

## ORIGINAL ARTICLE

## Disparity in Relation to Covid-19 Preventive Behaviour and Associated Myths among Rural and Urban Residents of Lucknow: A Community Based Study

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<a href="#">Abstract</a>	<a href="#">Introduction</a>	<a href="#">Methodology</a>	<a href="#">Results</a>	<a href="#">Conclusion</a>	<a href="#">References</a>	<a href="#">Citation</a>	<a href="#">Tables / Figures</a>
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### Citation

Shukla V, Kaushik A, Sachan B, Singh AK, Kumari R, Kandpal SD, Jauhari S. Disparity in Relation to Covid-19 Preventive Behaviour and Associated Myths among Rural and Urban Residents of Lucknow: A Community Based Study. Indian J Comm Health. 2022;34(3):341-347. <https://doi.org/10.47203/IJCH.2022.v34i03.004>

Source of Funding: Nil Conflict of Interest: None declared

### Article Cycle

Received: 22/04/2022; Revision: 15/07/2022; Accepted: 05/09/2022; Published: 30/09/2022

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### Abstract

**Introduction:** For curbing Covid-19 disease, adequate knowledge, attitude, and practices of both rural and urban population for Covid-19 disease prevention is required along with busting of the associated myths. **Objectives:** To assess the Knowledge, Attitude and Practices of urban and rural residents of Lucknow district regarding covid-19 preventive behaviour and associated myths. **Methodology:** A community-based study was conducted among 420 rural and 421 urban residents of Lucknow. Multistage random sampling was done to select the study subjects. A pre-designed pretested semi-structured questionnaire was used to collect the information regarding the Knowledge, Attitude and Practices of the residents for covid-19 disease causes, prevention, and treatment. Further, KAP scoring was done to compare the two groups. **Results:** The mean age of the rural and urban residents was  $31.48 \pm 12.05$  and  $30.93 \pm 11.96$  years respectively. Only 40.4 % urban and 25.5 % rural people had correct knowledge about social distancing ( $p < 0.0001$ ). Knowledge regarding quarantine for covid-19 disease prevention was less among the urban residents (64.6%) as compared to rural (70.5%) ( $p = 0.035$ ). More than one-third (37.6%) of the rural resident believed in the myth that alcohol can prevent the covid-19 disease ( $p = 0.003$ ). 68.8 and 70.5 percent rural and urban residents had positive attitude towards the Indian government's efforts in curbing the disease. Majority of the urban (90%) and rural (87.6%) residents wore mask when they went out. Only one-fourth of the urban (24.7%) and rural (22.9%) had correct practices for the duration of hand washing. **Conclusion:** The knowledge was more among the urban people, attitude and practices were almost similar among both the rural and urban residents while myths were more observed among the rural residents.

### Keywords

Knowledge; COVID-19; Rural; Urban; Disparity; Prevention; Attitude; Practices

### Introduction

Covid-19 pandemic in India is a part of the worldwide pandemic of corona virus disease 2019 (Covid -19) caused by Severe Acute Respiratory Syndrome CoV-2 (SARS CoV-

2). The first case of Covid-19 in India, which originated in China was reported on 30th Jan 2020. (1) Initially considered to be the disease of urban area gradually spread to all parts of the country. India has also faced

multiple waves of Covid-19 like any other parts of the world, and it is still not over. At the peak of the first wave, i.e., around September 2020, rural area accounted for 1 in 3 (33%) of all the new cases. (2)

After prolonged wait, the vaccination drive in our country started in January 2021. Since the nature of the virus is to mutate and it is mutating rapidly, it may not be prudent for us to rely on vaccination as the only means to curb the disease. Till date more than 30 crore vaccinations have been done in our country, however we have not been able to stop the emergence of the Covid-19 disease cases and lost thousands of lives. (3) On 19 December 2020, the case load was 1 crore, and this increased to 3 crore on 23 June 2021. (4) India has lost 4.08 lakhs lives as of 2 July 2021 including the rural and urban area population. (5)

Prevention is always better than cure and it becomes even more pertinent when there is no specific cure for a particular disease, like Covid-19. Hence, the responsibility primarily rests on the effective implementation of preventive steps to control the disease.

