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Knowledge, Attitude and Practice on Preventive Measures of COVID-19 among People during Second Wave of the Pandemic

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Abstract: ***Background: COVID-19 is significantly affecting all over the world. Hence the people must be aware about the best preventive measures against this disease. Objective: The purpose of this study was to assess the knowledge, attitude, and practices on preventive measures of COVID-19 among general public. Methods: This was a cross - sectional study conducted among people from a selected area at south India. Online survey was conducted using structured knowledge questionnaire through Google form. Data was collected from 20th April to 20th May 2021 and analyzed using descriptive statistics. Spearman rank correlation, chi - square test and multivariate analysis were used to examine the association between socio-demographic characteristics with knowledge, attitude and practice related to COVID-19. Results: Among 300 participants, 87.3% (262) of the participants had average knowledge, 78.3% (235) of the people had moderate attitude towards COVID-19 and only 1/3rd of the total participants (109) follows good COVID-19 practice. The source of information was found to be a significant influencing factor for knowledge (mean=8.92, p<0.05) and practice (mean=2.75, p<0.05) and a positive correlation was observed between knowledge and attitude, knowledge and practice and knowledge and practice (p<0.001). Conclusion: Most of the people had average knowledge, moderate attitude and only 1/3rd follows good COVID-19 practices. Hence, the constant motivations through educational programmer related to COVID-19 are necessary for public to improve the knowledge, attitude and practices.***

Keywords: knowledge, attitude, practice, COVID-19, preventive measures

1. Introduction

Corona viral disease (COVID-19) is an infectious disease caused by a noval corona virus. Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment. As per the recent statistics there has been 178202610 confirmed cases and 3865738 deaths reported [1]**.** People aged 60 years and over, and those with underlying medical problems like high blood pressure, heart and lung problems, diabetes, obesity or cancer, are at higher risk of developing serious illness. However, anyone can get sick with COVID-19 and become seriously ill or die at any age. Data has shown that it spreads mainly from person to person among those in close contact (within about 6 feet, or 2 meters). The virus spreads by respiratory droplets released when someone with the virus coughs, sneezes, breathes, sings or talks. These droplets can be inhaled or land in the mouth, nose or eyes of a person nearby. In some situations, the COVID-19 virus can spread by a person being exposed to small droplets or aerosols that stay in the air for several minutes or hours — called airborne transmission. Some reinfections of the virus that causes COVID-19 have happened, but these have been uncommon and median incubation period of maximum 8 days and 12 days respectively [2].

The pandemic COVID-19 is spreading very fast and greatly affected the lifestyle of the population all over the planet. The perception of the risk of epidemic and instructions for prevention of this epidemic is necessary for risk management of COVID-19 [3]. A key measure to mitigate the spread of COVID-19 has been masking, social distancing and hand washing. Across sectional survey from India found 81% of people had good knowledge, 77% had positive attitude and 83.5% following good practice towards prevention of COVID-19 [4]. Similar study among health care workers in Armed forces in North-Western part of India showed high prevalence (>90%) of knowledge related to symptom and transmission, whereas anxiety and worry prevalent among frontline workers [5]. Another study from India found that there was inadequate knowledge for 75% of people and 75% followed hand hygiene guidelines and 5% did not follow lock down restrictions [6]. Even though the government and health department enforcing all these preventive measures the test positivity rate is increasing day by day. Though there are few studies from different countries regarding the knowledge, attitude and practice of people, but no studies found from south India. Hence it is necessary to assess whether the people are knowledgeable about COVID-19, what is their attitude towards COVID-19 and how they are practicing the infection control measures during the second wave of COVID-19. The objective of the study was to assess the knowledge, attitude and practice of people regarding the prevention of COVID-19.

2. Materials and methods

Study design: The design of the study was a cross - sectional electronic survey. Data were collected through a web - link of an online questionnaire with closed ended questions.

Setting and samples: The study was conducted in a selected area at South India and the participants are selected by using snowball sampling technique. The estimation of the sample size was done by assuming a minimum prevalence of 25%, confidence level = 95%, and d (margin of error) = 0.05. The calculated sample size of this study was 288 participants, and with attrition of 10% reaching a sample size of nearly 320 participants.

Instruments/measurements: The survey was conducted using customized questionnaires designed in Google platform. The questionnaire was divided in to four parts. a) Demographic information about the participants: It includes 7 items such as age, gender, education, occupation, marital status, place of residence, source of information etc. b) The knowledge was assessed by multiple choice questions. Each correct answer scored 1 and the total score ranged from 0 to 10, with a higher total score indicating a better mastery of knowledge. c) Attitude was assessed by 5point attitude scale. It includes a total of 10 items. Each item was rated on a 5 - point Likert scale and the total score ranged from10 - 50, with a higher total score indicating more good attitude d) Practice questions include total of 8 items. Each correct answer scored 1 and the total score ranged from 0 to 10 with a higher total score indicating good practice.

