Knowledge and Attitude Towards COVID-19 Vaccination Among Urban Population

Swapan Deep Dhanopia[1,]*, Mansi Parekh[2], Dixita Parmar[2], Krupali Parmar[2], Rupal Parmar[2], Mansi Patel[2], Urvi Patel[2], Ankita Prajapati[2], Mona Prajapati[2], Vaibhav Prajapati[2], Krupali Rabari[2], Shilpa Thakor[2], Jonty Vankar[2]

Abstract

COVID-19, short for Coronavirus Disease 2019, is a rapidly spreading global pandemic caused by a novel human coronavirus initially named 2019-nCov and now known as SARS-CoV-2. This outbreak was first identified in December 2019 when patients in Wuhan, China, displayed symptoms of viral pneumonia. Our understanding of COVID-19 vaccines is currently limited, and it is expected that people's perspectives and attitudes toward these vaccines will vary widely among and within countries. These variations will depend on factors such as demographics, educational backgrounds, and overall knowledge about COVID-19 and the available vaccines. Our research employed a quantitative approach with a cross-sectional design, utilizing convenient non-probability sampling techniques to collect data from 200 participants who met the inclusion criteria. The tool was divided in to three sections. The first section contained demographic variable. The second part comprised a set of 10 multiple-choice questions aimed at evaluating individuals' understanding of COVID-19 vaccination. The third section contained five-point Likert scale for assessing the attitude regarding COVID-19 vaccination. The data were examined and assessed in alignment with the study's objectives. Both descriptive and inferential statistics were employed to analyze the data. Descriptive statistics were used for frequency and percentage while inferential statistics used to test hypothesis at $p < 0.05$ level of significance. The study concluded that 60% urban people having average knowledge regarding COVID-19 vaccination and 99% people having positive attitude towards it. Hence, Awareness programs can be conducted to improve the knowledge of urban people regarding COVID-19 vaccination.

Keywords: Knowledge, Attitude, COVID-19 vaccination, Urban Population.

INTRODUCTION

*Author for Correspondence
Swapan Deep Dhanopia
E-mail: swapandeepdhanopia@gmail.com

[1]Assistant Professor, Department of Nursing, Manikaka Topawala Institute of Nursing, Charusat Campus, Anand, Gujarat, India
[2]Nurse, Department of Nursing, Manikaka Topawala Institute of Nursing, JR3C+F75, Charusat Campus, Anand, Gujarat, India

COVID-19, a deadly viral disease, continues to impact numerous countries worldwide. It is caused by a novel coronavirus known as SARS-CoV-2, which emerged as a major global health concern. The pandemic has created unprecedented challenges and disruptions in healthcare systems [1]. The virus primarily affects the respiratory system, ranging from mild symptoms like runny noses to severe respiratory distress. It poses a higher risk to the elderly and individuals with underlying health conditions like hypertension, obesity, diabetes, and kidney disease. The World Health Organization declared it a pandemic in March 2020 [2–5].

Vaccinations have long been considered a powerful tool to combat infectious diseases. However, recent efforts to undermine vaccination

through rumors and conspiracy theories have placed additional pressure on healthcare authorities. Multiple COVID-19 vaccines have been developed and distributed in Europe and North America, prioritizing healthcare workers and high-risk populations [6]. Unfortunately, low- and middle-income countries face delays in vaccine distribution due to factors like public mistrust, limited resources, and vaccine shortages. This inequality may exacerbate their healthcare challenges and lead to humanitarian crises [7–10].

To achieve herd immunity and effectively control the virus's spread, widespread vaccination is crucial, necessitating high acceptance rates and minimal hesitancy [11]. Identifying factors influencing vaccine acceptance and hesitancy is vital for policy changes and public health campaigns to increase awareness. Public confidence in vaccines has been eroding due to rumors and misinformation, posing a significant challenge for global health experts and policymakers. Addressing vaccine hesitancy, countering rumors, and promoting accurate information are essential, particularly in resource-constrained settings. These efforts can foster trust between the public and health authorities, ultimately leading to better pandemic control and reduced loss of life [12–17].

Need of the Study

Achieving a safe and effective COVID-19 vaccine, stemming from the SARS-CoV-2 virus, has been a global healthcare priority [18]. Vaccine development is a meticulous, time-consuming process, necessitating rigorous assessments of efficacy and safety, particularly in high-risk groups like the elderly, pregnant women, and those with underlying health conditions or immunodeficiencies [19–21]. Moreover, assessing the public's willingness to adopt newly introduced vaccines is vital for a successful immunization campaign. The COVID-19 vaccine's rapid development, hitting the market just nine months after the virus's discovery, presents certain uncertainties. While initial data suggests the safety and effectiveness of approved vaccines, questions about their long-term efficacy and potential side effects linger [22–25].