To prevent a particular disease the basic Knowledge of the disease and factors responsible for its spread, a person's Attitude towards the disease and healthy practices which he or she follows, become utmost important. Not only this, clarity to the associated myths also plays an important role in curbing the disease. Since 65% of the Indian population reside in rural area, hence, to curb the disease, knowledge, attitude, and behaviour of both rural and urban population plays an equally important role. (3) Now the question arises whether there is a difference in the Knowledge, Attitude and Practices (KAP) for covid-19 disease between the rural and urban area population. Very limited studies have been conducted on ascertaining this difference in KAP towards Covid-19 between rural and urban population. We have not come across any similar type of study conducted till date in India.

### Aims & Objectives

1. To compare the knowledge of Covid-19 disease and associated myths among residents of rural and urban area of Lucknow.
2. To assess the attitude towards Covid-19 among residents of rural and urban area
3. To determine the practices being followed to prevent the Covid-19 among residents of rural and urban area

### Material & Methods

**Study Area:** The study was conducted among the residents of the rural and urban field practice area of the department of Community Medicine of a government Medical College of Lucknow.

**Study Unit:** Persons above the age 10 years

**Study Duration:** January 2021- December 2021 (12 months)

**Study Design:** Cross Sectional study

**Inclusion criteria:** Persons more than 10 years of age who were cooperative and consented to participate in the study.

**Exclusion Criteria:** Persons who do not want to participate or were not cooperative.

**Sample Size:** Taking the confidence interval 95%, prevalence 51.2% (which is lowest in all the factors included in KAP study conducted in Malaysia) (6), absolute error of 5% the sample size was calculated. Adding the non-response rate as 10 %, sample size was calculated to be 420. So, 421 residents in urban and 420 in rural area were studied.

**Sampling Technique:** Multistage sampling technique was used. The Rural field practice area (Rural Health and Training Centre, Juggaur) has a population of 55000 distributed in 8 sub-centres (SC). For convenience, it was decided to include only 2 villages from 3 randomly selected sub centres. A multi-stage sampling approach was adopted to choose the 6 villages and 70 participants fulfilling the inclusion/ exclusion criteria were randomly included from each of these 6 selected villages. (Figure 1) The Urban field practice area (Urban Health and Training Centre, Ujjariyaon) has a population of 54000 and extends across a single cluster. A random number table was used to randomly select a lane in the centre of the area and then the first house on the left from that lane was selected randomly. Subsequently, the participants were chosen from every adjacent house on the left side of the lane. This left-sided selection continued for adjacent houses till the desired sample (420) was obtained.

**Ethical Considerations:** Ethical clearance was taken from the Institutional Ethical Committee, IEC No. 117/20.

**Data Collection and KAP (Knowledge, Attitude and Practices) Assessment:** A predesigned and pre-tested semi-structured schedule based on WHO training regarding detection, transmission, prevention of Covid-19 was used to collect information. The questionnaire included 30 questions:

18 questions were asked to assess the knowledge of the Covid-19 disease, its spread and prevention. 1 score for correct answer and 0 for incorrect/not sure answer was given. Knowledge score ranged between 0-18. Knowledge was considered as satisfactory if 15 out of 18 questions were correct.

3 questions regarding the attitude were asked again for correct answer 1 and incorrect answer/not sure 0 was given and the attitude score ranged between 0-3. Attitude was assessed as positive if 2 out of 3 questions were correct.

For assessing the practices 9 questions were asked. Score 1 for correct and 0 for incorrect answer was given and the score ranged between 0-9. Practice was considered good if 7 out of 10 questions were correct. At the time of data collection, they were made aware of the various aspects of the disease like the nature of the disease, its transmission and its prevention. The doubts of the people were also

cleared regarding covid 19.

**Data analysis:** Data was analyzed using the statistical software SPSS 24.0. Descriptive summary using frequencies, percentages and graphs were used to present study results. Probability (p) was calculated to test statistical significance at the 5% level of significance. Chi square test was used to compare the proportions of KAP between urban and rural.