Data collection procedure: The data were collected from April 20th to May 20th, 2021. The study's inclusion criteria are the age above 18 years who write and read English and who are residing in south India. The link for filling the questionnaires were distributed through various online platforms like what's app and G mail for 320 people and received responses from 300 people. Through the link the participants could view the questions simply by clicking on it and answer the questions. The cover page of the questionnaire included voluntary nature of participation, declarations of confidentiality and anonymity Only participants who select 'agree to participate' option can proceed to fill in the rest of the questionnaire

Data analysis: The data were analyzed by using SPSS20 version.

3. Results

The data were analyzed by using SPSS 20 version. The table - 1 represents the demographic variables of the participants. Majority of the respondents belongs to the age group of 18 - 29years. Most of them are females (186). Among 300 participants 253 (84.3%) had an education of graduation and above. Employees and students contribute to 81% of the respondents. More than 50% of them were married and >50% belong to rural area. The source of information regarding COVID-19 for >210 participants were social media, TV, friends and family, magazines, newspapers and books.

Table 1: Descriptive statistics of Survey respondents (n=300)

S. No	Socio demographic characteristics	Total (n=300)	
		n	%
1	**Age (yrs)**		
	18 - 29	143	47.7
	30 - 39	53	17.7
	40 - 49	96	32
	50 - 59	3	1
	>60	5	1.7
2	**Gender**		
	Male	114	38
	Female	186	62
3	**Education**		
	Secondary school	47	15.7
	Graduation and above	253	84.3
4	**Occupation**		
	Self employed	24	8
	Employed	123	41
	Not employed	28	9.3
	student	125	41.7
5	**Marital status**		
	Married	166	55.3
	Single/Widowed	134	44.7
6	**Place of Residence**		
	Urban	136	45.3
	Rural	164	54.7
7	**Source of information**		
	Social media/TV	77	25.7
	Family and friends	5	1.7
	Magazines/Newspapers/Books	8	2.7
	All the above	210	70

Respondents scores of knowledge, attitude and practice on prevention of COVID-19 is given in table 2. The lowest knowledge score was "0" and highest score was 8. The mean score obtained was 6.70 with a SD of 1.39. The lowest attitude score was 24 and highest was 46 with mean score of 36.42 and SD 3.52. The practice score obtained by the participant's ranges from 2 to 8 with a mean score of 5.12 and SD 1.16.

Table 2: Respondents score of knowledge, attitude and practice on Prevention of COVID-19 (n=300)

Parameters	Lowest score	Highest score	Mean score (SD)
Knowledge	0	8	6.70 (1.39)
Attitude	24	46	36.42 (3.52
Practice	2	8	5.12 (1.16)

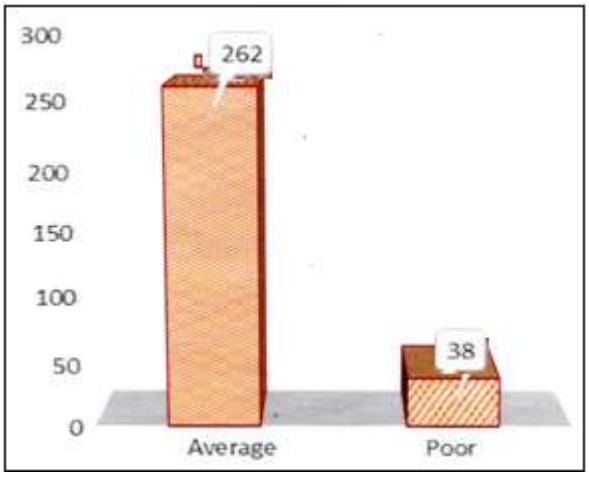

Figure 1: Knowledge of respondents on preventive measures of COVID-19

Assessment of knowledge score found that 87.3% (262) of the participants had average knowledge and 12.7% (38) had poor knowledge regarding prevention of COVID-19. Nobody attained good score (Figure 1).