Predictably, the acceptance of this novel vaccine is a source of uncertainty, not only among healthcare experts but also within the general public [26]. Complicating matters further is the pervasive presence of anti-vaccine movements, which have propagated various pseudoscientific conspiracy theories in the media. This environment of skepticism and misinformation may pose a significant challenge in the campaign to immunize against COVID-19 [27–30].

In most countries, including India as of this article's submission, COVID-19 vaccination remains a voluntary endeavor. Consequently, it is imperative to gauge the current sentiments and perspectives of local populations before launching large-scale vaccination programs. In India, regulatory approval for vaccines is still pending; however, there are expectations that vaccines such as AstraZeneca's may receive approval in early January 2021 [31–33].

The knowledge and attitudes surrounding COVID-19 vaccines have yet to be thoroughly explored. It is anticipated that these perspectives and attitudes will exhibit considerable variation across countries and even within countries. These differences will likely hinge on demographic factors, levels of education, and overall comprehension of COVID-19 and the available vaccines.

As per the above said details researchers felt a need to assess knowledge and attitude regarding COVID19 Vaccinations among urban populations of selected urban area of Gujarat [34–36].

Objectives of the Study
1. To evaluate the knowledge of COVID-19 vaccination among urban residents.
2. To assess attitude of urban population regarding COVID-19 vaccination.
3. To determine how selected demographic factors relate to the knowledge of COVID-19 vaccination among urban residents.

METHODOLOGY
Research Approach
In view of the nature of the problem selected for the present study that i s to assess the knowledge and attitude of urban population regarding COVID-19 vaccination, a quantitative research approach is used [37–39].

Research Design
Depending on the problem identified, a cross sectional study design is selected by the researchers for the present study.

Sampling Technique
200 urban people were selected using convenient non-probability sampling technique.

RESULT
Findings Related to Demographic Variables of Urban Population
Table 1 shows that majority of the participants 60 (30%) were belonged to the age group of 18 to 35 years while 56 (28%), 54 (27%) and 30 (15%) were belongs to the age group of 36 to 45 years, 46 to 60 years and 60 to 65 years respectively. Maximum participants 104 (52%) were female while 96 (48%) were male. Majority of the participants 118 (59%) had completed their primary education while 22 (11%), 44 (22%), 16 (8%) have no formal education, secondary & higher secondary education, and graduation and above respectively. Maximum 104 (52%) participants were employed while 80 (40%), 5 (2.5%) and 11 (5.5%) were unemployed, business and other occupation respectively. Majority of the participants 83 (41.5%) were having monthly income of 5001 to 30000 rupees while 69 (34.5%) and 48 (24%) were having income of <5000 and >30000 respectively. Majority of the participants 99 (49.5%) were partially vaccinated while 72 (36%) and 29 (14.5%) were fully vaccinated and unvaccinated respectively. Majority of the participants 180 (90%) had received covisheild vaccine while 18 (9%) and 2 (1%) had covaxin and don't know about covid vaccine respectively.

Table 1. Frequency and percentage distribution of Demographic Variables

n = 200

S.N.	Demographic variables	Frequency (*f*)	Percentage (%)
1.	*Age*		
1.1	18–35 years	60	30
1.2	36–45 years	56	28
1.3	46–60 years	54	27
1.4	61–65 years	30	15
2.	*Gender*		
2.1	Male	96	48
2.2	Female	104	52
3.	*Education*		
3.1	No formal education	22	11
3.2	Primary	118	59
3.3	Secondary & Higher secondary	44	22
3.4	Graduation & above	16	08
4.	*Occupation*		
4.1	Unemployed	80	40
4.2	Employed	104	52
4.3	Business	05	2.5
4.4	Others	11	5.5
5.	*Monthly Income*		
5.1	<5000	69	34.5

| 5.2 | 5001–30000 | 83 | 41.5 |
5.3	>30000	48	24.0
6.	*Vaccine status*		
6.1	Fully vaccinated (2 doses)	72	36.0
6.2	Partially vaccinated (1 dose)	99	49.5
6.3	Unvaccinated	29	14.5
7.	*Vaccine Type*		
7.1	Covaxin	18	09
7.2	Covisheild	180	90
7.3	Don't know	02	01

Findings Related to Knowledge of Urban Population Regarding COVID-19 Vaccination
Table 2 shows that majority of the participants 120 (60%) were having average knowledge of COVID-19 vaccination while minimum 20 (10%) were having poor knowledge and 60 (30%) were having good knowledge of COVID-19 vaccination [Figure 1].