## Results

Majority (N=393) of the study participants belonged to 21-30 years age group and out of them 48.3 percent were in urban and 51.7 percent in rural. Majority of the study participants were females in both urban (47.7%) and rural (52.3%). Maximum residents were married with 49.4 and 50.6 percent in urban and rural respectively. Most of the study participants were Hindus and SC/ST by caste. Majority of the study participants were illiterate with 50.6 and 49.4 percent in urban and rural respectively. Many of them were living in joint family. As far as socioeconomic status was concerned, maximum (N=288) belonged to lower middle class with 47.6 percent in urban and 52.4 percent in rural. There was no statistical difference in any of the sociodemographic characteristic of the study participants residing in urban and rural areas. (Table 1)

There was a significant difference in the knowledge of social distancing between urban and the rural residents with 40.4 percent in urban and only 25.5 percent in rural had correct knowledge. Maximum rural residents (70.5%) and even urban residents (64.6%) knew that covid-19 spread can be prevented by separating (quarantine) the contacts of patient and this finding was statistically significant. More participants in rural area (80.7%) had better knowledge than the urban people regarding that covid-19 patient recovers when treated early. Almost two-third (63.2%) in urban and half (53.3%) in rural participants knew that covid-19 cannot be prevented by alcohol intake, and this was significant. Majority of the study participants in urban (73.4%) and rural area (61.2%) knew that tulsi, ajwain and giloy can prevent covid-19 disease and the difference was significant. There was a significant difference in knowledge regarding other myths like fly spreads covid-19, thermal scanner can detect covid-19 virus, 25-degree environmental temperature protects from covid-19 disease and no spread of disease in hot and humid climate as well as in cold climate. (Table 2)

A statistically significant difference was observed regarding attitude of the residents for the question that whether they think the disease will get eradicated or not ( $p=0.026$ ) and 51.3 percent among the urban and 58.3 percent among the rural showed positive attitude towards this. No difference was observed in the attitude of urban and rural residents for questions like whether India was capable of defeating covid-19 disease and whether India was dealing with the disease properly. (Table 3)

There was a significant difference in practices of the urban and rural residents as 44.0 percent of the rural residents avoided visiting crowded places while among the urban residents, this was 31.8 percent. Majority of the urban and rural residents wore mask (90.0%, 87.6%) when they went outside their house and used handkerchief while coughing (93.8%, 92.6%) but this was not statistically significant. Among the urban residents, more than two-fifth (41.3%) threw mask in the dustbin for disposing it while 43.3 percent of the rural also had the same practice. Less than two-third of rural (61.7%) and urban (62.0%) washed their hands for two minutes. Majority of the residents of both urban and rural used 5ml of the sanitizer when outside their house but this was not significant. Maximum participants of both urban and rural areas used hot water for sanitizing vegetables and kept the ration in sunlight for 3 days. (Table 4)

More than half of the urban residents (55.1%) and 44.1 percent rural residents had satisfactory knowledge for covid-19 disease. However, the rural residents have more positive attitude than the urban for covid-19 disease (52.3%, 47.7%). Practices were better among the urban residents (56.1%) as compared to the rural residents (43.9%). (Figure 2)

## Discussion

Covid-19 disease has not only caused a huge toll on human lives but has led to collapse of the health infrastructure of various countries amounting to the fact that it rapidly spreads from one person to another and results in serious morbidity and mortality. The various parts of the world are facing different waves of this disease and it seems that despite the introduction of a strong vaccination drive, the cases and mortality is still occurring. This highlights the importance of covid-19 appropriate behaviour for preventing its transmission. For this, there should be good knowledge, positive attitude, and good practices among the general population. However various studies have reported disparities in KAP among the rural and urban residents in their study areas. (2,4,5) Our study provides a vivid understanding of this difference among the urban and rural residents of Lucknow.

