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PANDEMIC RESILIENCE: ANALYZING HUMAN RESPONSE

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ABSTRACT

This research presents a thorough assessment of COVID-19 knowledge and practices among adults in the urban city of Ahmedabad, India. Demographic disparities in knowledge and practices were observed, with young adults, males, and the educated showing relatively poorer knowledge. Despite reasonable knowledge levels, a notable portion of respondents exhibited poor adherence to COVID-19 preventive measures, possibly due to their inadequate understanding. Jobholders were more compliant than business owners, students, and homemakers.

Within homes, there were inconsistencies in sanitizing frequently touched surfaces, and allowing domestic helpers without health checks posed risks. Additionally, some respondents neglected either mask-wearing or social distancing; indicating areas of concern. Outside the home, respondents demonstrated higher compliance with recommended practices like mask-wearing and social distancing. Challenges in adopting new behaviours included a lack of access to authentic information and non-cooperation from peers. Issues like space constraints and mask discomfort further hindered compliance. Respondents suggested strict enforcement of correct mask-wearing in public places to encourage the adoption of new normal behaviours. In conclusion, while most respondents in Ahmedabad displayed good COVID-19 knowledge, there is a clear need to reinforce essential preventive measures. Targeted strategies for specific demographic groups and comprehensive health education campaigns are essential. Transparent information dissemination, stringent protocol enforcement, and collective responsibility are crucial in effectively addressing the pandemic and preparing for potential future waves.

Keywords: Pandemic COVID-19, knowledge, practices, problems, suggestions

INTRODUCTION

The COVID-19 global public health catastrophe, which broke out in December 2019 and originated in Wuhan, China, quickly became a global pandemic in a few months, culminating in significant mortality rates across multiple nations, including India. (48,49) COVID-19, attributed to the novel corona virus, is notable for its ability to cause a variety of illnesses, ranging from mild respiratory symptoms like the common cold to severe acute respiratory syndrome. (SARS) [4,50]. This exceptionally transmissible malady swiftly disseminated to all geographical corners, placing immense strain on even robust healthcare infrastructures. India and other nations with dense populations and poor public hygiene standards faced significant obstacles in the fight against the

virus, which were made worse by issues like ambiguity surrounding the pathogen, asymptomatic transmission, and the spread of unreliable information on social media [51].

On February 19, 2020, the World Health Organization (WHO) introduced the nomenclature "COVID-19" and formally classified the outbreak as a pandemic on March 11, 2020. As of May 28, 2021, the global tally encompassed 169,710,788 confirmed COVID-19 cases distributed across 220 countries and territories, accompanied by a fatality count reaching 3,527,082 [22]. India, the second-largest country (during Covid-19 time) in the world with a population of over 1.34 billion, was ranked in the unenviable second spot for recorded cases, amassing 2,75,55,457 confirmed instances and 3,18,895 fatalities by the aforementioned date [22].

In response to this crisis, India adopted a multifaceted approach to mitigate the dissemination of COVID-19. This approach encompassed containment via widespread lockdowns, the implementation of social distancing measures to decelerate transmission dynamics, and the provision of optimal healthcare services to those afflicted, with the overarching goal of mitigating the disease's impact [1,30]. The collaboration between governmental bodies and public health practitioners served as a testament to the pivotal role played by well-informed and conscientious citizens in this protracted struggle. Notwithstanding these concerted efforts, India continued to witness a daily upsurge in COVID-19 cases. States such as Maharashtra, Uttar Pradesh, Delhi, and Gujarat emerged among the ten states, contributing more than 75 percent of the 3,14,835 new COVID-19 cases documented in a single day, as reported by the Union Health Ministry [18,42].

To combat the escalating COVID-19 crisis, the government of Gujarat undertook a series of preventative measures. These measures encompassed stringent enforcement of lockdown protocols, reinforcement of the public healthcare infrastructure, assured provisioning of essential sustenance, and support extended to the migratory labor force. The public healthcare apparatus adopted a comprehensive strategy encompassing airport screening, dissemination of informative materials, contact tracing, the establishment of dedicated COVID-19 healthcare facilities and treatment centres, widespread diagnostic testing, augmentation of human resources, and training initiatives, in addition to the establishment of district-level task forces and the provision of non-COVID-19-related support measures [14,43,44].

Ahmedabad district, of Gujarat State in India, constituting the most densely populated locale within Gujarat with a population numbering 7.8 lakhs, reported the highest count of COVID-19 cases within the state. As of May 25, 2021, this district had recorded a cumulative total of 2,33,462 confirmed cases, along with the highest fatality count in Gujarat, amounting to 3304 deaths [14,25,26,27].

The municipal governing bodies within Ahmedabad, Gujarat, played a pivotal role in the formulation and execution of response strategies targeted at addressing the pandemic's challenges. Noteworthy initiatives included the deployment of mobile testing vans, colloquially known as Dhanvantari Rath, in each of the city's seven zones. These mobile units, comprising approximately 30 teams, are actively engaged in conducting diagnostic tests throughout the urban expanse, employing the EPIC approach (Enhanced Testing, Pro-active Detection, Intensive Surveillance, and Corona Check Post). Additional endeavors encompassed the facilitation of mobile vegetable vending, the initiation of the #SponsorATest campaign, pioneering the demarcation of social distancing zones proximate to commercial establishments, and extensive campaigns aimed at enhancing public awareness and engagement. [14,25,26,27].

