

# Study to Assess the Knowledge, Attitude, and Perception of Adults Towards the Resurgence of COVID-19: A Cross-Sectional Study

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## ABSTRACT

The recent resurgence of COVID-19, fuelled by emerging variants like NB.1.8.1 ("Nimbus"), has reignited global concern despite high vaccination rates. As new variants of COVID-19 continue to emerge, the risk of resurgence remains a global concern. Understanding the public's knowledge, attitudes, and perceptions (KAP) towards the resurgence of COVID-19 is crucial for effective public health planning and response. This study aimed to assess the knowledge, attitude, and perception of adults regarding the resurgence of COVID-19. A cross-sectional study was conducted among adults aged 18-40 years using a structured questionnaire, 5 point Likert scale for attitude & semantic differential scale for assessing perception of adults towards resurgence of COVID-19. The survey included sections on demographic data, knowledge about COVID-19 variants and transmission, attitudes towards prevention measures, and perception of risk related to a potential resurgence. Data were analysed using descriptive statistics and inferential tests to identify significant associations between demographic variables and KAP scores. While knowledge, attitude & perception

towards COVID-19 resurgence are generally favourable among adults, there is a need for enhanced public education on emerging variants and sustained risk communication.

**Keywords:** COVID-19 Resurgence, Adults, Knowledge, Attitude, and Perception (KAP)

## INTRODUCTION

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, has significantly altered global health systems, economies, and societies since its emergence in late 2019. After initial global surges and waves of infections, substantial progress was made in reducing cases through mass vaccination, public health interventions, and natural immunity. However, the virus continues to evolve, giving rise to new variants with increased transmissibility, partial immune escape, and the potential to trigger further waves of infection—a phenomenon commonly referred to as the "resurgence" of COVID-19.

India is under nation-wide lockdown since 25 March, 2020 to curb the spread of the novel coronavirus. To date (July 14, 2020, 08:00 IST), a total of 311,565 active cases, 571,459 cured/discharged, 23,727 deaths, were reported according to Ministry of

Health and Family Welfare, Government of India. Currently, there is no availability of any proven specific treatment or prevention strategy to fight against COVID-19. Non-pharmaceutical interventions like; quarantine of exposed individuals, isolation of suspected/confirmed cases, and sensitization of the general public about control measures are the only available options to limit the spread of this new virus. Resurgence is defined as a renewed increase in the number of COVID-19 cases following a period of decline. These upticks are often fueled by new variants (e.g., Omicron sub variants), reduced public compliance with preventive measures, pandemic fatigue, misinformation, and waning immunity. Despite advancements in therapeutics and vaccine technology, the resurgence of COVID-19 presents an ongoing threat, particularly when public health.

Named **NB.1.8.1** and informally called “**Nimbus**”, it's an Omicron sub-lineage first identified earlier this year. Detected in 20+ countries including India, the US, UK, China, Singapore, and Thailand WHO classifies NB.1.8.1 as a **Variant under Monitoring**, not a Variant of Concern, meaning no clear evidence of increased severity. **Razor-blade sore throat**: Intense throat pain is being reported, though experts caution this isn't unique to Nimbus—sore throats are common in COVID generally. India has seen a resurgence, with active cases climbing several thousand—India Today reported ~2,710 active at end-May (~5× increase), while early June counts reached ~6,500.

Adults—typically defined as individuals aged between 18 and 40—play a pivotal role in the epidemiology of COVID-19. While this group tends to experience milder symptoms and lower mortality rates compared to older adults, they are more socially mobile, more likely to engage in group activities, and less likely to perceive themselves as being at risk. Consequently, adults may unintentionally act as key vectors for community transmission, particularly during resurgences.

### Objectives:

- To assess the knowledge of adults regarding resurgence of COVID-19.
- To assess their attitude toward resurgence of COVID-19.
- To assess their perception toward resurgence of COVID-19.
- To find out the association between knowledge, attitude and perception with their selected demographic variable.
- To find out the correlation between knowledge, attitude and perception.

### Research Approach:

Quantitative - Research approach

**Research Design:** Cross-sectional descriptive study.

**Setting of the Study:** selected areas of the city.

**Population:** Adults aged 18 to 40 years residing in selected areas of the city.

**Sample:** Adults residing in selected areas of the city.

**Sample Size:** 100 adults

**Sample Technique:** Convenient sampling.

### MATERIALS & METHODS

A cross-sectional descriptive study was conducted to assess the knowledge, attitude, and perception (KAP) of adults aged 18–40 years regarding the resurgence of COVID-19 in selected city of Jalgaon District. Data was collected using a structured questionnaire. A total of 100 adults were selected through convenient sampling. Data were collected using a structured, self-administered questionnaire, which consisted of four sections:

1. **Demographics:** Age, gender, education level, occupation, and place of residence.
2. **Knowledge:** Multiple-choice questions related to COVID-19 variants, modes of transmission, symptoms, and prevention.
3. **Attitude:** Assessed using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" to evaluate participants' views on preventive measures and public health guidelines.