Table 2. Frequency and Percentage of Knowledge score

n = 200

Category	Frequency (*f*)	Percentages %
Poor (0–3)	20	10
Average (4–7)	120	60
Good (8–10)	60	30
Total	*200*	*100*

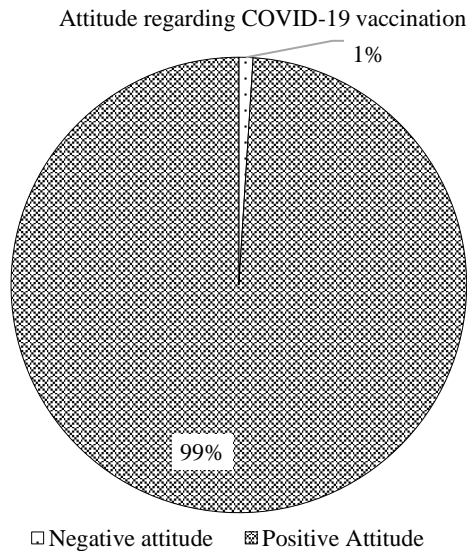Knowledge Regarding COVID-19 Vaccination
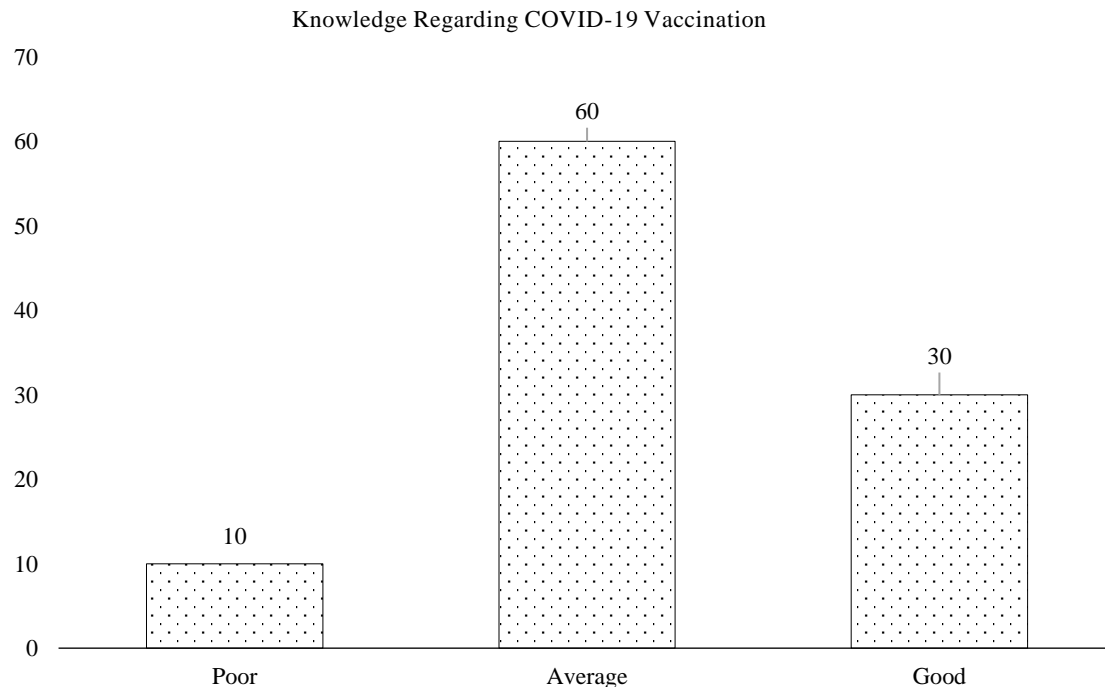
Figure 1. Percentage distribution of knowledge regarding COVID-19 vaccination.

Findings Related to Attitude of Urban Population Regarding COVID-19 Vaccination
Table 3 shows that majority of the participants 198 (99%) were having positive attitude towards COVID-19 vaccination while only 2 (1%) were having negative attitude towards COVID-19 vaccination [Figure 2].