Despite these resolute leadership and governance responses, Ahmedabad consistently

occupied the top rank in terms of reported COVID-19 confirmed cases and associated fatalities. This situation prompted concerns related to the efficacy of risk communication and community engagement within the city's populace during the course of the pandemic [2,45,46]. Given the aforementioned context, the present research study was undertaken to delve into the knowledge base and behavioural practices of citizens, with the objective of assessing their levels of awareness and commitment to combating the relentless COVID-19 pandemic.

REVIEW OF LITERATURE

The current research endeavours to investigate the "knowledge and practices of specific residents residing in Ahmedabad city, situated in the state of Gujarat, regarding their response to combat the COVID-19 pandemic." During the literature review conducted in preparation for this study, it became apparent that numerous studies have been carried out with the aim of assessing the knowledge, attitudes, perceptions, and practices of individuals in response to the COVID-19 pandemic. Major findings from the research studies of various authors, viz., Azlan and Hamzah (2020), Ferdous et al. (2020), Naseem et al. (2020), Reuben et al. (2020), Serwaa D et al. (2020), Zhong & Luo (2020), Dkhar et al. (2020), Agarwal, A. K., & Imtiyaz, A. (2020), Jose et al. (2020), and Kartheek et al. (2020) were reviewed to understand trends and research gaps. It showed the following trends in general and related to knowledge and practices to combat COVID-19:

- **Study Period**: All the reviewed studies were conducted in the year 2020, during the early phases of the COVID-19 outbreak. This indicates that the data reflects the initial responses and understanding of the pandemic.
- **Geographic Variation:** The studies were conducted in various countries, including Malaysia, Bangladesh, Pakistan, Ghana, North-Central Nigeria, China, and different regions of India. This diversity in geographic locations provides insights into how different populations responded to the pandemic.
- **Sample Size:** The sample sizes in the reviewed studies varied widely, ranging from 229 to 7978 participants. Larger sample sizes provide a broader representation of the population and more robust statistical analysis.
- **Demographic Factors:** Knowledge, attitudes, and practices related to COVID-19 were found to vary across demographic factors such as gender, age, education, income, and occupation. These factors influenced the level of awareness and adherence to preventive measures.

TRENDS RELATED TO KNOWLEDGE AND PRACTICES TO COMBAT COVID-19

Information Sources: The majority of participants in the studies obtained their information about COVID-19 from the internet, social media, television, newspapers, and family members. This suggests the importance of these channels for disseminating information during a pandemic.

Knowledge Levels: While participants generally had a good understanding of COVID-19 as a viral disease, its modes of transmission, and common symptoms, there were variations in the depth of knowledge. Some participants exhibited higher levels of knowledge than others.

Adherence to Preventive Measures: Although knowledge about COVID-19 was generally high, adherence to preventive measures varied. In some cases, participants exhibited poor adherence to practices such as mask-wearing, social distancing, and hand hygiene. This highlights the gap between knowledge and behaviour change [30,31].

Demographic Influences: Gender, age, education, income, and occupation were significant

factors influencing both knowledge and practices related to COVID-19. Females tended to exhibit higher levels of adherence to preventive measures, and higher knowledge scores were associated with certain demographic groups.

Health Education: Studies suggested that targeted health education interventions might be more effective for specific subpopulations, such as males, working-age individuals, or those from lower-income groups. Tailored interventions can help bridge the gap between knowledge and action [35,36,37,38].

Risk Perception: Many participants in the studies perceived themselves to be at risk of contracting COVID-19. This risk perception often drove them to adopt preventive measures and follow government guidelines [32,33,34].

RESEARCH GAPS

Geographic Gap: None of the reviewed studies focused on the state of Gujarat in India, despite its significant COVID-19 impact. This represents a gap in understanding the knowledge and practices of this region's population.

Family Chronic Disease: The presence of chronic diseases in the family as a variable influencing COVID-19 knowledge and practices was not explored in the reviewed studies.

Sampling Methods: Convenient sampling was predominantly used in the reviewed studies. Future research could benefit from more rigorous sampling techniques to enhance the generalizability of findings.

Knowledge-Practice Gap: Despite good knowledge levels, there is often a disconnect between knowledge and the adoption of preventive practices. Understanding the reasons behind this gap is crucial for effective public health interventions.

In conclusion, the reviewed studies provide valuable insights into the knowledge, attitudes, and practices of diverse populations during the early stages of the COVID-19 pandemic. They underscore the importance of targeted health education, considering demographic factors, and addressing the knowledge-practice gap. Additionally, there is a need for further research, especially in regions not covered by the existing studies, to inform localized strategies for combating COVID-19 effectively[39,40,41].

This study is undertaken with two main objectives: (1) To assess the overall knowledge of how to combat COVID-19 among the chosen residents of Ahmedabad city, Gujarat; and (2) To study the practices adopted by the selected residents of Ahmedabad city, Gujarat, in response to combating COVID-19. This evaluation will encompass both overall practices and practices related to specific aspects of COVID-19, including behaviours within and outside the home. A detailed item-wise analysis of the practices followed by the respondents will be conducted.

DELIMITATIONS OF THE STUDY

The study is delimited as follows:

- The research is confined to citizens of Ahmedabad city, Gujarat, aged between 21 to 58 years.
- The focus is on the knowledge of citizens of Ahmedabad city regarding COVID-19, including its characteristics, symptoms, transmission, treatment, and preventive measures.
- The study is delimited to the practices adopted by citizens of Ahmedabad concerning

COVID-19-appropriate behaviour.

METHODOLOGY

- **Study Population**

The study encompasses citizens residing in Ahmedabad City, Gujarat.

SAMPLING

- A sample of 200 residents from Ahmedabad City, primarily aged between 21 and 58 years, was selected for the study. Gender representation was sought to be equal, and a combination of convenient sampling and snowball sampling techniques was employed.

