Original Research Article

Assessing the Public's Understanding of Covid-19 in Varanasi District

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ABSTRACT

Background: The COVID-19 has become a worldwide pandemic. Despite global efforts to control the disease spread, the outbreak is still on the rise. The only way of prevention is to know about it and act accordingly.

Aims: The present paper aims to examine the knowledge, attitude, and practices (KAP) of the community on causation, prevention and treatment of Covid-19 and assess the factors associated with it.

Methods: A cross-sectional community based survey was carried out among 98 study subjects. The questionnaire was designed to assess the KAP regarding COVID-19. The common residents of Sundarpur locality of Varanasi district who were present in their houses during the data collection period and gave their consent to respond to the survey were included in the study.

Statistical analysis used: Descriptive statistics, chi-square test and bivariate logistic regression was used to analyse the data

Results: 71.4% of respondents had accurate knowledge regarding causation, transmission and prevention of COVID-19, 71.4% of respondents presented positive attitudes towards the preventive measures for controlling the spread of COVID-19 and 41.8% of respondents followed correct practices. Significant positive correlation was found between knowledge and attitude score and attitude and practice score.

Conclusions: This study demonstrated that knowledge and attitude towards COVID-19 is comparatively better among the respondents, but unfortunately, they lack behind in practices. COVID-19 reporting is still deficient among the respondents.

INTRODUCTION

Covid-19, officially known as Severe Acute Respiratory Syndrome Coronavirus 2(SARS-CoV-2) and also we know as the novel CORONA virus. The shift from hunter societies to agrarian-civilized societies has favoured the spread of infectious virus diseases in the human population[1]. Expanded trades between community and countries have increased interactions between humans. Thereafter, expanded cities and extended business or trades territories have been increased travels as well as effects on environment and our ecosystem[2]. It raised the emergence and spread of infectious diseases which is leading higher risks for outbreaks, epidemics and even pandemics. An Outbreak corresponds to an occurrence of cases in a new area & an Epidemic is an outbreak that spreads to larger areas but a Pandemic is an epidemic that spreads globally[3]. The novel coronavirus disease which begun in Wuhan (City of China) in Dec 2019 and it was declared a pandemic by World Health Organization on 11 March 2020 [4]. The timeline of different pandemics that occurred till date are mentioned below:

Timeline of the Pandemics:

Years	Pandemics	Vectors
541-543	Plague of Justinian	Fleas associated to wild rodents
1347-1351	Black Death	Fleas associated to wild rodents
1817-1824	First cholera pandemic	Contaminated water
1827-1835	Second cholera pandemic	Contaminated water
1839-1856	Third cholera pandemic	Contaminated water
1863-1875	Fourth cholera pandemic	Contaminated water
1881-1886	Fifth cholera pandemic	Contaminated water
1885- on-going	Third plague	Contaminated water
1899-1923	Sixth cholera pandemic	Fleas associated to wild rodents
1918-1919	Spanish flu	Contaminated water
1957-1959	Asian flu	Avian
1961- on-going	Seventh cholera pandemic	Avian
1968-1970	Hong Kong flu	Contaminated water
2002-2003	Severe acute respiratory syndrome (SARS)	Avian
2009-2010	Swine flu	Bats, palm civets
2015-ongoing	Middle East respiratory syndrome (MERS)	Pigs
2019-ongoing	COVID-19	Bats, dromedary camels
		Bats, pangolins??

Source: Pandemics throughout History by Jocelyne Piret and Guy Boivin[3]

World has faced many serious and widespread pandemic in the history like - during the 20th century, plague was the serious virus which took too many lives. However, when we search the most serious and widespread pandemic in recent history, we can say it is a Novel Corona Virus because it took 55.9 Lakhs lives in short period of time (up to 22nd January 2022)[5]. However, anyone can get infected with coronavirus but COVID-19 affects different people in different ways and the person can either become ill or die at any age. Most common symptoms of this virus is- fever, cough, tiredness, and loss of taste or smell. Most infected people have recovered without hospitalization. The coronavirus can spread from an infected person's nose or mouth in small liquid particles when they sneeze, speak, cough or breathe. Therefore, it is important to practice respiratory etiquette like- coughing into a flexed elbow, to stay at home and self-isolation until you recover. Protect yourself and others from virus by staying at least one metre apart from others, wearing a fitted mask and washing your hands frequently. Best way to prevent and slow down transmission is to get vaccinated on your turn and follow local guidance[6]. Some effective approaches were praised by WHO like- enforcement of immediate lockdown as "tough and timely"

and cluster containment to break the transmission chain[7.]