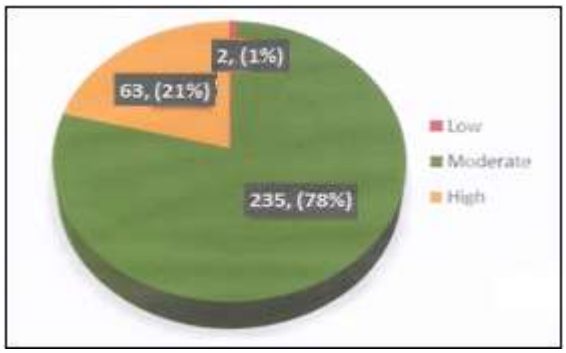

Figure 2: Attitude of the respondents towards COVID-19

The study shows that most (235) of the people had moderate attitude towards COVID-19 and 63 had high attitude towards prevention of COVID-19. Only two participants had low attitude (Figure 2).

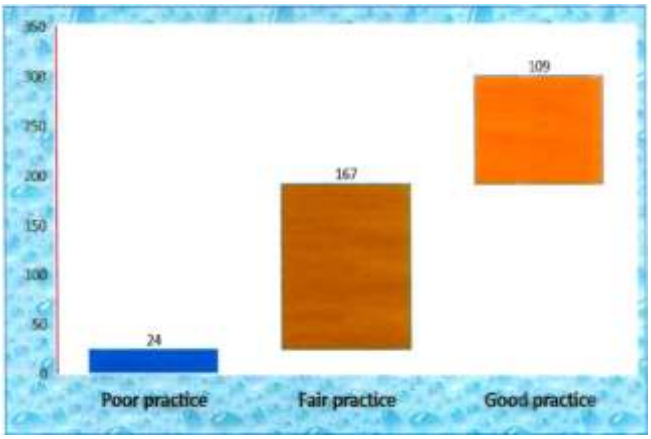

Figure 3: Practice of COVID-19 preventive measures among the participants

Practice scores of the participants shows that only 1/3rd of the total participants (109) follows good COVID-19 practice whereas more than 50% (167) attained fair practice scores and the scores of 24 participants were poor.

Table 3: Multivariate analysis of factors associated with knowledge attitude and practice score in prevention of COVID-19 (n=300)

Socio demographic characteristics	n	%	Knowledge			Attitude			Practice		
			Mean (SD)	F	P	Mean (SD)	F	P	Mean (SD)	F	P
Age (yrs)											
18 - 29	143	48	6.66 (1.54)	1.21	0.31	36.59 (3.79)	2.25	0.06	5.1 (1.09)	1.27	0.28
30 - 39	53	18	6.77 (1.03)			36.09 (2.96)			5.11 (1.24)		
40 - 49	96	32	6.71 (1.39)			36.44 (3.47)			5.12 (1.26)		
50 - 59	3	1	6.33 (1.15)			38 (1.0)			5.67 (0.58)		
>60	5	1.7	7.2 (0.45)			34 (1.87)			5.20 (0.84)		
Gender											
Male	114	38	6.75 (1.46)	0.55	0.88	36.35 (3.59)	0.52	0.47	5.06 (1.21)	0.14	0.71
Female	186	62	6.67 (1.36)			36.46 (3.48)			5.16 (1.14)		
Education											
Secondary school	47	16	6.53 (1.7)	2.42	0.12	35.59 (4.13)	0.3	0.59	5.11 (1.17)	0	0.97
Graduation and above	253	84	6.73 (1.33)			36.58 (3.38)			5.12 (1.17)		
Occupation											
Self employed	24	8	6.96 (0.91)	1.67	0.17	36.38 (3.24)	0.78	0.51	5.04 (1.12)	1.12	0.34
Employed	123	41	6.69 (1.38)			36.41 (3.4)			5.15 (1.27)		
Not employed	28	9.3	6.71 (1.15)			35.42 (2.92)			4.75 (0.89)		
student	125	42	6.66 (1.39)			36.66 (3.79)			5.12 (1.16)		
Marital status											
Married	166	55	6.76 (1.24)	2.8	0.09	36.34 (3.33)	1.56	0.21	5.11 (1.21)	1.47	0.23
Single/Widowed	134	45	6.63 (1.57)			36.53 (3.76)			5.12 (1.11)		
Place of Residence											
Urban	136	45	6.71 (1.38)	0	0.95	36.29 (3.66)	0.3	0.59	5.07 (1.13)	0.26	0.61
Rural	164	55	6.69 (1.39)			36.53 (3.41)			5.16 (1.19)		
Source of information											
Social media/TV	77	26	6.61 (1.52)	8.92	<0.05	36.27 (3.27)	0.5	0.68	5.09 (1.04)	2.75	<0.05
Family and friends	5	1.7	7.2 (1.30)			39 (2.65)			5.20 (2.17)		
Magazines/Newspapers/Books	8	2.7	5.5 (3.16)			36.63 (3.20)			5.13 (1.13)		
All the above	210	70	6.67 (1.22)			36.52 (3.59)			5.12 (1.19)		

According to the results of multi variate analysis of factors in terms of knowledge, attitude and practice on prevention of COVID-19, the difference in mean scores between respondents of different age, gender, education, occupation, marital status and place of residence were not statistically significant. Whereas a source of information was found to be a significant influencing factor for knowledge (mean=8.92, $p<0.05$) and practice (mean=2.75, $p<0.05$) (Table3).