RESEARCH TOOL DEVELOPMENT

To collect data, a structured questionnaire was formulated using Google Forms. The questionnaire was meticulously crafted based on an extensive review of relevant literature [6,7,8,10,11,15,16,17,20,21,24], information from authoritative sources such as the World Health Organization [22] and the Centres for Disease Control and Prevention, as well as existing research tools.

DESCRIPTION OF THE RESEARCH TOOL

The research tool, conducted through Google Forms, comprised four main sections. In addition to the study's introduction and the respondent's consent letter, the questionnaire encompassed the following:

Each section employed various response patterns under data collection tools such as checklists, multiple-choice questions, true or false questions, and rating scales to elicit responses from the participants. The specific tools used in each section are detailed below:

- Part A: Profile of the Citizens and Part-B Other Background Information: These sections used a combination of checklists with open-ended questions, multiple-choice questions, and open text fields for respondents to provide additional information.
- **Knowledge Test on COVID-19 (Section 2**): This section employed a mixture of checklist questions, multiple-choice questions, and true or false questions to assess the respondents' knowledge about COVID-19.
- **Practices Followed by Respondents amidst the COVID-19 Pandemic (Section 3**): The practices followed by respondents were collected using interval-scale questions. Respondents were asked to rate their practices using a 5-point rating scale.
- **Problems Regarding the Adoption of New Normal Behaviours (Part A, Section 4):** This part used interval scale questions, and respondents were asked to rate the problems they encountered using a 3-point rating scale.
- **Suggestions Regarding the Adoption of New Normal Behaviours (Part B, Section 5):** Similar to Part-A, this section utilized interval-scale questions with a 3-point rating scale to collect suggestions from respondents.

These research instruments were designed to comprehensively gather data on the profile, knowledge, practices, challenges, and suggestions of respondents in relation to the COVID-19 pandemic, allowing for a detailed analysis of their awareness and behaviours in academic research.

VALIDATION OF THE RESEARCH TOOL

The research instrument underwent a rigorous validation process. Ten experts, who are teaching faculty members from the Department of Extension and Communication within the Faculty of Family and Community Sciences, were entrusted with the task of evaluating the tool's content validity, relevance, logical sequence, language proficiency, and appropriateness of the response system. The tool was subsequently refined based on the valuable suggestions and comments provided by these experts.

RELIABILITY ASSESSMENT OF THE RESEARCH TOOL

The questionnaire's reliability was assessed using the split-half reliability test methodology. Thirty respondents, including an equal distribution of males and females residing in Ahmedabad City, were administered the tool. Data for the reliability test was gathered from these 30 respondents between February 1st and February 7th, 2020. The split-half reliability test, calculated using the appropriate formula, yielded a coefficient of 0.80.

PRE-TESTING OF THE RESEARCH TOOL

Prior to its formal implementation, the research tool underwent a pre-testing phase involving ten respondents from Vadodara City. The aim of this exercise was to assess the clarity of the questionnaire. During this process, ambiguous items were identified and subsequently removed, rendering the tool more comprehensible and user-friendly.

ETHICAL APPROVAL BY THE IECHR COMMITTEE

Ethical approval for the study was sought from the Institutional Ethical Committee for Human Research (IECHR) on November 6, 2020. Subsequently, it was granted ethical approval under the registration number IECHR/FCSC/2020/32.

DATA COLLECTION

Data pertaining to the knowledge and practices of selected citizens of Ahmedabad City, Gujarat, regarding COVID-19 combat was collected from 200 participants between the ages of 21 to 58. The data collection period spanned from February 1st to 20th, March 2020, and was conducted by the researcher. Given the prevailing pandemic circumstances, data collection was executed through an online platform, specifically Google Forms. Respondents were provided access to the Google Form via email, WhatsApp, and other digital means.

DATA TABULATION

The data collected during the study was meticulously tabulated using Excel spreadsheets. A systematic coding system was applied to the responses, aligning them with the predetermined scoring criteria.

FINDINGS AND DISCUSSION

Table 1: Frequency and Percentage Distribution of the Selected Citizens of Ahmedabad City According to their Knowledge Level Regarding COVID-19 (n=200)

Sr. No.	Knowledge Regarding COVID-19	f	%
1	Low Knowledge	80	40
2	High Knowledge	120	60

Figure 1: Percentage Distribution of the Selected Citizens of Ahmedabad City According to their Knowledge Level Regarding COVID-19

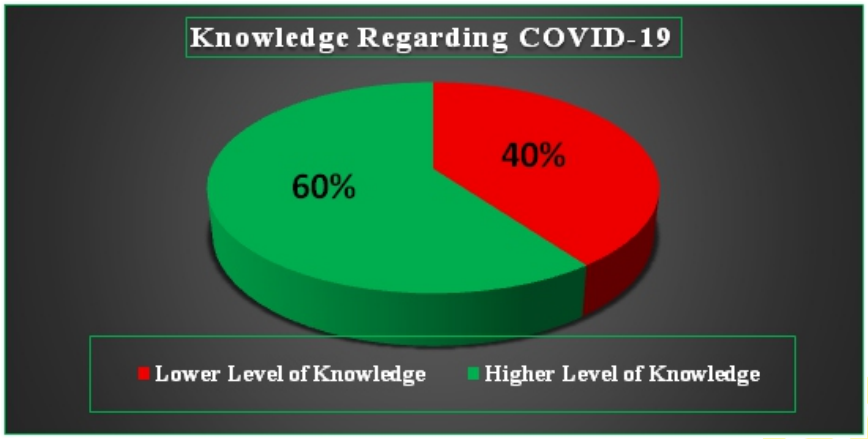


Table 1 and Figure 1 provide insights into the overall knowledge levels of respondents concerning COVID-19, highlighting the following key observations:

OVERALL, KNOWLEDGE LEVELS

Among the surveyed population, 60% demonstrated a higher level of knowledge about COVID-19, while 40% exhibited a lower level of knowledge on the subject.