India is the second most populated country in the world with more than 1.3 billion people and also with vast socio-cultural diversity; health inequalities and economic disparity. These challenges have become a threat by the growing pandemic of COVID-19. Government of India has taken Lockdown as a weapon against coronavirus and most important factor in preventing the spread of COVID-19 virus locally. The empowered citizens would be one who has right information and who follows the right advisories issued by the Indian Government. Hence, the present paper aims to examine the knowledge, attitude, and practices (KAP) of the community on causation, prevention and treatment of Covid-19. Knowledge, Attitude and Practices (KAP) is a very important cognitive key in community health regarding health prevention and promotion. It involves a range of beliefs about the causes of the disease and aggravating factors, identification of symptoms, and available methods of treatments[8].

The study covers following objectives:

- To study the knowledge, attitude, and practices (KAP) of the community regarding Covid-19.
- To assess the factors associated with the level of KAP regarding the COVID-19.
- To assess the relationship between the knowledge, attitude, and practice scores.

Subjects and Methods:

Participation and Procedures: We carried out a community-based cross-sectional study during September 29 to October 19, 2021, which involved local residents aged 14 years and above residing in Sundarpur locality of Varanasi. Respondents were given questionnaires which had the written informed consent in it and were asked to fill them explaining each question to them. After consenting, participants responded to the survey assessing respondent's socio-demographics and KAP towards COVID-19. Total 98 respondents completed the

entire survey. The inclusion criteria to participate in the study were being a local resident of Sundarpur Locality, within age group 14 years and above and voluntary participation.

Ethical Approval: The study is approved by Institutional Ethics Committee.

Measures: A semi-structured and self-reported questionnaire containing informed consent, questions regarding socio-economic and demographics, knowledge, attitude, and practice was used as a tool in the study. Delphi method[9] was used to validate the questionnaire.

- **Socio-Economic and Demographic measures:** The Socio-demographics measures collected were - gender, age, education, occupation, nature of family, marital status, and family monthly income.
- **Knowledge, Attitude, and Practice measures:** To assess the level of knowledge, attitude, and practice of the respondents, a total of 28 questions (including 5 for knowledge, 12 for attitude, and 11 for practice) were included. The knowledge section consists of 5 questions related to knowledge about causation, transmission and prevention of COVID-19 and each question had 2 to 7 options. Some questions had more than one correct option. The correct answers were coded as 1, while the wrong answer was coded as 0. The total score ranged from 0–5, with an overall greater score indicates more accurate knowledge. A cut off level of ≥3 was set for more accurate knowledge. The attitude section consists of 12 questions related to attitude towards prevention and transmission of COVID-19. The total score was calculated by summating the raw scores of the 12 questions ranging from 0 to 12, with an overall greater score indicating more positive attitudes towards prevention from COVID-19. A cut off level of ≥10 was set for more

positive attitudes towards the prevention of COVID-19. The practice section included 11 questions to record the correct practices followed to prevent causation or transmission of COVID-19, and each item was answered as "Yes" and "No". Practice items' total score ranges from 0–11, with an overall greater score indicating correct practices followed towards the COVID-19. A cut off level of ≥9 was set for more appropriate practices.

STATISTICAL ANALYSIS

The data analysis was performed using Microsoft Excel 2019 and SPSS version 20.0. Microsoft Excel was used for editing, sorting, and coding. The excel file was then imported into SPSS software. Descriptive statistics (frequencies, percentages, means, and standard deviations) were calculated. Chi-square test was used to compare proportions. Binary logistic regression was performed with a 95% confidence interval to determine significant associations between KAP score and respondent's socio-economic and demographic characteristics. As the KAP scores failed to fulfill the normality criteria, Spearman's coefficient of correlations was used to determine the relationship between KAP. The statistical significance was set at ≤0.05.

