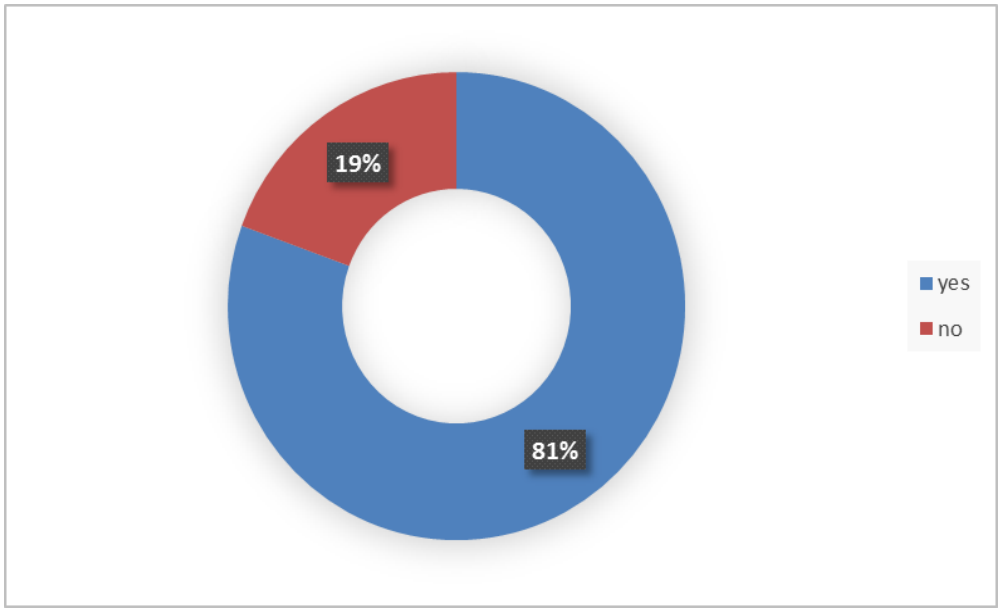

Figure: 10 Mask wearing belief.

The statistics show that 981 respondents believe it is required to wear a mask in the present scenario, with 80.6 % believing it is necessary to use a mask in the current situation and 19.4 % believing it is not necessary to use a mask in the current circumstance.

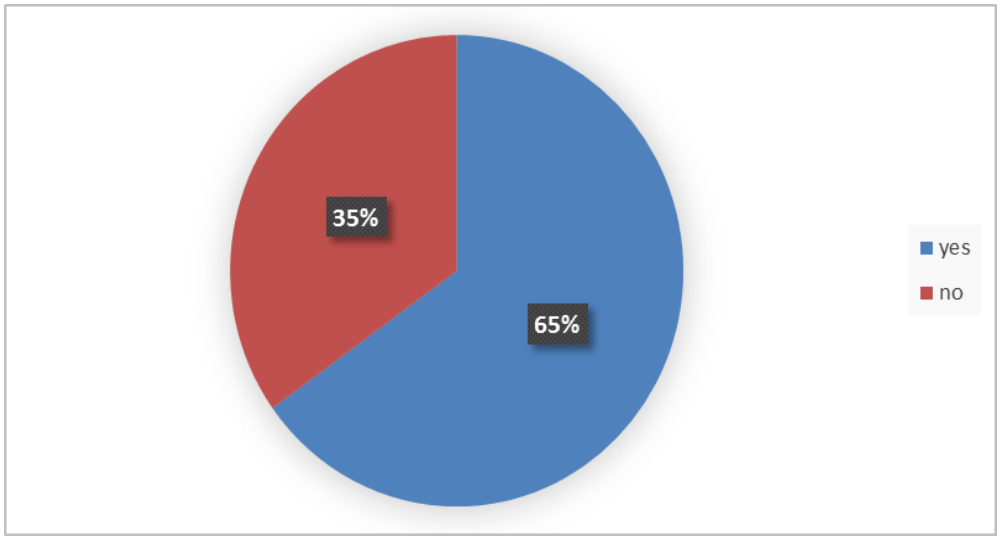

Figure: 11 Effectiveness of Cloth mask.

The graph reveals that cotton masks are more effective than surgical masks, with 981 responders. 65.1 % of participants agreed that a cloth face mask is as effective as a standard surgical mask, while 34.9 % disagreed that a cloth mask is that effective.