Our study has observed that people are aware that social distancing is necessary to prevent the spread of covid-19 disease, but only 40% in urban and 25% of rural residents knew how much distance should be maintained. This was significantly higher in urban residents because of the better education level. This finding agreed with studies by Njingu AE et al and chen X et al. (2,5) They knew that “do gaj doori” (2 metres) is necessary but how much “2 gaj” is they must be explained in a better way. Significantly higher number of rural residents knew that separating the contacts of the diseased person (quarantine) can prevent the spread. This agreed with Chen X et al but conflicts with

other researchers' findings. (2,6-8) This can be subjected to the fact that the rural residents of India are always surrounded by myths and untouchability especially with diseased people has been prevalent in older times. So, they think that the disease is contagious ("chuaa chhoot ki beemari") and they stick to it. Bonding among the people of the village was good, and they do not allow the diseased person and their contacts to enter the house and rather make them stay in the field till they recover from it. People still believed in the myth that alcohol can prevent the virus to enter in the body. This thinking was more among the rural (34 %) than the urban (24.6%) residents. To the best of our knowledge this variable has not been studied till date. WHO has reported that drinking alcohol does not prevent the covid-19 disease. (9) Again, this may be associated with the poor educational level of the rural people.

Covid-19 disease can spread by flies according to 42% people in rural area. This was again a myth and adequate knowledge was required to correct it. Extreme cold and warm humid condition can prevent the spread was told by almost 40% of the rural residents. Strangely 40% in rural as well as urban residents thought that thermal scanner can detect the virus. 60% in both rural and urban residents thought that breath holding for more than 30 sec was a sign of better immunity. This was similar to study by Lau LL et al and Zhang B et al. (4,10) Most of the people in both rural as well as in urban area believed that Kada/giloy has protective properties against covid-19 infection and this knowledge was significantly higher among urban residents. Shree P et al has identified the important role of giloy and ashwagandha in preventing the covid-19 disease in their study. (11) Better educational level may not be the only reason, but more accessibility to internet facilities might have contributed to this. More than 50% population think that the disease can be eliminated, and significantly higher percentage of people were from rural area. The reason could be that urban people were more educated and aware of the consequences of the disease from news on television as provided by the media.

Coming to their practices/behaviour, there was no significant difference between rural and urban people except for few practices. 68.2% of urban and 56% of rural residents said that they go to crowded places. This was in oppose to the study by Bangladesh and Chinese authors Mohd Anwar Hossain et al, Xuwei Chen 1 et al and Zhang J et al respectively. (1,2,4) The reason for this significant difference was that urban people have to go out in crowded places for their livelihood, groceries and milk. Around 90% residents in both rural and urban area used mask when going out, >40% threw the masks in dustbins, >60% washed hands for 2 mins, >35% washed vegetables with salt and water and >50% sanitized the

ration by keeping them in sunlight for 3 days. >50% in both rural and urban area used the sanitizer when they went out but only 15% of them used it correctly. Similar practices in both rural and urban area might be the result of government's tireless efforts in spreading awareness for covid-19 disease prevention.(8) The results of similar practices in both rural and urban area was not same as in other studies of authors 'of Bangladesh, China and Cameroon like Hossain MA et al, Chen X et al, Njingu AE et al.(1,2,5) But commenting anything on practices was the limitation of our study because we have not witnessed them doing the things, but we just believed what they said.

The study has following strengths: Firstly, there is paucity of evidence regarding urban-rural disparity in covid-19 KAP from India. Most of the published literature on Covid-19 KAP were online or web-based studies, but our study is a community-based study giving us a better insight. Secondly, the study has been done post the second wave of covid-19 disease in India and clearly highlights that the Knowledge, Attitude and Practices were less among the people indicating the cause of Covid-19 (third wave Omicron) in India. More the virus transmits, more the mutation occurs resulting in re-emergence of disease. (12)

### Conclusion

Despite better knowledge among the urban people for covid-19 disease prevention, attitude and practices were almost same among both the rural and urban residents while myths were more observed among the rural residents.