This finding suggests that a substantial portion of the respondents possessed a commendable level of awareness regarding COVID-19. Knowledge is considered a crucial precursor to adopting proactive measures during an epidemic, making this observation particularly relevant in the context of pandemic response.

This finding aligns with research conducted by [1,2,3] and [9], which reported a high level of knowledge among respondents regarding COVID-19.

POSSIBLE INFLUENCES ON KNOWLEDGE

Education emerged as a probable contributing factor to the higher knowledge levels observed among respondents. A significant majority (55.5%) of the respondents belonged to the educated and highly educated categories.

Educated individuals are more likely to stay informed about current events, including pandemics, due to their understanding of the importance of knowledge. In times of uncertainty, knowledge serves as a potent tool for reducing stress.

Neupart's study supports this notion, emphasizing that increased factual information about COVID-19 correlates with reduced pandemic-related stress across different age groups [12].

CONCERNS ABOUT LOWER KNOWLEDGE LEVELS

The presence of a 40% segment with a lower level of knowledge regarding COVID-19 raises concerns, especially considering the pandemic's global prevalence for over a year.

Information overload emerged as a potential cause of lower knowledge levels. The majority of respondents (56%) had high access to information about COVID-19, with a significant portion

(70.3%) relying on social media platforms for information.

The COVID-19 pandemic has led to an infodemic characterized by an overwhelming abundance of information, some of which is inaccurate. This information overload can hinder individuals' ability to distinguish between reliable and unreliable sources.

This finding underscores the importance of ensuring that governments serve as trusted sources of accurate information during pandemics. Government-provided information should be transparent, timely, and truthful, as it becomes the primary source of reliable guidance for individuals amidst high uncertainty.

Trust in official government information is especially critical in an era where the public has access to a wide array of information sources through social media channels [21].

In conclusion, the study's results suggest that knowledge plays a pivotal role in shaping individuals' responses to a pandemic like COVID-19. While a significant proportion of respondents demonstrated a higher level of knowledge, the existence of a segment with lower knowledge levels highlights the challenges posed by information overload and misinformation during a pandemic. To mitigate these challenges, it is imperative that governments prioritize the dissemination of accurate and trustworthy information to the public.

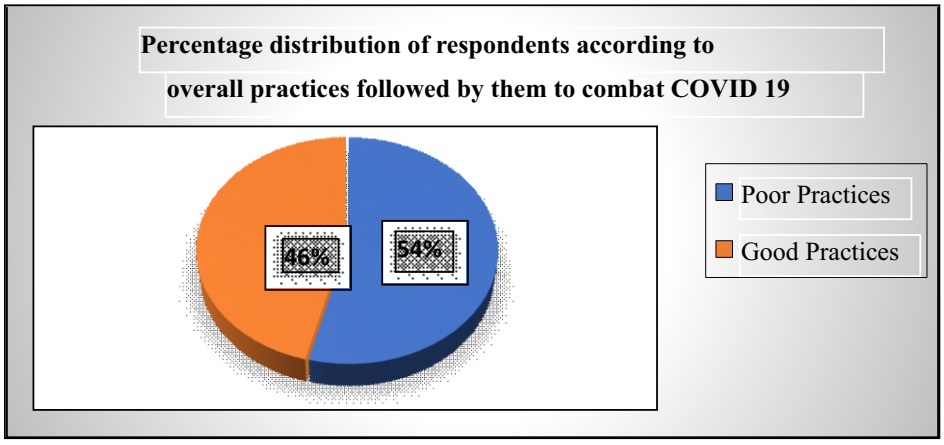
Table 2 and Figure 2 present the frequency and percentage distribution of selected citizens of Ahmedabad city based on the practices they adopted to combat COVID-19. The results reveal the following key findings:

Table 2: Frequency & Percentage Distribution of the Selected Citizens of Ahmedabad City According to their Overall Practices followed to combat COVID-19 (n=200)

Sr. No.	Overall practices	f	%
1	Poor Practices	108	**54.0**
2	Good Practices	92	46.0

Figure 2: Percentage Distribution of the Selected Citizens of Ahmedabad City

(n=200)



OVERALL PRACTICES

Among the surveyed respondents, 54% were categorized as following "poor practices" in response to COVID-19, while 46% were classified as adhering to "good practices."

These findings indicate that a significant proportion of the surveyed population, comprising more than half, exhibited inadequate practices in their efforts to combat COVID-19. This suggests a concerning level of negligence regarding the seriousness of the disease within this demographic.

FACTORS INFLUENCING PRACTICES

The reluctance to adopt appropriate COVID-19 practices observed in this study could potentially be attributed to the discomfort associated with the "new normal" introduced by the pandemic. Concepts such as "social distancing," "mask-wearing," and "personal hygiene" have become integral to daily life but may be perceived as inconvenient or uncomfortable by some individuals, leading to a lack of compliance [28,29].

Perceived risk, encompassing perceived susceptibility and perceived seriousness of the pandemic threat, plays a crucial role in influencing health-related behaviours. Individuals who believe they are vulnerable to illness or perceive the disease as having severe consequences are more likely to adopt health-seeking behaviours.