**4. Perception:** Measured using a semantic differential scale, capturing feelings and perceptions related to the severity, risk, and government response to the resurgence of COVID-19.

**STATISTICAL ANALYSIS**

**DATA INTERPRETATION, ORGANIZATION OF DATA: TABLES, FIGURES AND GRAPHS**

The data collected of the study was classified, organized and analyzed under following sections:

**SECTION I**

Deals with analysis of demographic data of the adults from selected area in terms of frequency and percentage.

**SECTION II**

Deals with analysis of data related to assessment of level of knowledge, attitude,

and perception of adults from selected area towards the resurgence of COVID-19 in terms of frequency and percentage.

**SECTION III**

Deals with analysis of data related to the association between knowledge, attitude, and perception of adults from selected area towards the resurgence of COVID-19 with their selected demographic variables.

**SECTION - IV**

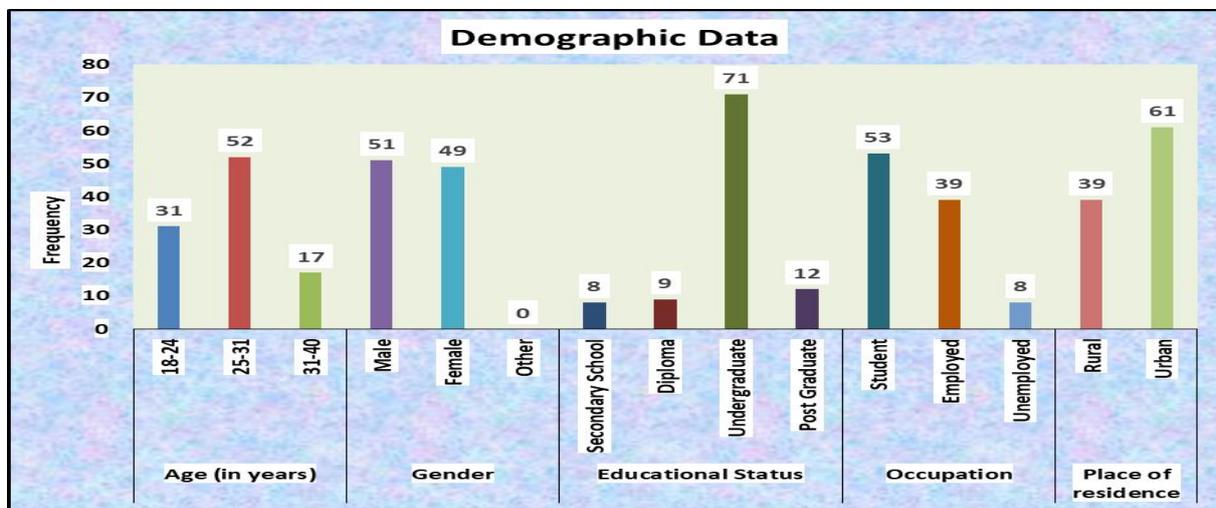
Deals with analysis of data related to correlation between knowledge, attitude, and perception of adults from selected area towards the resurgence of COVID-19.

**SECTION I**

Deals with analysis of demographic data of the adults from selected area in terms of frequency and percentage.

**Table 1: Frequency & percentage distribution of adults from selected area N=100**

Sr. No.	Variable	Groups	Frequency	Percentage
1	Age (in years)	18-24	31	31.00
		25-31	52	52.00
		32-40	17	17.00
2	Gender	Male	51	51.00
		Female	49	49.00
		Other	0	0.00
3	Educational Status	Secondary School	8	8.00
		Diploma	9	9.00
		Undergraduate	71	71.00
		Post Graduate	12	12.00
4	Occupation	Student	53	53.00
		Employed	39	39.00
		Unemployed	8	8.00
5	Place of residence	Rural	39	39.00
		Urban	61	61.00



**Figure No-1: Distribution of adults from selected area**

## SECTION II

Deals with analysis of data related to assessment of level of knowledge of adults from selected area towards resurgence of COVID-19 in terms of frequency and percentage.