RESULTS

Table 1 shows the distribution of background characteristics of respondents. A total of 98 respondents were included in the final analysis. More than half of the respondents (i.e., 51%) were female with majority having the age of 40 years and above. Almost all respondents (78.6%) were married. The majority were Housewives (39.8%), had a high school level of education (31.6%), lived in joint families (67.3%), and their monthly family income was 5000-10,000 (50.0%). 24.5% respondents had received first dose of COVID-19 vaccine, 43.9% had received both doses of COVID-19 vaccine, 28.6% had not received any vaccination dosage till

now and 3.1% said they are not interested in taking COVID-19 vaccines. Among the participants, 10.2% got infected with COVID-19 and all of them got treatment at home and none of them got visited doctor/got institutional treatment.

Table 1: Distribution of the socio-demographic characteristics of respondents

Background Characteristics of respondents		Count	Percent
Age	Below 18	2	2.0%
	18-25	25	25.5%
	25-33	12	12.2%
	33-40	15	15.3%
	40 & ABOVE	44	44.9%
Gender	Male	48	49.0%
	Female	50	51.0%
Education	Illiterate	9	9.2%
	Up to 5th standard	8	8.2%
	High school	31	31.6%
	Intermediate	21	21.4%
	Graduation & above	29	29.6%
Occupation	Student	11	11.2%
	Self employed	27	27.6%
	Employee	18	18.4%
	Housewives	39	39.8%
	Retired	3	3.1%
Nature of family	Nuclear	32	32.7%
	Joint	66	67.3%
Marital status	Married	77	78.6%
	Unmarried	21	21.4%
Average monthly income of family	Below 5000	0	0.0%
	5000-10000	49	50.0%
	10000-15000	17	17.3%
	15000-20000	11	11.2%
	20000 and above	21	21.4%

Knowledge:

The mean knowledge score (mean ± 1S.D) was 2.87 ± 0.768 (range 0–5), with 71.4%

of respondents (70 out of 98 respondents) having accurate knowledge regarding causation, transmission and prevention of COVID-19 as compared to the remaining respondents.

There were no significant gender differences in knowledge regarding Covid-19. The socio-economic and demographic factors related to more accurate knowledge were –

1. Belonging to (18–25) years age group vs >40 years (OR = 9.356; 95% CI = [1.647. 53.149], p = .012). That is, the odds of having more accurate knowledge were 9 times more in (18–25) years age group

2. Belonging to (25-33) years age group vs >40 years (OR = 9.977; 95% CI = [1.044 – 95.370], p = .046). That is, the odds of having more accurate knowledge were 10 times more in (25-33) years age group as compared to 40 years and above age group.

3. Having high school level education vs graduation or higher degree (OR = 0.173; 95 CI% = [0.033 –0.924], p = 0.04). That is, having only high school level education had lower odds of having accurate knowledge regarding Covid-19 as compared to those having graduation or higher degree. (Refer to Table 2).

Table-2: Distribution of accurate knowledge of participants with the socio-demographic characteristics along with their chi-square and bivariate logistic regression estimates

Socio- Economic and Demographic characteristics of the Respondents	Accurate Knowledge	Degrees of Freedom	χ² (P-value)	Odds ratio	95% CI for odds ratio		P-value
					Lower	Upper	
Gender	71.4%	1	0.331 (0.565)				
Female	68.8%			1.762	.562	5.527	.331
Male	74%			Ref.	Ref.	Ref.	Ref.
Age	71.4%	4	16.494* (0.002)				
Below 18	50%			.669	.021	21.510	.820
18-25	92%			9.356*	1.647	53.149	.012
25-33	91.7%			9.977*	1.044	95.370	.046
33-40	80%			3.878	.801	18.777	.092
40 & above	52.3%			Ref.	Ref.	Ref.	Ref.
Education	71.4%	4	9.694* (0.046)				
Illiterate	44.4%			.170	.019	1.542	.115
Up to 5th Standard	87.5%			.993	.063	15.551	.996
High school	58.1%			.173*	.033	.924	.040
Intermediate	81%			.760	.104	5.576	.788
Graduation & above	82.8%			Ref.	Ref.	Ref.	Ref.
Family income	71.4%	3	2.994 (0.393)				
5000-10000	73.5%			3.712	.792	17.393	3.712
10000-15000	76.5%			4.066	.620	26.655	4.066
15000-20000	81.8%			6.813	.860	53.950	6.813
20000 & above	57.1%			Ref.	Ref.	Ref.	Ref.