### Recommendation

People in both rural and urban area must be made aware of the things in a better way so that they can understand what they are supposed to do for example demonstrating them the distance of 6 feet or 2 meters. Above all focus should be on basic education of each person of the society whether rural or urban so that they can understand the messages being given to them by the government system and the responsible citizen of the society. The future outbreaks by other contagious viruses can also be prevented when there will be satisfactory knowledge, attitude, and practices among the general population.

### Limitation of the study

The study has only one limitation that conducting study by interviewing the people does not reflect their proper practices and a qualitative design will be beneficial in understanding the magnitude of this problem.

### Relevance of the study

This community-based study has demonstrated the gaps and disparity in the knowledge, attitude and practices of the population residing in rural and urban areas of Lucknow and has highlighted the importance of

awareness of covid-19 among the general population in prevention of spread of this infectious disease and combating the future waves.

**Authors Contribution**

VS: Conception and design of the study, literature search, designing of the tool, data collection and interpretation, manuscript preparation and revision, guarantor, AK: Design of the study, designing of tool, manuscript preparation and revision, BS: Literature search, manuscript preparation and revision for intellectual content, SDK: manuscript preparation, editing and review for intellectual content, AKS: Design of the study, designing of tool, manuscript preparation and revision, RK: Literature search, manuscript preparation and revision for intellectual content SJ: Literature search, Data analysis and interpretation, manuscript preparation and revision.

**Acknowledgement**

This study would not have been possible without the invaluable contribution of the dedicated team of field investigators and the team leader Mrs. Sapna Sinha.

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**Tables**

**TABLE 1 SOCIO- DEMOGRAPHIC CHARACTERISTICS OF STUDY PARTICIPANTS.**

Parameters	Urban (N=421)		Rural (N=420)		Total	p value	
	N	%	N	%			
Age(years)	10-20	59	52.7	53	47.3	0.523	
	21-30	190	48.3	203	51.7		
	31-40	90	52.3	82	47.7		
	41-50	46	45.5	55	54.5		
	≥50	36	57.1	27	42.9		
Gender	Female	225	47.7	247	52.3	0.126	
	Male	196	53.1	173	46.9		
Marital status	Married	262	49.4	268	50.6	0.542	
	Unmarried	154	50.8	149	49.2		
	Divorcee	2	100	0	0		
	Widow/Widower	3	50	3	50		
Religion	Hindu	326	50.6	318	49.4	0.085	
	Muslim	70	44.3	88	55.7		
	Sikh	11	55	9	45		
	Christen	14	73.7	5	26.3		
Cast	Gen	122	54.5	102	45.5	0.092	
	OBC	155	51.7	145	48.3		
	SC/ST	144	45.4	173	54.6		
Education	Illiterate	121	50.6	118	49.4	0.251	
	High School	94	45.9	111	54.1		
	Intermediate	68	50.4	67	49.6		
	Graduate	109	55.9	86	44.1		
	Other	29	43.3	38	56.7		
Family type	Nuclear	202	49.6	205	50.4	407	0.836

Parameters		Urban (N=421)		Rural (N=420)		Total	p value
Socio economic status	Joint	219	50.5	215	49.5	434	0.675
	Upper	30	55.5	24	44.5	54	
	Upper middle	56	54.9	46	45.1	102	
	Middle	97	49.7	98	50.3	195	
	Lower middle	137	47.6	151	52.4	288	
	Lower	101	50	101	50	202	