Previous studies, such as those focusing on the Health Belief Model, [10] have highlighted the significance of perceived likelihood, seriousness, and susceptibility in decisions related to preventive measures, such as vaccinations against infectious diseases.

The seriousness and perceived susceptibility to the COVID-19 pandemic are key determinants of individuals' willingness to adopt personal protective behaviours. A perceived threat from the pandemic positively influences the adoption of preventive behaviours.

Health promotion professionals and policymakers should focus their efforts on the segment of the population that did not follow COVID-19 appropriate practices, as this group represents a significant portion of the population. Behaviour change interventions and education campaigns should be designed to empower individuals to take self-protective measures and participate actively in combating the disease.

Health messages related to COVID-19 should be tailored to address perceived susceptibility and severity, helping individuals better understand the threat posed by the disease. Clear communication regarding the importance of preventive measures can help individuals manage their fear and anxiety more effectively.

In conclusion, the study's findings underscore the need for targeted public health interventions aimed at improving COVID-19 practices, particularly among individuals who have not yet embraced appropriate preventive measures. By addressing perceptions of susceptibility and severity, health promotion professionals and policymakers can enhance public understanding of the pandemic's threat and encourage more effective compliance with recommended practices.

Aspect wise item wise intensity indices of Practices followed by the selected citizens of Ahmedabad to combat COVID-19

Table 3: Intensity Indices of the selected respondents according to their practices followed at home (n=200)

Sr. no.	Practices followed at home	Intensity Indices
1.	Washing hands with soap and water/ sanitize – (After coughing/sneezing/blowing my nose)	4.70
2.	Washing hands with soap and water/ sanitize – (After using Bathroom/Toilet)	4.60
3.	Washing hands with soap and water/ sanitize – (Before and after eating)	4.60
4.	Washing hands with soap and water/ sanitize – (As soon as I reach home)	4.60
5.	Sanitize/clean items which are home-delivered/purchased from outside before using them.	4.40
6.	Follow hygiene protocols as per Government of India while returning home	4.33
7.	The used mask keeps separately for washing when reach home.	4.32
8.	Keep yourself socially active by talking to friends/ relatives on the phone /video call/virtually.	4.19
9.	If anyone in the family, including own-self, feel unwell, immediately self-isolate in home	4.02
10.	Ask to leave home-delivered items outside the house	4.02
11.	Check for good air flow/ proper ventilation when shared spaces in the rooms in the house	3.97
12.	Allow sick caretakers (maid/driver/cook etc.) to take care of elderly family members at home.	3.47
13.	Allow sick domestic helper/cook to prepare food for the family	3.45
14.	Allow home care service provider /repairer during urgency without checking his/her health status.	3.22
15.	The habit of touching eyes, nose, and mouth without cleaning hands	3.21
16.	Greet neighbours/friends/relatives with hand-shake/hug when they visit home.	3.20
17.	Temperature screening/Thermal check-up for all outsiders who arrives at the house is done at the entrance.	3.18
18.	Do not change clothes or keep them separate for washing which used outside the home.	3.07
19.	Invite friends/relatives for festival celebrations (Diwali, Christmas, Eid, Uttarayan/Makar Sankranti, etc.) at home.	2.95
20.	Prefer to eat outside more than homemade food	2.87
21.	Pay in cash for online delivery products/items	2.81
22.	Forward COVID-19 WhatsApp messages immediately to the near & dear ones.	2.72
23.	Use home remedies for COVID-19 as and when it is shared by neighbour/nearby sources.	2.37
24.	Frequently touched surfaces in the rooms and kitchen of the house (such as door-knobs, light switches, electronics, and counters).	1.95

Table 3 presents the intensity indices of practices followed by the surveyed respondents at home in their efforts to combat COVID-19. These intensity indices range from a high of 4.70 to a low of 1.95. The findings indicate the extent to which individuals adopted various preventive measures within their home environments.

EFFECTIVE PRACTICES FOLLOWED

- Practices with the highest intensity indices (ranging from 4.32 to 4.70) include:
- Washing hands with soap and water or using sanitizer after specific activities
- Sanitizing or cleaning items that are home-delivered or purchased from outside before using them
- Adhering to hygiene protocols recommended by the Government of India
- Keeping the mask worn outside separately for washing upon returning home

These practices were followed to a very high extent by the respondents, suggesting that they were conscientiously implementing these measures in their daily lives. These practices are crucial in protecting individuals and their families from COVID-19.

HYGIENE AND SOCIAL PRACTICES

- Practices related to maintaining personal hygiene, keeping oneself socially active through virtual means, and self-isolation when feeling unwell also received relatively high intensity indices (ranging from 3.97 to 4.19).

These findings emphasize the importance of personal hygiene and social connectedness through virtual means during the pandemic. It is noteworthy that maintaining mental well-being through virtual social interaction is considered essential during periods of social distancing.

RISKY PRACTICES TO SOME EXTENT

Certain practices, such as allowing sick caretakers or domestic helpers to continue working, touching the face without cleaning hands, and greeting visitors with handshakes or hugs, received intensity indices ranging from 3.18 to 3.47.

These practices were followed to some extent by the respondents, indicating a level of risk associated with these behaviours, especially concerning the potential spread of the virus within households.

LOW-EXTENT PRACTICES WITH RISK

- Practices associated with a lower extent of adherence (intensity indices ranging from 2.72 to 3.07) include not changing clothes worn outside, inviting friends or or relatives for festival celebrations at home, preferring outside food over homemade meals, paying in cash for online deliveries, and forwarding COVID-19 WhatsApp messages.