Table 3. Frequency and percentage of attitude level

n = 200

Category	Frequency (*f*)	Percentage %
Positive Attitude	198	99%
Negative attitude	2	1%

Figure 2. Percentage distribution of attitude regarding COVID-19 vaccination.

Association Between Knowledge Score of Urban Population with Selected Demographic Variables

Table 4 shows that Education (χ^2=28.16, df=6, p< 0.05), Occupation (χ^2=61.29, df=6, p< 0.05), Monthly income (χ^2=30.93, df=3, p< 0.05) and Vaccine status (χ^2=27.84, df=4, p< 0.05) were significantly associated with knowledge regarding COVID-19 vaccination while Age (χ^2=2.65, df=6, p< 0.05), Gender (χ^2=1.15, df=2, p< 0.05) and Vaccine type (χ^2=2.70, df=4, p< 0.05) does not have any statistical significance with knowledge score.

Table 4. Association between knowledge score and demographic variables

n = 200

S.N	Demographic variables	Chi square $\chi2$ (calculated value)	Chi square $\chi2$ (table value)	df	Significance level
1	Age	2.65	12.59	6	Not significant
2	Gender	1.15	5.99	2	Not significant
3	Education	28.16	12.59	6	Significant
4	Occupation	61.29	12.59	6	Significant
5	Monthly Income	30.93	7.81	3	Significant
6	Vaccine status	27.84	9.49	4	Significant
7	Vaccine type	2.70	9.49	4	Not significant

Significant at 5% level (p <0.05 level)

Major Findings and Result

The findings show that majority of the participants 60 (30%) were belonged to the age group of 18 to 35 years while 56 (28%), 54 (27%) and 30 (15%) were belongs to the age group of 36 to 45 years, 46 to 60 years and 60 to 65 years respectively. Maximum participants 104 (52%) were female while 96 (48%) were male. Majority of the participants 118 (59%) had completed their primary education while 22 (11%), 44 (22%), 16 (8%) have no formal education, secondary & higher secondary education, and

graduation and above respectively. Maximum 104 (52%) participants were employed while 80 (40%), 5 (2.5%) and 11 (5.5%) were unemployed, business and occupation respectively. Majority of the participants 83 (41.5%) were having monthly income of 5001 to 30000 rupees while 69 (34.5%) and 48 (24%) were having income of <5000 and >30000 respectively. Majority of the participants 99 (49.5%) were partially vaccinated while 72 (36%) and 29 (14.5%) were fully vaccinated and unvaccinated respectively. Majority of the participants 180 (90%) had received covisheild vaccine while 18 (9%) and 2 (1%) had covaxin and don't know about covid vaccine respectively.

Frequency and percentage were used to assess knowledge regarding COVID-19 vaccination. The findings show majority of the participants 120 (60%) were having average knowledge of COVID-19 vaccination while minimum 20 (10%) were having poor knowledge and 60 (30%) were having good knowledge of COVID-19 vaccination.

Frequency and percentage were used to assess attitude regarding COVID-19 vaccination. The findings show majority of the participants 198 (99%) were having positive attitude towards COVID-19 vaccination while only 2 (1%) were having negative attitude towards COVID-19 vaccination. Chi square test were used to find association between knowledge of urban people regarding COVID-19 vaccination with selected demographic variables. Education (χ^2=28.16, df=6, $p<0.05$), Occupation (χ^2=61.29, df=6, $p<0.05$), Monthly income (χ^2=30.93, df=3, $p<0.05$) and Vaccine status (χ^2=27.84, df=4, $p<0.05$) were significantly associated with knowledge regarding COVID-19 vaccination while Age (χ^2=2.65, df=6, $p<0.05$), Gender (χ^2=1.15, df=2, $p<0.05$) and Vaccine type (χ^2=2.70, df=4, $p<0.05$) does not have any statistical significance with knowledge score.

CONCLUSION

The study concluded that 60% urban people having average knowledge regarding COVID-19 vaccination and 99% people having positive attitude towards it. Hence, Awareness programs can be conducted to improve the knowledge of urban people regarding COVID-19 vaccination.