**TABLE 2 KNOWLEDGE AMONG URBAN & RURAL RESIDENTS REGARDING COVID-19 DISEASE & MYTHS**

PARAMETER	URBAN(N=421)			RURAL(N=420)			p Value
	YES	NO	NOT SURE	YES	NO	NOT SURE	
1. Do you know Covid-19	415 (98.6)	6 (1.4)	0(0)	408 (97.1)	12 (2.9)	0(0)	0.162
2. Do you know the main symptoms (dry cough, fever,body ache) of covid-19	378 (89.8)	30 (7.1)	13 (3.1)	365 (86.9)	40 (9.5)	28 (3.6)	0.407
3. Do you know that symptoms like running nose, sneezing are less in covid-19 as compared to common cold	325 (77.2)	73 (17.3)	23 (5.5)	332 (79.2)	67 (16.0)	20 (4.8)	0.765
4. Wearing a mask can prevent this disease	377 (89.5)	28 (6.7)	16 (3.8)	360 (85.7)	41 (9.8)	19 (4.5)	0.213
5. Social distancing	<b>1ft</b> 46 (10.9)	<b>2ft</b> 205 (48.7)	<b>3ft</b> 170 (40.4)	<b>1ft</b> 64 (15.2)	<b>2ft</b> 249 (59.3)	<b>3ft</b> 107 (25.5)	<b>0.0001</b>
6. Virus can't spread by treating the infected person separately.	291 (69.1)	113(26.8)	17(4.0)	290(69.0)	101(24.0)	29(6.9)	0.149
7. The virus does not spread by immediately separating the person who came in contact with the infected person.	272(64.6)	120(28.5)	29(6.9)	296(70.5)	110(26.2)	14(3.3)	<b>0.035</b>
8. Most of the people recover if treated in early stage of disease	272 (64.6)	123 (29.2)	26 (6.2)	339 (80.7)	47 (11.2)	34 (8.1)	<b>0.0001</b>
9. Alcohol can protect from Covid-19	111 (26.4)	266 (63.2)	44 (10.5)	157 (37.4)	224 (53.3)	39 (9.3)	<b>0.003</b>
10. Thermal scanner can detect Covid-19 Virus	160 (38.0)	228(54.2)	33(7.8)	179(42.6)	187(44.5)	54(12.9)	<b>0.006*</b>
11. Fly can spread covid virus	124(29.5)	271(64.4)	26(6.2)	179(42.6)	221(52.6)	20(4.8)	<b>0.0001</b>
12. 25-degree environmental temperature can protect from covid-19	140(33.3)	237(56.3)	44(10.5)	174(41.4)	190(45.2)	190(45.2)	<b>0.006</b>
13. Holding the breath for more than 30 sec can prevent the covid-19 infection	261(62.0)	127(30.2)	33(7.8)	251(59.7)	125(29.8)	44(10.5)	0.41
14. Covid-19 cannot spread in hot and humid climate	160(38.0)	214(50.8)	47(11.2)	205(48.8)	173(41.2)	42(10.0)	<b>0.006</b>
15. Winter season and ice can kill the Covid-19 Virus	116(27.6)	267(63.4)	38(9.0)	157(37.4)	233(55.5)	30(7.1)	<b>0.009</b>
16. Eating garlic can prevent Covid-19	233(55.3)	147(34.9)	41(9.7)	214(51.0)	154(36.7)	52(12.4)	0.321
17. Kada(tulsi,ajwain,giloy)can prevent Covid-19 disease	309(73.4)	87(20.7)	25(5.9)	257(61.2)	122(29.0)	41(9.8)	<b>0.001</b>
18. Most of the people recover if treated in early stages of the disease	300(71.3)	98(23.3)	23(5.5)	272(64.8)	114(27.1)	34(8.1)	0.095

**TABLE 3 ATTITUDE TOWARDS COVID-19 AMONG URBAN AND RURAL RESIDENTS**

Parameter	URBAN			RURAL			p Value
	Yes	No	Not Sure	Yes	No	Not sure	
1. Do you think the disease will be completely eradicated?	216(51.3)	108(25.7)	97(23.0)	245(58.3)	108(25.7)	67(16.0)	<b>0.026</b>
2. Is India capable of defeating Covid -19?	307(72.9)	70(16.6)	44(10.5)	301(71.7)	84(20.0)	35(8.3)	0.308
3. Is Indian govt. dealing with the disease properly?	297(70.5)	87(20.7)	37(8.8)	289(68.8)	97(23.1)	34(8.1)	0.678