  These practices pose a potential risk of virus transmission and indicate the need for greater awareness and adherence to preventive measures.

NEGLECTED PRACTICES

- The lowest intensity indices (1.95 and 2.37) were observed for practices such as using home remedies for COVID-19 based on information from neighbours or nearby sources and cleaning or sanitizing frequently touched surfaces within the home.
- Neglecting to clean frequently touched surfaces represents a significant oversight, as these

surfaces can serve as potential sources of virus transmission within households.

- The study findings align with previous research and underscore the importance of effective practices such as hand hygiene, sanitization, and adherence to government guidelines in preventing COVID-19 transmission. These findings also highlight the need for increased awareness and compliance with recommended practices, especially those related to hygiene and avoiding risky behaviours within the household.

Table 4: Intensity Indices of the selected respondents according to their practices followed outside the home. (n=200)

Sr. no	Practices followed outside the home	Intensity Indices
1.	Properly wear/cover face with a mask when leaving home	**4.40**
2.	Sanitize hands after touching money and high contacted surfaces (like public coupons, lift button, elevator handrails, etc.)	**4.40**
3.	Wear a properly fitted mask (covering both my nose and mouth and a maximum portion of my chin) till I am outside the home.	**4.30**
4.	Carry hand sanitizers whenever you go out.	**4.30**
5.	At public /workplace, while coughing/sneezing, cover the mouth with tissue/napkin / bent elbow.	**4.30**
6.	Make a list of the essential items before reaching the grocery shop / going outside the home.	**4.30**
7.	Keep at least 6 feet distance with to interact any outsider while outside home.	**4.20**
8.	Purchase essential home supply (e.g., grocery, pharmacy, vegetables, fruits, etc.) for at least one week / as per storage capacity at home.	**4.20**
9.	Follow marked entry or exit points/any directional signs/floor markings designed to keep peopl e at least 6 feet apart.	**4.10**
10.	Avoid non-essential group activities (in-person) at work place	**4.00**
11.	While going for the purchase of any product, touch products that need to be purchased.	**3.90**
12.	Schedule outside visits in less rushing hours.	**3.80**
13.	Go outside home for only most essential work.	**3.70**
14.	Go outside the home even when sick.	**3.50**
15.	Give used own mask to others to use if they don't have	**3.50**
16.	Throw disposable masks in an open place near home before entering the home.	**3.50**
17.	Touch eyes, nose, mouth without cleaning hands when outside home	**3.40**
18.	While following social distancing, do not wear a mask.	**3.40**
19.	Use public transportation/ sharing services while commuting.	**3.20**
20.	Visit friends/relative's houses for festival celebrations (Diwali, Christmas, Eid, Uttarayan/Makar Sankranti, etc.)	**3.10**
21.	Visit crowded places (shopping malls/ Market/ Theatres /Worshipping places etc.) without wearing a mask.	**3.00**
22.	Don't wear a mask when in the car with friends/family.	**3.00**
23.	Eat street food (like Panipuri, Vadapav, etc.) for taste.	**2.90**
24.	Prefer cash payment over online payment whenever go out.	**2.90**
25.	Because of wearing a mask, work with the people in closed settings.	**2.80**
26.	Do not check Arogya Setu App for COVID-19 alerts before visiting any place.	**2.60**

Table 4 presents the intensity indices of COVID-19 preventive practices followed by respondents outside their homes. These practices encompass a wide spectrum, ranging from highly effective measures to those associated with elevated risks, as indicated by intensity indices, which varied from 2.60 to 4.40.

Highly Effective Preventive Practices

- Certain practices received the highest intensity indices (ranging from 4.20 to 4.40), signifying that respondent adhered to these measures to a very high extent. These practices included wearing properly fitted face masks when leaving home and continuing to wear them outside, sanitizing hands after handling money and frequently touched surfaces, practicing social distancing, carrying hand sanitizers, and using tissues or elbows to cover the mouth when coughing or sneezing.

  It is encouraging to note that these practices, considered essential in mitigating the spread of COVID-19, were followed diligently by the majority of respondents.

Effective Practices with High Compliance

- Several preventive practices, such as following designated entry and exit points or floor markings for social distancing, avoiding non-essential group activities at the workplace, and limiting physical contact with products while shopping (intensity indices ranging from 3.80 to 4.10), were followed to a high extent.

  These practices align with recommended guidelines for minimizing transmission risks in public settings.

Moderate Compliance with Preventive Measures

- Respondents demonstrated moderate compliance with practices such as limiting outdoor activities to essential tasks, refraining from going out when feeling unwell, and avoiding the sharing of used masks or improper disposal (intensity indices ranging from 3.40 to 3.70).

  While adherence to these practices was not as high as in the previous categories, they still contributed to reducing potential transmission.

Lower Adherence to Preventive Measures

- Certain practices were followed by respondents to a lesser extent, potentially increasing risks. Examples include using public transportation, visiting friends or relatives for festivities, frequenting crowded places without masks, and not wearing masks when able to maintain social distance (intensity indices ranging from 3.00 to 3.20).

  These behaviors pose challenges in curtailing virus transmission and highlight areas where awareness and compliance may need improvement.

High-Risk Practices with Minimal Compliance

- The study identified practices that were followed to a very low extent (intensity indices ranging from 2.60 to 2.90). These included consuming street food, opting for cash payments over online transactions, working in closed settings without proper mask usage, and failing to use the Aarogya Setu App for COVID-19 alerts.
- Such practices are associated with heightened risks of exposure and virus transmission, necessitating urgent attention to address misconceptions and improve compliance.