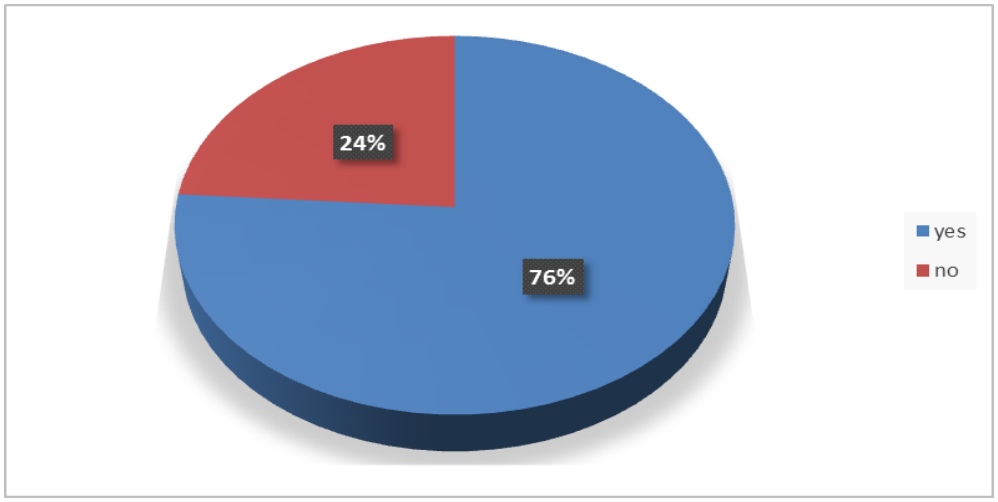

Figure: 12 Knowledge about Correct step of mask wearing.

The study depicts how confident people are in their ability to correctly apply a face mask, with 76.1 % of respondents correctly applying a face mask and 23.9 % incorrectly applying a face mask.

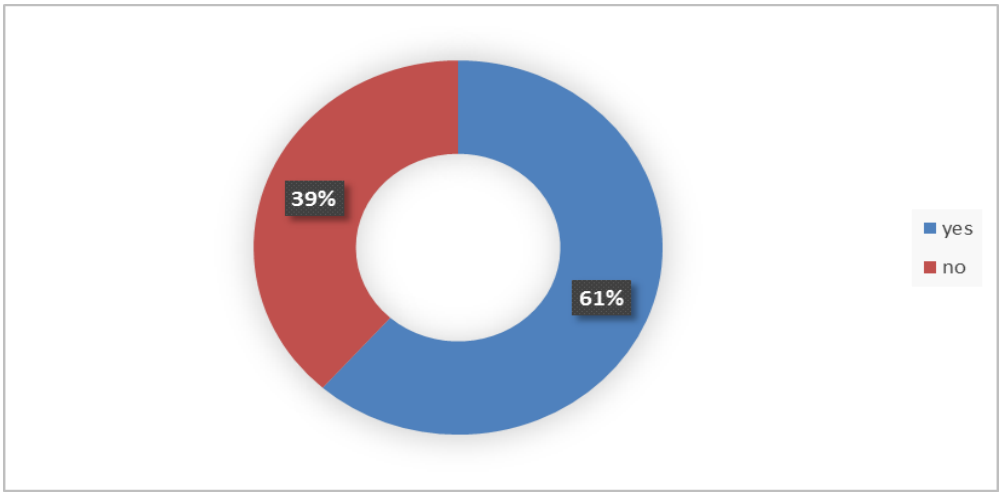

Figure: 13 Reuse of mask.

The result demonstrates that 61.5 % of participants use the mask only once, whereas 38.5 % of participants reuse the face mask once in a month.