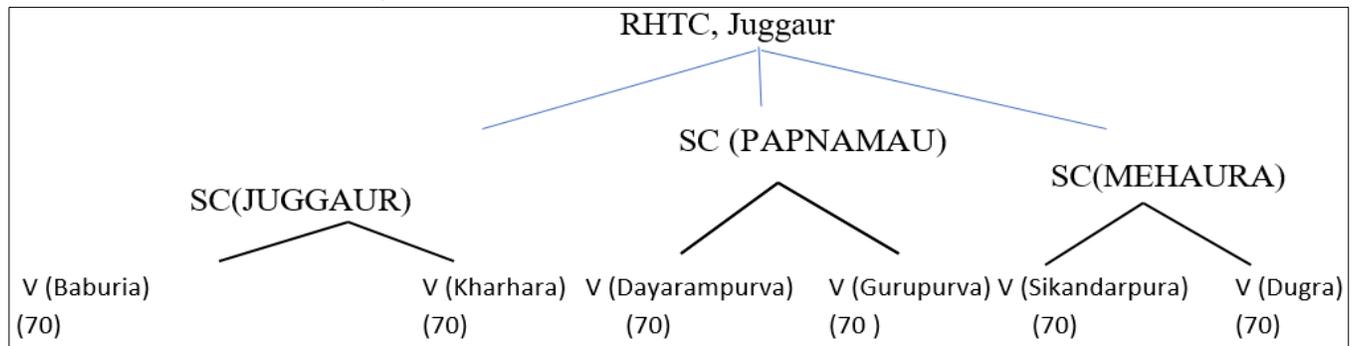
**TABLE 4 PRACTICES TOWARDS COVID-19 AMONG URBAN AND RURAL RESIDENTS**

Parameters	Urban	Rural	P value
1 <b>Do you go to crowded places like markets, birthday, marriage, festival?</b>			
Yes	287(68.2)	235(56.0)	<b>0.0001</b>
No	134(31.8)	185(44.0)	
2 <b>Do you wear mask when leave the house?</b>			
Yes	379(90.0)	368(87.6)	0.276
No	42(10)	52.0(12.4)	
3 <b>Do you use handkerchief while coughing?</b>			
Yes	395(93.8)	389(92.6)	0.479
No	26(6.2)	31(7.4)	
4 <b>Where do you keep the mask after use?</b>			
Wash them	103(24.5)	97(23.1)	0.849
Keep in the sunlight	107(25.4)	100(23.8)	
Throw in the dustbin	174(41.3)	182(43.3)	
Keep in the bag	37(8.8)	41(9.8)	

Parameters		Urban	Rural	P value
<b>5</b>	<b>How long you wash your hands with soap?</b>			0.8
	1 min	104(24.7)	96(22.9)	
	2 min	261(62.0)	259(61.7)	
	3 min	1(0.2)	1(0.2)	
	Until foam appear	55(13.1)	64(15.2)	
<b>6</b>	<b>When do you use sanitizer?</b>			0.074
	When going out from the house	257(61.0)	229(54.5)	
	When bringing foods from outside	95(22.6)	13(29.3)	
	When coughing and sneezing	69(16.4)	68(16.2)	
<b>7</b>	<b>How much of sanitizer should be used at a time?</b>			0.155
	5 ml	241(57.2)	265(63.1)	
	10 ml	115(27.3)	92(21.9)	
	30 ml	65(15.4)	63(15.0)	
<b>8</b>	<b>How do you sanitize vegetables?</b>			0.099
	With hot water	154(36.6)	162(38.6)	
	with salt and water	157(37.3)	169(40.2)	
	Keeping in sunlight	54(12.8)	57(13.6)	
	With soap and water	1(0.2)	0(0)	
<b>9</b>	<b>How do you sanitize ration?</b>			0.652
	Keep it in sunlight for 3 days	214(50.8)	222(52.9)	
	Clean with soap and water	43(10.2)	46(11.0)	
	Sanitize it with sanitizer	163(38.7)	152(36.1)	
	Do not sanitize	1(0.2)	0(0)	

**Figures**

**FIGURE 1 SAMPLING TECHNIQUE.**



**FIGURE 2 KAP SCORING AMONG URBAN AND RURAL RESIDENTS FOR COVID-19 DISEASE**