**Table 2: General assessments of Knowledge of adults towards resurgence of COVID-19 N=100**

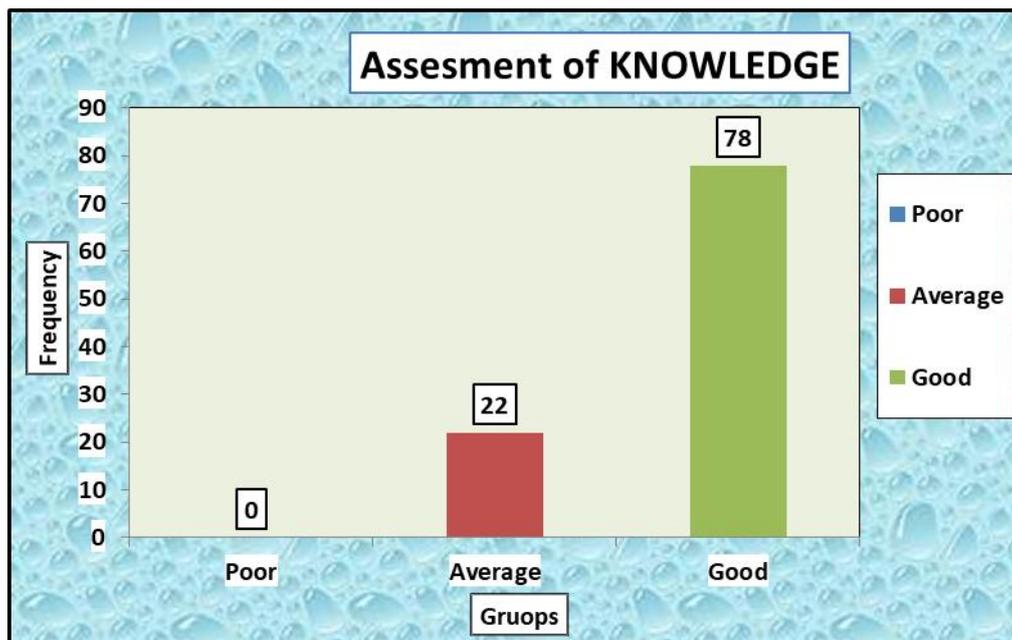
Variable	Groups	Score	Frequency	Percentage
KNOWLEDGE	Poor	0-7	0	0.00
	Average	8-14.	22	22.00
	Good	15-20.	78	78.00
KNOWLEDGE	Minimum		10	
	Maximum		20	
	Average (SD)		15.69 (2.92)	

For assessment purpose total score of knowledge towards the resurgence of COVID-19 among the adults was divided in to three groups like poor (0-7 score), average (8-14 score) and good (15-20 score).

Assessment of knowledge of adults from selected area towards resurgence of

COVID-19 shows that, no one of adult had poor, 22% average knowledge and 78% of them had good knowledge.

Average knowledge score was 15.69 with standard deviation of 2.92. The minimum score of knowledge was 10 with maximum score of 20.



**Figure No-2: Knowledge of adults towards resurgence of COVID-19**

Deals with analysis of data related to assessment of level of attitude of adults from selected area towards resurgence of COVID-19 in terms of frequency and percentage.

**Table 3: General assessments of attitude of adults towards resurgence of COVID-19 N=100**

Variable	Groups	Score	Frequency	Percentage
ATTITUDE	Unfavorable	20-60	0	0.00
	Moderately favorable	61-80	22	22.00
	Favorable	81-100	78	78.00
ATTITUDE	Minimum		74	
	Maximum		98	
	Average (SD)		89.67 (7.05)	

For assessment purpose total score of attitudes towards the resurgence of COVID-19 among the adults was divided in to three groups like unfavorable (20-60 score), moderately favourable (61-80 score) and favourable (81-100 score).

Assessment of attitude of adults from selected area towards resurgence of

COVID-19 shows that, no one of adult had unfavorable attitude, 22% moderately favourable and 78% of them had favourable attitude.

Average attitude score was 89.67 with standard deviation of 7.05. The minimum score of attitudes was 74 with maximum score of 98.