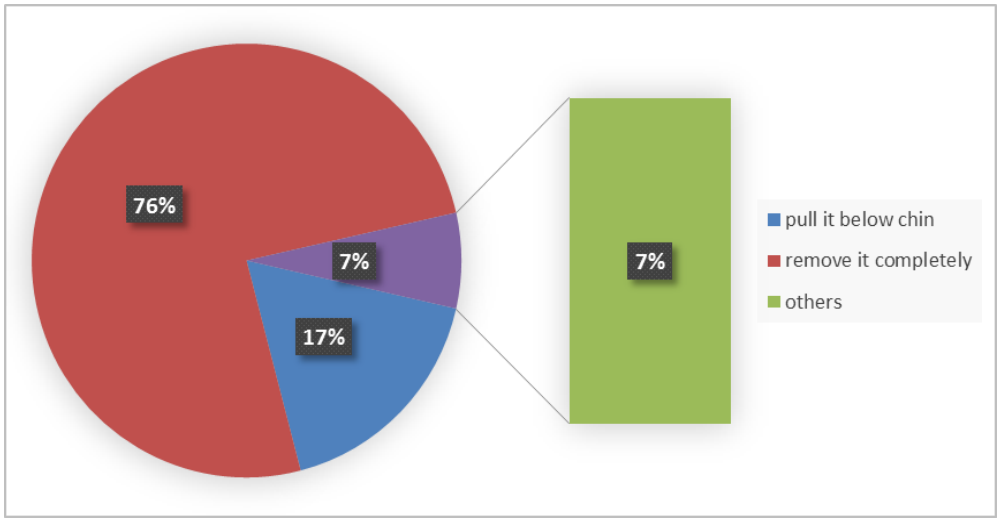

Figure: 14 Practice of removing mask before eating.

The figure-14 depicts the knowledge about how to remove the mask before eating, with 75.5 % of respondents know how to remove the mask before eating and 24.5 % of participants not knowing the correct step to remove the mask before eating.

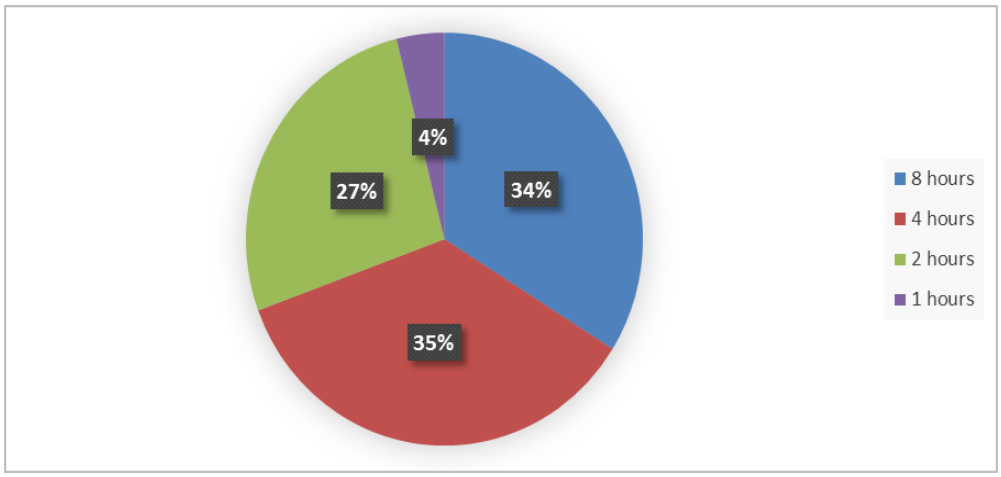

Figure: 15 wearing a surgical mask.

The figure depicts the length of time to use a surgical mask. Out of 981 responses, 35.5 % were knowing the length of time (4 hours) to use a surgical mask and 35.5 % not knowing the length of time to use a surgical mask.

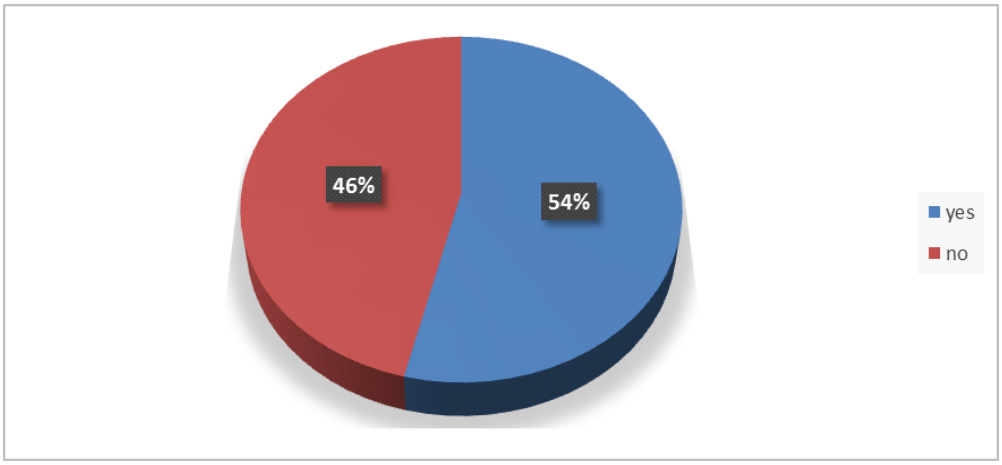

Figure: 16 Clinics – patient counseling.