REFERENCES

1. Pal M, Berhanu G, Desalegn C, Kandi V. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): an update. Cureus. 2020 Mar;12(3).
2. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect Dis. 2020;20(5):533–4.
3. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med. 2020;382(18):1708–20.
4. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 Novel coronavirus in Wuhan, China. Lancet. 2020;395(10223):497–506.
5. Bhatraju PK, Ghassemieh BJ, Nichols M, Kim R, Jerome KR, Nalla AK, et al. Covid-19 in critically ill patients in the Seattle region-case series. N Engl J Med. 2020;382(21):2012–22.
6. Grasselli G, Zangrillo A, Zanella A, Antonelli M, Cabrini L, Castelli A, et al. Baseline characteristics and outcomes of 1591 patients infected with SARSCoV-2 admitted to ICUs of the Lombardy region, Italy. JAMA. 2020;323(16):1574–81.
7. Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. Acta Bio Medica: Atenei Parmensis.2020;91(1):157.
8. Paterson P, Meurice F, Stanberry LR, Glismann S, Rosenthal SL, Larson HJ. Vaccine hesitancy and healthcare providers. Vaccine. 2016;34(52):6700–6.
9. Lurie N, Saville M, Hatchett R, Halton J. Developing Covid-19 vaccines at pandemic speed. N Engl J Med. 2020;382(21):1969–73.
10. Voysey M, Clemens SAC, Madhi SA, Weckx LY, Folegatti PM, Aley PK, et al. Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) againstSARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK. Lancet. 2021;397(10269):99–111.
11. Elhadi M, Msherghi A, Alkeelani M, et al. Concerns for low-resource countries, with under

prepared intensive care units, facing the COVID-19 pandemic. Infect Dis Health. 2020;25(4): 227–32.

12. Alliance GtV: New collaboration makes further 100 million doses of COVID-19 vaccine available to low-and middle-income countries. 2020.

13. Sanche S, Lin YT, Xu C, Romero-Severson E, Hengartner N, Ke R. High contagiousness and rapid spread of severe acute respiratory syndrome corona virus 2. Emerg Infect Dis. 2020;26(7):1470

14. Wong MCS, Wong ELY, Huang J, Cheung AWL, Law K, Chong MKC, et al. Acceptance of the COVID-19 vaccine based on the health belief model: a population-based survey in Hong Kong. Vaccine. 2021;39(7):1148–56.

15. Kumar D, Chandra R, Mathur M, Samdariya S, Kapoor N. Vaccine hesitancy: understanding better to address better. Israel J Health Policy Res. 2016;5(1): 2.

16. Ghinai I, Willott C, Dadari I, Larson HJ. Listening to the rumours: what the northern Nigeria polio vaccine boycott can tell us ten years on. Glob Public Health. 2013;8(10):113850.

17. Heymann DL, Sutter RW, Aylward RB. Polio eradication: interrupting transmission, towards a polio-free world; 2006.

18. Chakraborty I, Maity P. COVID-19 outbreak: Migration, effects on society, global environment and prevention. Sci Total Enviro. 2020;728:138882.

19. World Health Organization. WHO SAGE Roadmap for Prioritizing uses of COVID-19 Vaccines in the context of limited supply. Geneva, switzerland; 2020.

20. Bohme S, Varghese E, Sabat I, Barros P, Brouwer W, van Exel J, et al. Once we have it, will we use it? A European survey on willingness to be vaccinated against COVID-19. Eur J Health Econ. 2020;21 (7):977–82.

21. Islam MS, Siddique AB, Akter R, Tasnim R, Sujan MS, Ward PR, Sikder MT. Knowledge, attitudes and perceptions towards COVID-19 vaccinations: a cross-sectional community survey in Bangladesh. medRxiv. 2021 Jan 1.

22. Elhadi M, Alsoufi A, Alhadi A, Hmeida A, Alshareea E, Dokali M, Abodabos S, Alsadiq O, Abdelkabir M, Ashini A, Shaban A. Knowledge, attitude, and acceptance of healthcare workers and the public regarding the COVID-19 vaccine: a cross-sectional study. BMC public health. 2021 Dec;21(1):1–21.

23. Ciardi F, Menon V, Jensen JL, Shariff MA, Pillai A, Venugopal U, Kasubhai M, Dimitrov V, Kanna B, Poole BD. Knowledge, Attitudes and Perceptions of COVID-19 Vaccination among Healthcare Workers of an Inner-City Hospital in New York. Vaccines. 2021 May;9(5):516.

24. Gadhave S, Gore M, Saraf A. Determinants of COVID-19 Vaccine Acceptancy: Scoping Review of Literature. NVEO-NATURAL VOLATILES & ESSENTIAL OILS Journal| NVEO. 2021 Nov 11:4289–302.