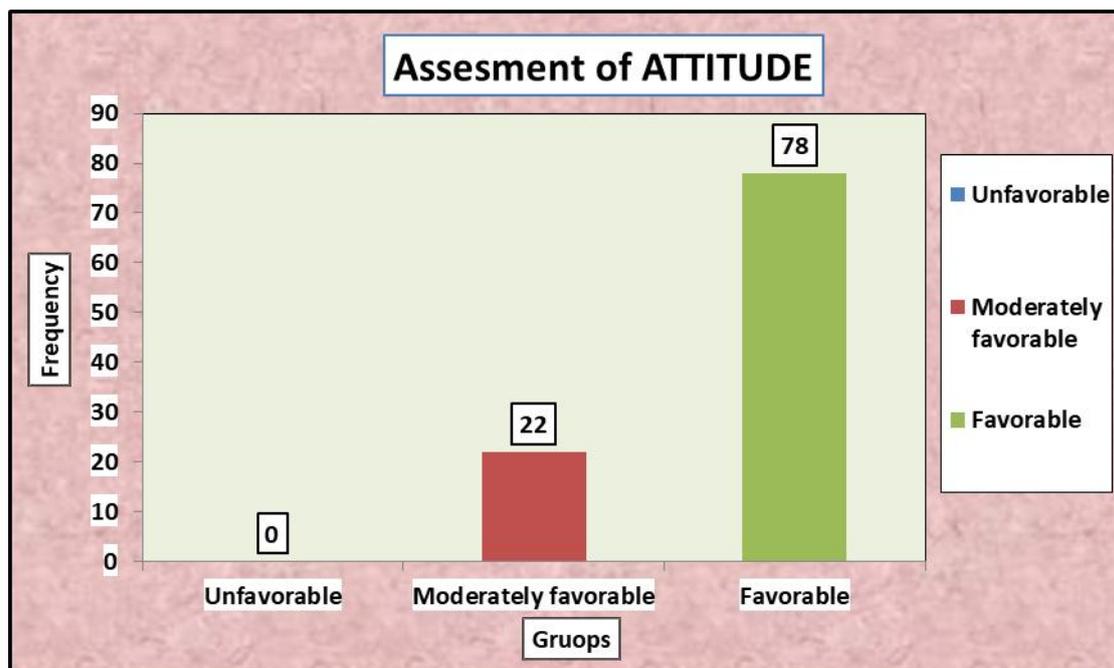


Figure No-3: Attitude of adults towards resurgence of COVID-19

Deals with analysis of data related to assessment of level of perception of adults from selected area towards resurgence of COVID-19 in terms of frequency and percentage.

Table 4: General assessments of perception of adults towards the resurgence of COVID-19 N=100

Variable	Groups	Score	Frequency	Percentage
Perception	Negative	20-80	9	9.00
	Positive	81-140	91	91.00
Perception	Minimum		78	
	Maximum		136	
	Average (SD)		119.33 (17.57)	

For assessment purpose total score of perception towards the resurgence of COVID-19 among the adults was divided in to two groups like negative perception (20-80 score) and positive perception (81-140 score).

Assessment of perception of adults from selected area towards resurgence of

COVID-19 shows that, 9% of adult had negative perception and all 91% of them had positive perception.

Average perception score was 119.33 with standard deviation of 17.57. The minimum score of perception was 78 with maximum score of 136.

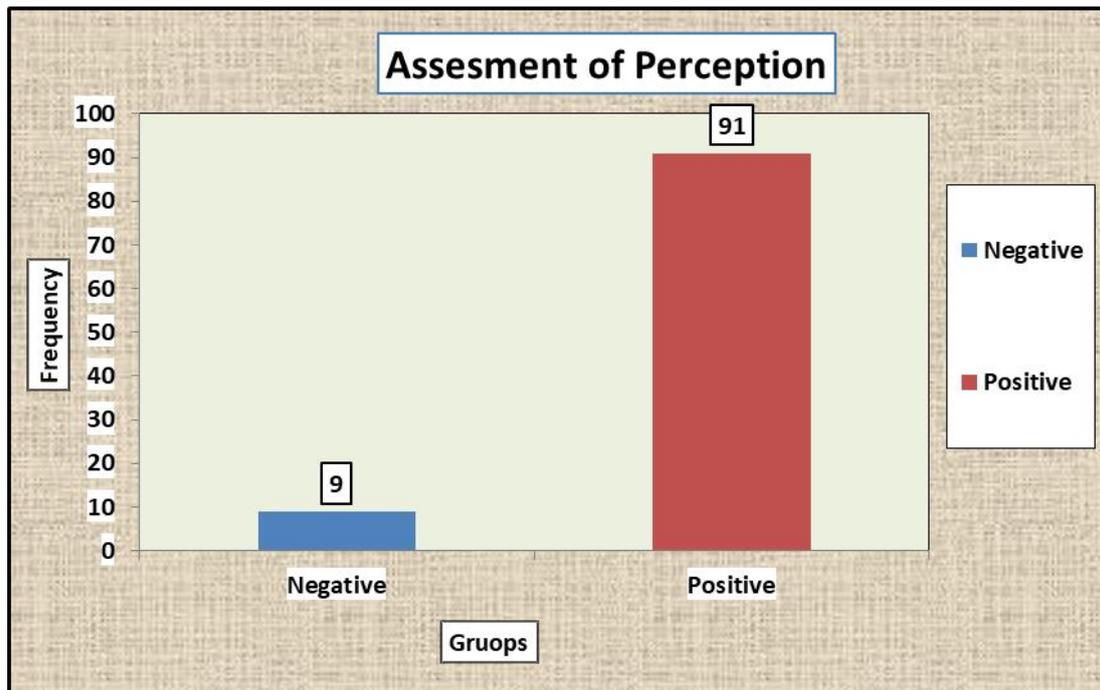


Figure No-4: Perception of adults towards the resurgence of COVID-19

### SECTION III

Deals with analysis of data related to the association between knowledge of adults from selected area towards the resurgence of COVID-19 with their selected demographic variables.