The statistics reveal that there is a need to speak with the patient to remove the mask, with 973 participants accepting the need and 46.2 % rejecting the need to speak with someone to remove the mask.

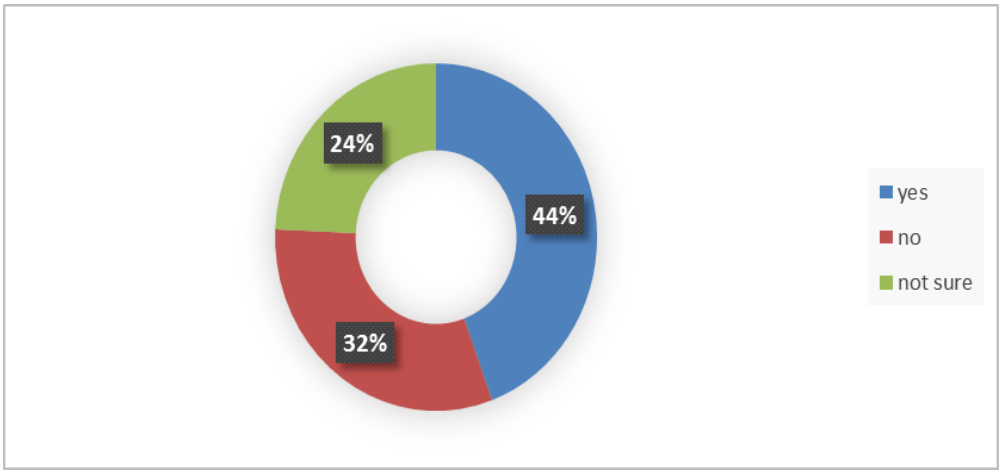

Figure: 17 Attitude of wearing mask.

The figure-17 shows that 44.4 % of participants accept that wearing mask at the same time as social distance guidance is very much needed, 31.4 % of participants do not accept wearing mask at the time of social distance guidance, and 24.3 % of participants were unsure to follow the social distance while wearing mask.

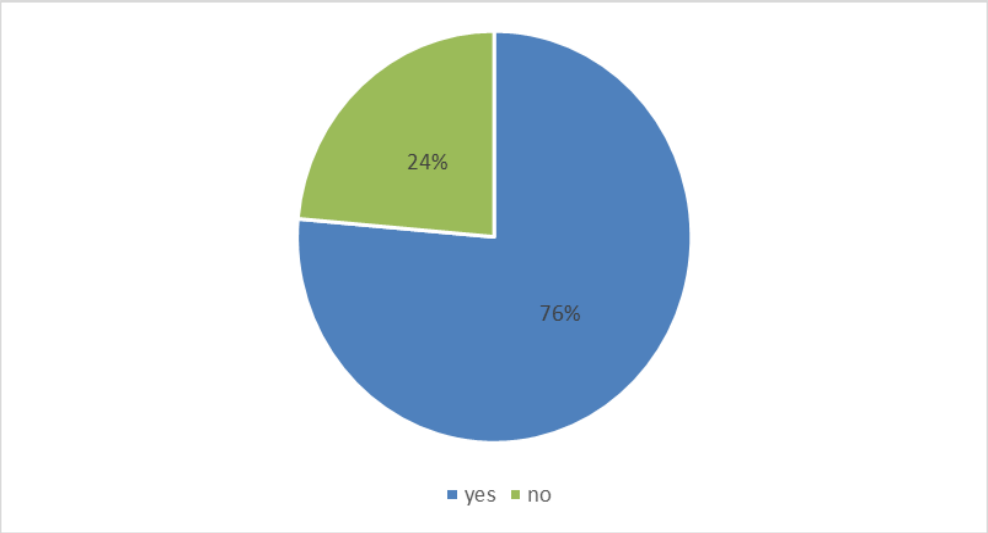

Figure: 18 spreading awareness.

The study finding Shows that out of 981 respondents, 76.4 % agreed to tell someone to put on a mask and 23.6 % disagreed to tell someone to put on a mask.