Table 4: Correlation between knowledge, attitude and practice (n=300)

S. No.	Variables	r value	p value
1	Knowledge and attitude	0.28	p<0.001
2	Knowledge and practice	0.22	p<0.001
3	Attitude and practice	0.23	p<0.001

Karl Pearson correlation between knowledge, attitude and practice found a positive correlation between knowledge and

attitude, knowledge and practice and knowledge and practice ($p<0.001$).

4. Discussion

In this study majority of the participants were females (189). The chances of getting infected with COVID-19 increases with age. Indian females <35 years were found to be at greater risk of COVID-19 [7]. Older patients and those with primary diseases were at risk of worsening of clinical manifestations [8]**.** The present study found that majority (262) of the participants had average knowledge and 38 had poor knowledge regarding prevention of COVID-19. A study on knowledge, attitude and practice about COVID-19 and its psychological impact on students and their studies among pharmacy students in Saudi found that students have good knowledge, positive attitude and good practice towards COVID-19 and the preventive measures. In the early months of pandemic made a negative psychological impact among students [9]**.**

The current study shows that most (235) of the people had moderate attitude towards COVID-19 and 63 had high attitude towards prevention of COVID-19. Studies from south Korea found knowledge on COVID-19 affected both the attitude and practice scores [10]. Knowledge, attitude and practice studies from Iran towards COVID-19 outbreak shows that 60.8% of general population has moderate knowledge and significant correlation between knowledge, attitude and practice and socio-demographic variables [11]. Studies among medical students found 92.7% had extensive knowledge about COVID-19 and 80% had positive attitude [12].

Results of the present study shows that only 1/3rd of the total participants (109) follows good COVID-19 practice methods whereas more than 50% (167) attained fair practice scores and the scores of 24 participants were poor. A web based crosssectional study among public regarding the knowledge, attitude and acceptance of health care workers and public found that 61.8% of public is reported with mask wearing adherence [13]**.** Study from Vietnam found 92.2%had high knowledge level regarding preventive measures68.6% had positive attitude and 75.8% practices all measures for preventing the spread of disease [14]. Knowledge, attitude and practice among residents in China found that 85 - 2% had adequate knowledge, 92.9% had positive attitude and 84.4% had good practice scores [15].

Analysis of factors associated with knowledge, attitude and practice scores on prevention of COVID-19 found that source of information had a significant impact on knowledge and practice scores. A similar study in Bangladesh during the first lock down found that the demographic variables associated with positive attitude of COVID-19 were older age, having higher education, being employed, having joint family and higher monthly income [16]**.** Knowledge, attitude and practice among public in Saudi Arabia shows majority of the participants have high level of knowledge, optimistic attitude and good practice. Compared to women, men had less knowledge, less optimistic attitude and less good practices [17]. It was found that social media users in Jammu and Kashmir had good knowledge, positive attitude and sensible practice during COVID-19 pandemic [18]. Positive correlation was found between knowledge and attitude, knowledge and practice and knowledge and practice. Knowledge, attitude and practice among pregnant women in South Africa found low mean scores of knowledge and attitude and knowledge was positively correlated to practice [19]. Knowledge, attitude and practice in India among health care works found that 80%had adequate knowledge, positive attitude and practiced safely and the knowledge was positively correlated with attitude [20].

A knowledge, attitude and practice study among general population of India towards the transmission and prevention practices (93.8%). Whereas another study found moderate level of knowledge (67.6%) and attitude (96%), but 89.9% follow good practice. Positive correlation observed between knowledge and attitude as well as attitude and practice [21].

5. Conclusion

Most of the people had average knowledge, moderate attitude and only 1/3rd follows good COVID-19preventive practices. Study on public awareness in preventing the spread of COVID-19 outbreak in India found the need to elaborates socio economic aspects for the society to start appreciating and following the preventive measures [22]. Hence, the constant motivations through educational programs related to COVID-19 are necessary for public to improve the knowledge, attitude and practices.

6. Limitations

- The Non probability sampling technique and online data was collected due to statewide lockdown
- Difficulties' in reaching the sample, hence online survey with self - reporting method was used to collect the data.

7. Acknowledgement

The author wish to acknowledge all the participants of the study.

8. Availability of data

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Conflict of Interest: The author declares no conflict of Interest.

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