### ASSOCIATION OF KNOWLEDGE SCORE IN RELATION TO DEMOGRAPHIC VARIABLES

Table 5: Association of Knowledge with demographic variables N=100

Variable	Groups	KNOWLEDGE		Chi Square	d. f.	p value	Significance
		below Md	Above Md				
Age (in years)	18-24	21	10	6.63	2	0.036	Significant
	25-31	26	26				
	32-40	5	12				
Gender	Male	26	25	0.04	1	0.835	Not Significant
	Female	26	23				
	Other	0	0				
Educational Status	Secondary School	5	3	3.03	3	0.38	Not Significant
	Diploma	6	3				
	Undergraduate	33	38				
	Post Graduate	8	4				
Occupation	Student	30	23	0.99	2	0.60	Not Significant
	Employed	18	21				
	Unemployed	4	4				
Place of residence	Rural	14	25	6.64	1	0.010	Significant
	Urban	38	23				

### ASSOCIATION OF KNOWLEDGE SCORE IN RELATION TO DEMOGRAPHIC VARIABLES

The chi square test was used to see association between knowledge of adults from selected area towards the resurgence of

COVID-19 with their selected demographic variables. The test was conducted at 5% level of significance.

#### Significant Association:

For demographic variables, age and place of residence, p value of the association test with knowledge was less than 0.05. That means, the knowledge of adults from selected area towards resurgence of COVID-19 was associated with these demographic variables.

**Concludes that, there was significant association of these demographic variables with the knowledge.**

**No Significant Association:**

For demographic variables, gender, educational status and occupation, p value of the association test with knowledge was more than 0.05. That means, the knowledge

of adults from selected area towards resurgence of COVID-19 was not associated with these demographic variables.

**Concludes that, there was no significant association of these demographic variables with the knowledge.**

Deals with analysis of data related to the association between attitude of adults from selected area towards the resurgence of COVID-19 with their selected demographic variables.

**ASSOCIATION OF ATTITUDE SCORE IN RELATION TO DEMOGRAPHIC VARIABLES**

*Table 6: Association of Attitude with demographic variables N=100*

Variable	Groups	ATTITUDE		Chi Square	d. f.	p value	Significance
		below Md	Above Md				
Age (in years)	18-24	21	10	10.69	2	0.005	Significant
	25-31	34	18				
	32-40	4	13				
Gender	Male	31	20	0.13	1	0.71	Not Significant
	Female	28	21				
	Other	0	0				
Educational Status	Secondary School	6	2	0.93	3	0.82	Not Significant
	Diploma	5	4				
	Undergraduate	41	30				
	Post Graduate	7	5				
Occupation	Student	31	22	0.05	2	0.97	Not Significant
	Employed	23	16				
	Unemployed	5	3				
Place of residence	Rural	18	21	4.36	1	0.037	Significant
	Urban	41	20				

**ASSOCIATION OF ATTITUDE SCORE IN RELATION TO DEMOGRAPHIC VARIABLES**

The chi square test was used to see association between attitude of adults from selected area towards the resurgence of COVID-19 with their selected demographic variables.

The test was conducted at 5% level of significance.

**Significant Association:**

For demographic variables, age and place of residence, p value of the association test with attitude was less than 0.05. That means, the attitude of adults from selected

area towards resurgence of COVID-19 was associated with these demographic variables.

**Concludes that, there was significant association of these demographic variables with the attitude.**

**No Significant Association:**

For demographic variables, gender, educational status and occupation, p value of the association test with attitude was more than 0.05. That means, the attitude of adults from selected area towards resurgence of COVID-19 was not associated with these demographic variables.

**Concludes that, there was no significant association of these demographic variables with the attitude.**

Deals with analysis of data related to the association between perception of adults from selected area towards the resurgence of

COVID-19 with their selected demographic variables.