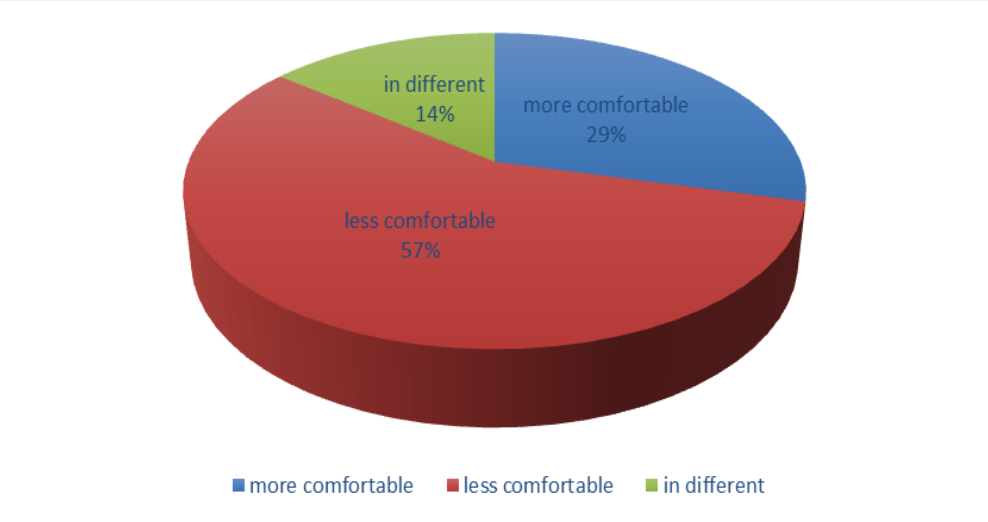

Figure: 19 Comfort during mask wearing.

The figure depicts whether wearing a mask is comfortable or not, and whether it is completely comfortable or not. A total of 972 people took part. 56.7 % of participants agreed that wearing a mask makes them feel more comfortable, whereas 29 % said it makes them feel less comfortable, and 14.3 % said it makes them feel different.

The data depicts the discomfort of 981 respondents in wearing a mask. Participants reported difficulty mainly in breathing, talking, and recognising faces, among other things, which are all substantial sources of discomfort for the participants.**(Figure-20)**

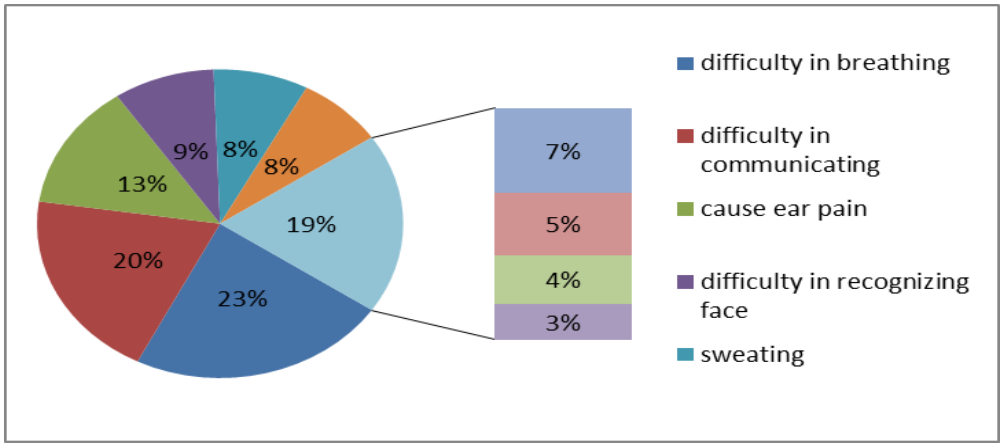

Figure: 20 Discomforts of wearing mask.

DISCUSSION

A face mask may help to prevent the spread of infection in the community by reducing the spread of infected individuals' respiratory droplets, although research on the sort of mask to employ in this current COVID-19 pandemic is still inconclusive. [22]

A previous study conducted in Pakistan shows that the majority of participants (60.1%) had enough knowledge of how to wear face masks to prevent the transmission of COVID-19, and this knowledge score was largely distributed among those with a tertiary education. The knowledge score is higher than that of healthcare personnel in Pakistan, who scored 35.2 percent on the usage of face masks to prevent the spread of COVID-19.[23]

High education and marriage are indicators of responsibility, which may explain why these groups of people were more knowledgeable than others, as reported in several other studies on KAP toward COVID-19.[24, 25] Our study reports were in concurrence with the previous reports. In our study, the majority of the respondents (46.3%) maintained social distance even while wearing masks, 6.6% did not remember, and 31.9% responded that they do so only sometimes. Wearing a mask did not interfere with the majority of the study participants (44.4%) following the distancing guidelines, and 24.3% were not sure about the same.