25. Hossain MB, Alam M, Islam M, Sultan S, Faysal M, Rima S, Hossain M, Mamun AA. Health Belief Model, Theory of Planned Behavior, or Psychological Antecedents: What Predicts COVID-19 Vaccine Hesitancy Better Among the Bangladeshi Adults?. Frontiers in Public Health. 2021:1172.

26. El-Elimat T, AbuAlSamen MM, Almomani BA, Al-Sawalha NA, Alali FQ. Acceptance and attitudes toward COVID-19 vaccines: a cross-sectional study from Jordan. Plos one. 2021 Apr 23;16(4):e0250555.

27. Lee M, Kang BA, You M. Knowledge, attitudes, and practices (KAP) toward COVID-19: a cross-sectional study in South Korea. BMC Public Health. 2021 Dec;21(1):1–0.

28. Erfani A, Shahriarirad R, Ranjbar K, Mirahmadizadeh A, Moghadami M. Knowledge, attitude and practice toward the novel coronavirus (COVID-19) outbreak: a population-based survey in Iran. Bull world Health organ. 2020 Mar 30;30(10.2471).

29. Masoud AT, Zaazouee MS, Elsayed SM, Ragab KM, Kamal EM, Alnasser YT, Assar A, Nourelden AZ, Istatiah LJ, Abd-Elgawad MM, Abdelsattar AT. KAP-COVIDGLOBAL: a multinational survey of the levels and determinants of public knowledge, attitudes and practices towards COVID-19. BMJ open. 2021 Feb 1;11(2):e 043971.

30. Ferdous MZ, Islam MS, Sikder MT, Mosaddek AS, Zegarra-Valdivia JA, Gozal D. Knowledge, attitude, and practice regarding COVID-19 outbreak in Bangladesh: An online-based cross-sectional study. PloS one. 2020 Oct 9;15(10):e0239254.

31. Maheshwari S, Gupta PK, Sinha R, Rawat P. Knowledge, attitude, and practice towards coronavirus disease 2019 (COVID-19) among medical students: A cross-sectional study. Journal of Acute Disease. 2020 May 1;9(3):100.

32. Qutob N, Awartani F. Knowledge, attitudes and practices (KAP) towards COVID-19 among Palestinians during the COVID-19 outbreak: A cross-sectional survey. PLoS One. 2021 Jan 5;16(1):e0244925.

33. Christy JS, Kaur K, Gurnani B, Hess OM, Narendran K, Venugopal A, Anuja J, Manohar D, Raman R, Venkatesh R. Knowledge, attitude and practise toward COVID-19 among patients presenting to five tertiary eye care hospitals in South India-A multicentre questionnaire-based survey. Indian Journal of Ophthalmology. 2020 Nov;68(11):2385.

34. Alrasheedy AA, Abdulsalim S, Farooqui M, Alsahali S, Godman B. Knowledge, attitude and practice about coronavirus disease (COVID-19) pandemic and its psychological impact on students and their studies: a cross-sectional study among pharmacy students in Saudi Arabia. Risk Management and Healthcare Policy. 2021;14:729.

35. Al-Hanawi MK, Angawi K, Alshareef N, Qattan AM, Helmy HZ, Abudawood Y, Alqurashi M, Kattan WM, Kadasah NA, Chirwa GC, Alsharqi O. Knowledge, attitude and practice toward COVID-19 among the public in the Kingdom of Saudi Arabia: A cross-sectional study. Front Public Health. 2020; 8: 217.

36. Okello G, Izudi J, Teguzirigwa S, Kakinda A, Van Hal G. Findings of a cross-sectional survey on knowledge, attitudes, and practices about COVID-19 in Uganda: implications for public health prevention and control measures. BioMed research international. 2020 Dec 4;2020.

37. Shukla, S., & Deotale, P. (2020). Knowledge, attitude and practices towards COVID-19 pandemic in the community: a cross-sectional web-based survey in India. International Journal of Research in Medical Sciences, 8(10), 3652–3656.

38. Balvir Singh Tomar, Pratima Singh, Supriya Suman, Preeti Raj, Deepak Nathiya, Sandeep Tripathi, Dushyant Singh Chauhan medRxiv 2020.05.05.20092122.

39. Bhartiya, Shibal et al. Knowledge, attitude and practice towards COVID-19 vaccination acceptance in West India. International Journal Of Community Medicine And Public Health, [S.l.], v. 8, n. 3, p. 1170–1176, feb. 2021. ISSN 2394–6040.