**ASSOCIATION OF PERCEPTION SCORE IN RELATION TO DEMOGRAPHIC VARIABLES**

*Table 7: Association of Perception with demographic variables N=100*

Variable	Groups	Perception		Chi Square	d. f.	p value	Significance
		below Md	Above Md				
Age (in years)	18-24	18	13	0.56	2	0.750	Not Significant
	25-31	29	23				
	32-40	8	9				
Gender	Male	29	22	0.14	1	0.70	Not Significant
	Female	26	23				
	Other	0	0				
Educational Status	Secondary School	4	4	11.23	3	0.011	Significant
	Diploma	4	5				
	Undergraduate	35	36				
	Post Graduate	12	0				
Occupation	Student	28	25	0.43	2	0.80	Not Significant
	Employed	23	16				
	Unemployed	4	4				
Place of residence	Rural	15	24	7.06	1	0.008	Significant
	Urban	40	21				

**ASSOCIATION OF PERCEPTION SCORE IN RELATION TO DEMOGRAPHIC VARIABLES**

The chi square test was used to see association between perceptions of adults from selected area towards the resurgence of COVID-19 with their selected demographic variables.

The test was conducted at 5% level of significance.

**Significant Association:** For demographic variables, educational status and place of residence, p value of the association test with perception was less than 0.05. That means, the perception of adults from selected area towards resurgence of COVID-19 was associated with these demographic variables.

**Concludes that, there was significant association of these demographic variables with the perception.**

**No Significant Association:** For demographic variables, age, gender and occupation, p value of the association test

with perception was more than 0.05. That means, the perception of adults from selected area towards resurgence of COVID-19 was not associated with these demographic variables.

**Concludes that, there was no significant association of these demographic variables with the perception.**

**SECTION – IV** Deals with analysis of data related to correlation between knowledge and attitude of adults from selected area towards the resurgence of COVID-19.

*Table 8: Correlation between knowledge and attitude of adults from selected area towards the resurgence of COVID-19*

Correlation	p value
0.80	0.00

The Karl Pearson’s correlation coefficient was used to find correlation between knowledge and attitude of adults from selected area towards the resurgence of COVID-19.

The correlation coefficient between knowledge and attitude was 0.80 with the p value 0.00. The p value less than 0.05, shows the significant correlation between the knowledge and attitude of adults from

selected area towards the resurgence of COVID-19.

The scatter diagram, also confirms correlation between knowledge and attitude.

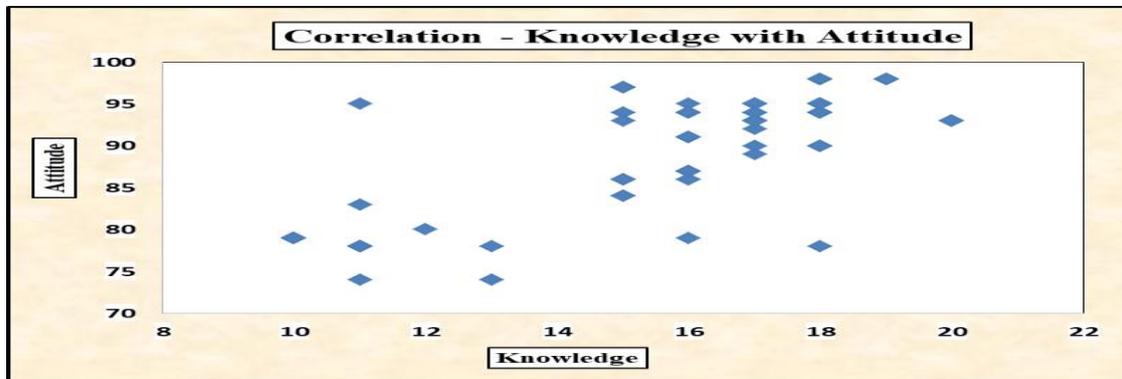


Figure 5: Scatter Diagram - Correlation of Knowledge with Attitude

Deals with analysis of data related to correlation between knowledge and perception of adults from selected area towards the resurgence of COVID-19.

Table 9: Correlation between knowledge and perception of adults from selected area towards the resurgence of COVID-19

Correlation	p value
0.65	0.00

The Karl Pearson's correlation coefficient was used to find correlation between knowledge and perception of adults from

selected area towards the resurgence of COVID-19.

The correlation coefficient between knowledge and perception was 0.65 with the p value 0.00. The p value less than 0.05, shows the significant correlation between the knowledge and perception of adults from selected area towards the resurgence of COVID-19.

The scatter diagram, also confirms correlation between knowledge and perception.