  In summary, the study findings reveal a range of COVID-19 preventive practices

followed by respondents outside their homes. While many respondents embraced essential measures with high compliance, others engaged in behaviours associated with varying degrees of risk. Addressing low-compliance practices through targeted awareness campaigns and education is crucial to minimizing the spread of COVID-19 within communities.

Table 5: Percentage distribution and intensity indices according to the extent to which problems faced by the respondents in adopting new normal towards COVID-19 (n=200)

Sr. no	Problems faced by the selected respondents	Low Extent	Some Extent	Great Extent	Intensity Indices
		%	%	%	
1	Find lack of availability of authentic information about COVID-19 protocol and guidelines.	25.5	**45**	29.5	2.04
2	Friends/People in surrounding environment are not co-operative to follow social distancing.	27	**43.5**	29.5	2.03
3	Small/ lack of space at workplace does not allow me to follow social distancing at public places/office	27.5	**49**	23.5	1.96
4	Find difficulties in wearing a mask due to spectacles.	**40**	29	31	1.94
5	Find difficulties in wearing mask due to difficulty in breathing/hypertension/asthma	34.5	**42.5**	23	1.88
6	Neighbours didn't disclose COVID-19 infected person information due to fear of social stigma against COVID-19 affected people.	**42.5**	31	26.5	1.87
7	Find it difficult to drive wearing mask.	**50.5**	25	23.5	1.77
8	Forget to wear mask when go out.	**55.5**	25.5	19	1.62
9	Cannot afford resources. (soap/sanitizer/water/mask etc.) to Combat coronavirus.	**60**	21	19	1.59

Table 5 presents the percentage distribution and intensity indices reflecting the challenges faced by respondents in adapting to the new normal during the COVID-19 pandemic. These challenges span from low to great extent, with intensity indices ranging from 1.59 to 2.04.

Lack of Authentic Information and Social Distancing Non-Cooperation

Approximately 45% of respondents found a significant problem in obtaining authentic information about COVID-19 protocols and guidelines, while 43.5% encountered resistance from friends and people in their surroundings regarding social distancing.

These issues were reported with high intensity indices of 2.04 and 2.03, respectively, suggesting significant concerns.

The World Health Organization (WHO) has emphasized the importance of combating misinformation during the pandemic [22]. Misinformation can be rampant and influential [13], making reliable information crucial for public health [19].

CHALLENGES IN SOCIAL DISTANCING AT WORK AND MASK WEARING

About 49% of respondents faced challenges in maintaining social distancing at workplaces due to limited space.

Some respondents (40%) encountered difficulties wearing masks due to wearing spectacles, while 34.5% faced issues related to mask-wearing due to breathing difficulties, hypertension, or asthma.

These challenges, though not as pronounced as the previous ones, still garnered moderate intensity indices (ranging from 1.88 to 1.96).

The findings indicate the need for workplace modifications to facilitate social distancing [19] and improved mask designs for comfort.

STIGMA AND INCONVENIENCE

- A substantial portion of respondents (42.5%) reported that neighbours withheld information about COVID-19 infections due to the fear of social stigma.
- Other problems included difficulties in driving while wearing a mask (50.5%) and forgetting to wear a mask (55.5%).
- These issues received lower intensity indices (ranging from 1.62 to 1.87), indicating a moderate level of impact.
- Stigma associated with COVID-19 is a significant challenge (Bhattacharya et al., 2020). Fear and misconceptions drive such behaviour [23].

Resource Affordability

- The majority of respondents (60%) mentioned that they could not afford essential resources (e.g., soap, sanitizer, masks) to combat COVID-19.
- This issue received an intensity index of 1.59, indicating a moderate level of concern.
- Lack of resources can hinder adherence to preventive measures.

Table 6: Percentage distribution and intensity indices according to the extent to which the respondents expressed suggestions in adopting COVID-19 appropriate practices.

(n=200)

Sr. no	Suggestions of the respondents	Low Extent	Some Extent	Great Extent	Intensity Indices
		%	%	%	
1	Public places like banks and others should strictly allow entry of only those people who are wearing a mask in the correct manner.	**6**	**20**	**74**	**2.71**
2	Accurate and updated information on red/yellow zone areas of the city should be made available for citizens through various media.	**4.5**	**24.5**	**71**	**2.70**

3	Digital services in all different need-based sectors (health, education, transport, etc.) should be strengthened by the government	**5.5**	**24.5**	**70**	**2.66**
4	Testing, tracing, diagnosis, and treatment should be strengthened by Government.	**7.0**	**24**	**69**	**2.67**
5	Individual citizen requires to be more accountable for his/her public behaviour and action.	**5.5**	**27.5**	**67**	**2.65**
6	Educational institutions require to organize awareness campaign required on acceptance of new normal behaviour of COVID-19 by citizens	**5.5**	**30**	**64.5**	**2.61**
7	More debates/discussions should be organized by multi-stake holders in society to reduce social stigma and discriminatory behaviour to COVID19 patients, health workers, and other corona warriors.	**6.5**	**30.5**	**63**	**2.60**

Table 6 outlines respondents' suggestions for enhancing COVID-19-appropriate practices, with percentage distribution and intensity indices ranging from 2.60 to 2.71.

Promoting Mask-Wearing

A significant majority (74%) of respondents suggested that public places should allow entry only to individuals wearing masks correctly, receiving an intensity index of 2.71.

This indicates a strong consensus on the importance of mask-wearing in public spaces to prevent the virus's spread.

Information Dissemination and Digital Services

The majority of respondents recommended providing accurate information about red and yellow zone areas (71%) and strengthening digital services across sectors (70%).