Table 2 To Be Continued…							
Marital status	71.4%	1	2.673				
Married	67.5%		(0.102)	.427	.092	1.983	.277
Unmarried	85.7%			Ref.	Ref.	Ref.	Ref.
Nature of family	71.4%	1	2.246				
Nuclear	81.3%		(0.134)	2.735	.908	8.235	.074
Joint	66.7%			Ref.	Ref.	Ref.	Ref.
Occupation	71.4%	4	5.380				
Student	90.9%		(0.250)	2.210	.078	62.556	.642
Self-employed	59.3%			.398	.030	5.298	.485
Employee	83.3%			1.599	.104	24.646	.736
Housewives	69.2%			.866	.070	10.635	.910
Retired	66.7%			Ref.	Ref.	Ref.	Ref.

Here, * denotes P value < 0.05 implying significant association; CI denotes the confidence interval; Ref. denotes that it is the reference category.

Attitude:

The mean attitude score was found to be 9.41 ± 3.045 (range 0-12) with 71.4% of respondents (70 out of 98) had positive attitudes towards preventive measures of COVID-19 as compared to other respondents.

There were no significant gender differences in attitude regarding Covid-19. The variables that were found to be significantly related to preventive attitudes against COVID-19, were-

1. Being younger (aged 18–25 years) vs older (>40 years) (OR = 0.164; 95% CI = [0.042, 0.635], p= 0.009). That is, the odd of displaying more preventive attitudes towards Covid-19 was lower among younger respondents (aged 18–25 years) as compared to older (i.e. 40 years and above age group).

2. Being illiterate vs having graduation or higher education (OR = 0.057; 95%CI = [0.007, 0.466], p = 0.007). Being illiterate had lower odds of displaying more preventive attitudes as compared to those having graduation or higher education. (Refer to Table 3)

Table-3: Distribution of preventive attitude of participants with the socio-demographic characteristics along with their chi-square and bivariate logistic regression estimates

Socio- Economic and Demographic characteristics of the Respondents	Preventive Attitude	Degrees of Freedom	χ^2 (P-value)	Odds Ratio	95% CI for Odds Ratio		P-value
					Lower	Upper	
Gender	71.4%	1	0.331				
Female	68.8%		(0.565)	2.163	.709	6.600	.175
Male	74%			Ref.	Ref.	Ref.	Ref.
Age	71.4%	4	5.452				
Below 18	100%		(0.244)	178355811.6	.000	-	.999
18-25	56%			.164*	.042	.635	.009
25-33	83.3%			.802	.117	5.483	.822
33-40	66.7%			.330	.074	1.465	.145
40 & above	77.3%			Ref.	Ref.	Ref.	Ref.
Education	71.4%	4	5.803				
Illiterate	44.4%		(0.214)	.057*	.007	.466	.007
Up to 5th Standard	75%			.481	.057	4.022	.499
High school	64.5%			.322	.085	1.227	.097
Intermediate	81%			1.217	.234	6.323	.815
Graduation & above	79.3%			Ref.	Ref.	Ref.	Ref.
Family income	71.4%	3	3.889				
5000-10000	73.5%		(0.274)	1.180	.265	5.249	.828
10000-15000	52.9%			.357	.065	1.967	.237
15000-20000	72.7%			.928	.122	7.055	.943
20000 & above	81%			Ref.	Ref.	Ref.	Ref.
Marital status	71.4%	1	1.188				
Married	74%		(0.276)	1.858	.525	6.573	.337
Unmarried	61.9%			Ref.	Ref.	Ref.	Ref.
Nature of family	71.4%	1	0.167				
Nuclear	68.8%		(0.683)	.972	.374	2.522	.953
Joint	72.7%			Ref.	Ref.	Ref.	Ref.
Occupation	71.4%	4	3.751				
Student	72.7%		(0.441)	.000	.000	.	.999
Self-employed	59.3%			.000	.000	.	.999
Employee	72.2%			.000	.000	.	.999
Housewives	76.9%			.000	.000	.	.999
Retired	100%			Ref.	Ref.	Ref.	Ref.