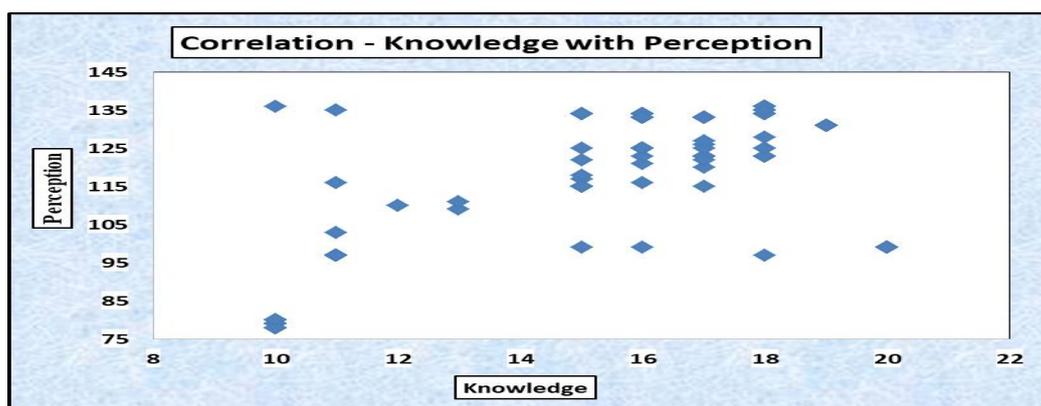


Figure 6: Scatter Diagram - Correlation of Knowledge with Perception

Deals with analysis of data related to correlation between attitude and perception of adults from selected area towards the resurgence of COVID-19.

Table 10: Correlation between attitude and perception of adults from selected area towards the resurgence of COVID-19

Correlation	p value
0.72	0.00

The Karl Pearson's correlation coefficient was used to find correlation between attitude and perception of adults from selected area towards the resurgence of COVID-19.

The correlation coefficient between attitude and perception was 0.72 with the p value

0.00. The p value less than 0.05, shows the significant correlation between the attitude and perception of adults from selected area towards the resurgence of COVID-19.

The scatter diagram, also confirms correlation between attitude and perception.

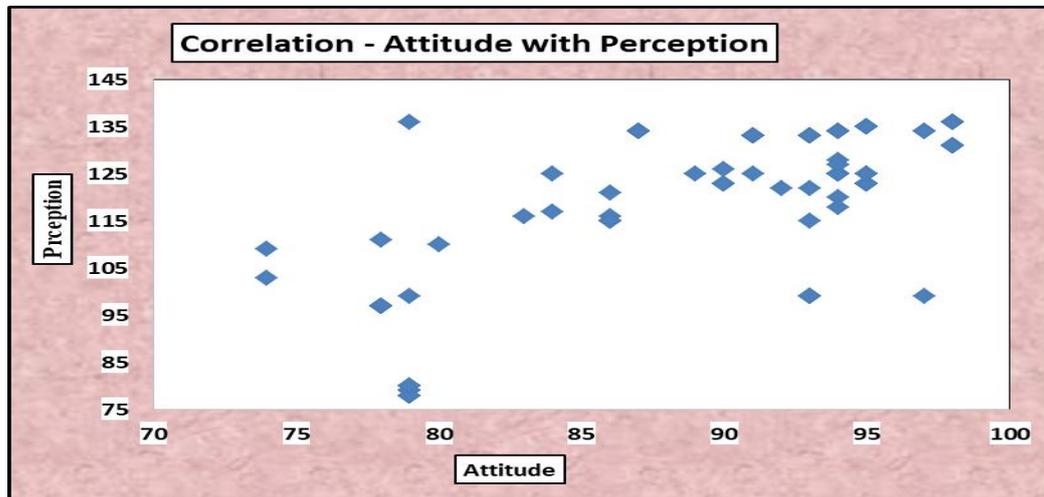


Figure 7: Scatter Diagram - Correlation of Attitude with Perception

## RESULT

### Demographic Profile of Participants shows that

The majority of adults were aged 25–31 years (52%), with a nearly equal distribution of gender—51% male and 49% female. Most participants were undergraduates (71%) and students by occupation (53%). A greater proportion resided in urban areas (61%) compared to rural areas (39%).

### Result related to Knowledge, Attitude and Perception

The study findings revealed that the majority of adults from the selected area demonstrated a good level of knowledge (78%) towards the resurgence of COVID-19, with an average knowledge score of  $15.69 \pm 2.92$ , and scores ranging from 10 to 20. Regarding attitude, 78% of adults exhibited a favourable attitude, while 22% had a moderately favourable attitude, with an average attitude score of  $89.67 \pm 7.05$ , ranging from 74 to 98. In terms of perception, 91% of adults had a positive perception, whereas 9% held a negative perception, with an average perception score

of  $119.33 \pm 17.57$ , ranging between 78 and 136. These results indicate that the majority of adults possess adequate knowledge, maintain a positive attitude, and hold a favourable perception towards the resurgence of COVID-19.