Knowledge about the proper use of face masks plays a vital role in fulfilling the purpose of wearing a face mask. Also, the attitude of using a face mask will improve the adherence to the guidelines. Findings by Hager et al. showed that the study participants' attitudes toward face masks varied by age, education level, occupation, marital status, and residence.[26] Earlier studies have reported that despite the fact that just 69.4% (773/1114) of respondents were confident in their ability to appropriately put on a face mask, 83.4 percent of COVID-19 can be protected with a face mask, according to 75.9% of respondents who denied that they had ever shared their face mask. Similar studies on the usage of face masks in Pakistan and Hong Kong found that 88.5% and 88.44% of participants, respectively, reported being confident enough to know the proper processes for wearing a face mask.[27, 28] Ho et al.[29] conducted a study in Hong Kong and reported that 52.0% of participants knew the proper process for wearing a face mask to protect themselves from infection.

In a prior survey, 83.4% of participants thought that wearing a face mask might protect them from COVID-19. This was slightly higher than Azlan et al.[30], who showed that 76.7% of Malaysian participants believed a face mask could protect them from COVID-19. These reports support the findings of our study, which shows that most of the participants (76.1%) were aware of the correct procedure for wearing a face mask and that 80.6% of the participants believed it was really necessary to wear a face mask during this pandemic.

Most people, even healthcare workers, have the habit of removing their face mask when they are in a situation to talk to someone. Studies conducted earlier reported around 51.5% of participants removing their face mask if they needed to communicate with someone, which was in contrast with a study in Pakistan, where only 13.8% of participants said they could remove their face mask while conversing.[30] Our study reports showed that 53.8% removed their mask while talking to others, and 46.2% of the participants did not remove the mask while speaking. In different population settings, people's perceptions of the effectiveness of various types of face masks differed. As the surgical masks were exclusively suggested for health personnel, the cloth variety was generally used by most of the population. Furthermore, surgical masks are only worn once, whereas fabric masks are washed and reused as identified by Lee et al., 2020.[27]

Studies conducted among the Vietnamese people showed that surgical masks (57.6%) and non-antibacterial cotton masks (23.1%) were the two most popular types of face masks worn by them. Around 88.2% of healthcare workers agreed that a cloth mask is not as effective as a standard surgical mask, and approximately 79.8% knew that a surgical face mask cannot be reused. Around

75.6% were aware of the right and maximum usage time.[31]

In our study, 65.1% of respondents believed that a cloth face is as effective as a regular surgical mask, while 34.9% opposed the statement. Results of our study show that 61.5% of participants reused the masks, while 38.5% used them only once. According to previous surveys, the majority of respondents who reused non-antibacterial cloth masks (56.2 percent) claimed they followed the manufacturer's recommendations and washed their masks after each use or every day of use. Despite this, a small percentage of individuals (6.8%) washed their masks after a few days but less than a week of usage or after each week of usage. A well-washed cotton mask has been demonstrated to be just as effective as a medical mask in terms of protection.[32]

N95 respirators, by definition, are meant to prevent small airborne particles from entering the mouth and have specific filtering standards. Medical masks, often known as surgical masks, are worn to protect people from microbe transmission, particularly during hand-to-face contact and big drops and sprays. To guard against airborne viral diseases such as SARS-CoV-2 and the influenza virus, both masks and N95 respirators are used.[33]

Only a small portion of what comes out of a person's mouth is already in aerosol form when they breathe, speak, or cough.[34] Almost all of what is exhaled is in the form of droplets. Many of these droplets will then evaporate, resulting in 3 to 5-fold smaller aerosolized particles.[35] Surgical masks and N95 respirators were shown to be the most consistent protective strategies in a prior evaluation of the literature, which included 67 randomized controlled trials and observational studies. 66.9% of the respondents had knowledge about the availability of the valve in the N95 mask, while 33.1% of the participants had no knowledge about the same.

CONCLUSION

The study reports show that the knowledge about wearing mask was good among the study population. Eventhough the attitude was considerably good, the practice of wearing mask was having certain drawbacks due to unidentified reasons. Also, there is still much more to be done in terms of attitude and practices among the students as well as the general public to fight this pandemic. More awareness must be generated among the community on the proper steps of wearing and disposing off a face mask to limit the spread of COVID-19.

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