Here, * denotes P value < 0.05 implying significant association; CI denotes the confidence interval; Ref. denotes that it is the reference category.

Practices:

The mean practice score was found to be 7.80 ± 2.046 (range 0-11) with 41.8% of respondents (41 out of 98) following correct practices towards the COVID-19.

The socio-economic and demographic factors significantly associated with application of correct practices related to Covid-19 prevention were –

1. Gender (females vs males: OR = 2.604; 95% CI = [1.020, 6.647], p = 0.045).That is, the females had 3 times more odds of following correct practices than males.

2. Being illiterate vs. graduation or higher education (OR = 0.126; 95% CI = [0.017, 0.938], p = 0.043). Being illiterate had lower odds of following correct practices as compared to those having graduation or higher education. (Refer to Table-4)

Table-4: Distribution of participants following right practice with the socio-demographic characteristics along with their chi-square and bivariate logistic regression estimates

Socio- Economic and Demographic characteristics of the Respondents	Right Practice	Degrees of Freedom	χ² (P-value)	Odds Ratio	95% CI for Odds Ratio		P-value
					Lower	Upper	
Gender	41.8%	1	1.594				
Female	35.3%		(0.207)	2.604*	1.020	6.647	.045
Male	48%			Ref.	Ref.	Ref.	Ref.
Age	41.8%	4	1.142				
Below 18	50%		(0.888)	.687	.032	14.696	.810
18-25	36%			.499	.159	1.571	.235
25-33	33.3%			.364	.080	1.660	.192
33-40	46.7%			.855	.228	3.205	.817
40 & above	45.5%			Ref.	Ref.	Ref.	Ref.
Education	41.8%	4	3.933				
Illiterate	22.2%		(0.415)	.126*	.017	.938	.043
Up to 5th Standard	25%			.221	.032	1.539	.127
High school	38.7%			.504	.156	1.635	.254
Intermediate	47.6%			.855	.218	3.354	.823
Graduation & above	51.7%			Ref.	Ref.	Ref.	Ref.
Family income	41.8%	3	3.348				
5000-10000	38.8%		(0.341)	.560	.161	1.950	.363
10000-15000	29.4%			.396	.086	1.816	.233
15000-20000	45.5%			.781	.153	3.985	.767
20000 & above	57.1%			Ref.	Ref.	Ref.	Ref.
Marital status	41.8%	1	0.154				
Married	42.9%		(0.695)	.427	.092	1.983	.277
Unmarried	38.1%			Ref.	Ref.	Ref.	Ref.
Nature of family	41.8%	1	0.071				
Nuclear	43.8%		(0.789)	2.735	.908	8.235	.074
Joint	40.9%			Ref.	Ref.	Ref.	Ref.
Occupation	41.8%	4	2.822				
Student	45.5%		(0.588)	2.210	.078	62.556	.642
Self-employed	29.6%			.398	.030	5.298	.485
Employee	44.4%			1.599	.104	24.646	.736
Housewives	46.2%			.866	.070	10.635	.910
Retired	66.7%			Ref.	Ref.	Ref.	Ref.

Here, * denotes P value < 0.05 implying significant association; CI denotes the confidence interval; Ref. denotes that it is the reference category.

Relationship among knowledge, attitude and practice components:

The knowledge score and practice score were found to have significant positive correlation with value of Spearman's correlation coefficient, r = 0.201. Similarly, attitude score and practice score showed strong significant positive correlation with r = 0.603. However the correlation between knowledge and attitude score was also positive but not statistically significant.