These suggestions received moderate intensity indices of 2.70 and 2.66, respectively. Access to accurate information and digital services is crucial during a pandemic.

Strengthening Health Services

- Respondents suggested strengthening testing, tracing, diagnosis, and treatment (69%).
- This recommendation received an intensity index of 2.67, highlighting its significance.
- Individual Accountability and Awareness Campaigns:
- Suggestions for individual citizens to take more responsibility for their public behaviour (67%) and organizing awareness campaigns in educational institutions (64.5%) garnered moderate support.
- These recommendations received intensity indices of 2.65 and 2.61, respectively.

Reducing Stigma and Discrimination

- A majority of respondents (63%) proposed organizing debates and discussions to reduce social stigma and discriminatory behaviour related to COVID-19 patients, health workers, and Corona Warriors.
- This recommendation received an intensity index of 2.60, indicating its importance.

The findings reveal several challenges faced by citizens in adapting to the new normal during the COVID-19 pandemic. These challenges encompass misinformation, difficulties in mask-wearing, social stigma, and resource affordability. Respondents also provided valuable suggestions to address these challenges, emphasizing the importance of mask compliance, accurate information dissemination, digital services, strengthened health services, individual accountability, awareness campaigns, and stigma reduction.

The study underscores the significance of reliable information dissemination to combat misinformation [6] and the need for innovative solutions to encourage mask-wearing and social distancing. Addressing resource affordability and mitigating stigma are crucial aspects of public health efforts [5] [19].

Moreover, respondents' suggestions for strengthening health services, promoting individual responsibility, and conducting awareness campaigns reflect the community's role in pandemic management. Collaborative efforts involving various stakeholders, including educational institutions, media, and civil society, are essential to creating a cohesive response [13] [19].

In conclusion, this study sheds light on the multifaceted challenges faced by citizens during the COVID-19 pandemic and highlights the importance of collective action and informed decision-making to combat the virus effectively.

CONCLUSION AND RECOMMENDATIONS

The present research conducted an extensive assessment of the knowledge and practices of adults in Ahmedabad to combat COVID-19. The study identified that the majority of respondents possessed a good understanding of COVID-19, indicating that the efforts of government, media, and healthcare professionals in disseminating information were generally effective. However, a notable portion of respondents exhibited inadequate knowledge, highlighting the persistence of knowledge gaps.

Specifically, respondents had partially correct or incorrect knowledge regarding essential aspects such as hand hygiene protocols, risk factors contributing to disease transmission, and the purpose of lockdowns and night curfews. This knowledge gap could lead to the spread of misinformation and hinder the adoption of appropriate COVID-19 preventive practices.

The study also revealed disparities in knowledge and practices among different demographic groups. Young adults, males, and educated respondents exhibited comparatively poorer knowledge. Therefore, tailored information campaigns should target these groups to enhance their awareness and understanding of COVID-19.

Regarding COVID-19 preventive practices, the majority of respondents demonstrated poor adherence. This may be attributed to the inadequate knowledge discussed earlier. Notably, young adults, males, and educated individuals exhibited lower compliance with preventive measures compared to their counterparts. Occupation also played a role, with jobholders displaying better practices than business owners, students, and homemakers.

The study assessed practices within the home and identified areas of concern. While respondents generally adhered to government protocols, they were inconsistent in sanitizing frequently touched surfaces. Allowing domestic helpers, caretakers, and service providers into homes without health checks posed a risk during the pandemic. Additionally, a significant number of respondents either did not wear masks while practicing social distancing or neglected social distancing when wearing masks.

Outside the home, respondents exhibited higher compliance with recommended practices such as wearing masks, practicing hand hygiene, carrying hand sanitizer, covering the mouth when sneezing or

coughing, and maintaining social distancing.

The study also identified challenges faced by respondents in adopting new normal behaviours. The lack of access to authentic information about COVID-19 protocols and non-cooperation from friends and peers in maintaining social distancing were the most common issues. Space constraints in public places and difficulties wearing masks due to factors like spectacles, driving, or health conditions were additional challenges.

Respondents offered suggestions to encourage the adoption of new normal behaviours, with a significant majority supporting strict enforcement of mask-wearing in public places for individuals who do not wear masks correctly.

In conclusion, while the majority of respondents demonstrated good knowledge about COVID-19, there is a clear need for reinforcement, particularly concerning essential preventive measures. Targeted strategies should be developed for specific demographic groups, and comprehensive health education campaigns should be initiated to promote knowledge and positive practices. Transparent information dissemination by authorities, strict enforcement of COVID-19 protocols, and collective responsibility are essential to effectively combat the ongoing pandemic and prepare for potential future waves.

FUTURE RESEARCH RECOMMENDATIONS

Replication of the Study in Diverse Geographical Locations: Future research endeavours should consider replicating this study in various urban and rural settings across Gujarat and other states in India. Assessing the knowledge and practices of citizens in different regions can provide valuable insights into regional variations in COVID-19 awareness and behaviour, allowing for more targeted public health interventions.

Exploring Attitudes and Risk Perceptions: In addition to knowledge and practices, there is a need for research focusing on the attitudes and risk perceptions of citizens during the ongoing pandemic. Investigating public attitudes and perceptions can shed light on the underlying factors influencing individual behaviour and decision-making, thereby aiding in the development of more effective public health communication strategies.

Extending The Study to Rural Areas : Extending similar studies to rural areas within Gujarat and across India is essential. Rural communities often face unique challenges and disparities in healthcare access and information dissemination. Assessing the knowledge and practices of citizens in rural settings can help tailor interventions to address specific rural needs and bridge urban-rural healthcare gaps.

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