### Result related to Association with demographic variables

The association analysis revealed that age and place of residence had a statistically significant association with both knowledge ( $p = 0.036$  and  $p = 0.010$ , respectively) and attitude ( $p = 0.005$  and  $p = 0.037$ , respectively) of adults towards the resurgence of COVID-19. In terms of perception, a significant association was found with educational status ( $p = 0.011$ ) and place of residence ( $p = 0.008$ ). However, gender and occupation showed no significant association with knowledge, attitude, or perception. Additionally, educational status was not significantly associated with knowledge and attitude but was significantly associated with perception. These findings suggest that certain demographic factors, particularly

age, educational status, and place of residence, play a significant role in shaping adults' knowledge, attitude, and perception regarding the resurgence of COVID-19.

### **Result related to Correlation with Knowledge, Attitude a Perception**

The correlation analysis demonstrated a strong and statistically significant positive correlation between the knowledge and attitude of adults towards the resurgence of COVID-19, with a Pearson's correlation coefficient of 0.80 ( $p = 0.00$ ). Similarly, a moderate positive correlation was observed between knowledge and perception ( $r = 0.65$ ,  $p = 0.00$ ), and a strong positive correlation was found between attitude and perception ( $r = 0.72$ ,  $p = 0.00$ ). These results indicate that as knowledge about COVID-19 increases, both attitude and perception improve correspondingly among adults in the selected area.

### **DISCUSSION**

The present study assessed the knowledge, attitude, and perception (KAP) of adults aged 18–40 years toward the resurgence of COVID-19 in a selected city of Jalgaon district. The findings indicated that a majority of participants had good knowledge (78%), favourable attitudes (78%), and positive perceptions (91%) toward COVID-19 resurgence. These findings are largely consistent with similar studies conducted across different regions in India and internationally.

- **Wong CL, Chen J. (2020)** This study assessed the knowledge, attitudes and practices (KAP) towards coronavirus disease 2019 (COVID-19) among South Asians in Hong Kong and examined the factors that affect KAP towards COVID-19 in this population. This cross-sectional descriptive study recruited participants with assistance from South Asian community centres and organisations. A total of 352 participants completed questionnaires to assess their level of KAP towards COVID-19. <sup>(5)</sup>
- **Padmanaban S, Rajendran P (2021)** This study explored the knowledge, attitude and practices (KAP) of higher education students towards COVID-19. In addition, this study analysed the association of socio-demographic variables with KAP apart from finding the relationship between KAP. This is a cross-sectional study conducted in India. Study participants were selected using a convenient sampling method from various higher educational institutions across 22 states in India. Data was collected using self-administered close-ended questionnaires via Google forms. <sup>(6)</sup>
- **Lazarus JV, Ratzan SC (2020)** Study to Several coronavirus disease 2019 (COVID-19) vaccines are currently in human trials. In June 2020, we surveyed 13,426 people in 19 countries to determine potential acceptance rates and factors influencing acceptance of a COVID-19 vaccine. Respondents reporting higher levels of trust in information from government sources were more likely to accept a vaccine and take their employer's advice to do so. <sup>(7)</sup>
- **Yang XY Gong RN (2020)** To explore factors influencing adolescents and young adults' (AYAs) risk perception of COVID-19 and adherence to public health measures, we conducted a cross-sectional online survey of AYAs (14–22 years old) from Quebec (Canada) recruited through school and community partners in April 2020 during the first wave of the COVID-19 pandemic. Self-perceived risk and desire to protect others were significantly associated with adherence to preventive measures among youth. These findings may help inform public health messaging to AYAs in the current and future pandemics. <sup>(8)</sup>
- **Vu HH, Nguyen HD (2021)** The COVID-19 pandemic has become a significant public health threat. Therefore, the purpose of this survey was to assess knowledge, attitudes, and

precautionary measures related to COVID-19 among college students. This cross-sectional study examined the KAP concerning COVID-19 prevention in Vietnam. Participants' sociodemographic data, along with KAP toward COVID-19, were collected in a survey utilizing a standardized questionnaire. Uni- and multivariable logistic regression were used to identify factors associated with poor level of KAP. <sup>(9)</sup>

## CONCLUSION

In conclusion, this study reveals that adults possess a good level of knowledge about the resurgence of COVID-19 but demonstrate favourable attitudes and relatively positive perception. These factors collectively influence their engagement with preventive behaviours essential to controlling the pandemic's new waves. Given their social mobility and potential role as transmission vectors, improving adults' attitude and perception through targeted, credible communication and community engagement is imperative.

Public health authorities must prioritize interventions that not only disseminate accurate information but also address pandemic fatigue and risk misperceptions within this demographic. Reinforcing the importance of vaccination, mask use, and other preventive measures remains critical in managing the ongoing threat posed by COVID-19 resurgence

### Declaration by Authors

**Ethical Approval:** Approved

**Acknowledgement:** None

**Source of Funding:** None

**Conflict of Interest:** The authors declare no conflict of interest.

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