DISCUSSION

This Study Was Conducted With Aim Of Examining The Level Of Knowledge, Attitude, And Practice Regarding Covid-19 At The Community Level. The Study Found That Majority Of Respondents Had Accurate Knowledge And Displayed

Positive Attitude Related To Covid-19. However They Lag Behind In Following Preventive Practices. The Knowledge And Practices Had A Weak Positive Correlation With Value 0.201. Respondents With Higher Knowledge Relatively Followed More Preventive Practices; However, There Was Very Weak Relationship Between The Two. The Attitude And Practices Was Found To Have A Strong Positive Correlation With Value 0.603 Suggesting Respondents Showing Higher Positive Attitudes Followed Relatively More Preventive Practices.

Compared to other studies conducted by Tomar et al [10] and Yousaf et al [11], our study marked lower accurate knowledge, positive attitudes, and preventive practices towards covid-19 which might be attributed to the difference in study area and the mode of data collection. The findings showed the vast majority of the respondents were hesitant to visit doctor or get institutional help when infected with covid-19 and they preferred taking treatment at home. Only 68.4% respondents were vaccinated and 3.1% were reluctant to receive vaccine displaying vaccine hesitancy.

The findings of logistic regression in our study identified only gender, age and education as the main socio-demographic factors affecting KAP same as previously quoted study[12]. Age and education were significantly associated with accurate knowledge and positive attitude while gender and education were significantly associated with correct practices which are somewhat similar to findings of other studies conducted on KAP related to Covid in India. Yousaf et al [11] in their study among the general population of Jammu and Kashmir (J&K), India found the knowledge score (correct answer) to be significantly associated with gender, age, qualification, and occupation, positive attitude score to be significantly associated with gender, age, qualification, marital status, and geographic area and the positive practices to be significantly associated with gender, age, qualification, marital status, area, and

occupation while Tomar et al[10] found gender, place of residence, education, and occupation to be associated significantly with high knowledge score along with gender, age, education, and occupation to be associated significantly with good attitude score and gender, age, marital status and education to be significantly associated with good practice. Another study [13] has been conducted among South Indian population and according to this study, people with low level of education and with non-medical background witnessed poor knowledge and practices. The attitude was poor among subjects who were employed in physical works.

Our study found a positive significant correlation between knowledge and practice score and attitude and practice score which is very similar to previously quoted studies [10, 11]. However knowledge and attitude score were not significantly related in our study which is in contrast with their study. We found respondents with higher knowledge were following more personal hygiene practices such as practicing hand hygiene, maintaining social distancing, wearing face masks, and disinfecting common surfaces and those respondents who witnessed positive attitudes and opinions for avoiding religious gathering, social gathering and crowded places were following more preventive behaviors such as - wearing a face mask, practicing hand hygiene, avoiding crowded places, and getting vaccinated etc. Attitude and Practices had relatively stronger association than knowledge and practices.

However, the study has few methodological limitations. Firstly, sample size was small and had possible selection bias, due to limited participants consenting to participate in survey due to Covid. Secondly, due to limited questions to assess the level of KAP, in-depth information could not be gathered. Thus, future research would be needed covering all aspects of KAP towards COVID-19, in order to determine the actual extent of KAP among the general population. Thirdly, as the study followed a

cross-sectional study design, the causal inferences could not be established.

Despite these limitations, our study provides valuable information regarding KAP at the community level in India during the Covid-era. From this aspect, and to the best of our knowledge, this is presently the first study on KAP related to Covid-19 from India based on face to face community-based household survey covering the general population.

CONCLUSION

Our findings suggest education level is a strong indicator of knowledge domain regarding COVID-19 and the knowledge domain have significant association with practice domain. This means that the better access to information and high educational level maybe directly or indirectly associated with positive attitude and adoption of preventive practices regarding Covid-19. Therefore, government and public health policy makers should implement effective health education programs aimed at improving COVID-19 knowledge, thereby leading to more favourable attitudes and to implementation and maintenance of preventive practices.

Noteworthily, enormous improvement is seen in the public healthcare system over the years in eradicating several life-threating diseases like- polio and tetanus etc. and hopefully our public-health policy makers will fight back with optimistic control and empowered knowledge related to the COVID-19.

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