



## COVID 19 AND INDIA

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### ABSTRACT

The COVID-19 pandemic has emerged as a transformative global event, disrupting societies, economies, and healthcare systems on an unprecedented scale. This paper encapsulates a comprehensive exploration of the multifaceted dimensions of COVID-19, encompassing the virus's biology, public health challenges, societal responses, and the ongoing efforts towards recovery. This document navigates through the scientific intricacies of the SARS-CoV-2 virus, shedding light on its origins, transmission dynamics, and the emergence of variants. Delving into the realm of public health, it analyses the adaptive strategies employed by nations to curb the spread of the virus, from widespread vaccination campaigns to social distancing measures and healthcare system fortification. Beyond the immediate health implications, the paper examines the societal and economic repercussions of the pandemic. The discussion encompasses the disparities in the impact of COVID-19, highlighting vulnerabilities in healthcare infrastructure and exploring the evolving nature of work and education in the wake of lockdowns and social restrictions. Furthermore, this document emphasizes the collaborative global response to COVID-19, with nations uniting in scientific research, data sharing, and the development of therapeutic and preventive measures. It underscores the importance of international cooperation in navigating the challenges posed by the pandemic and fostering a resilient global community. The paper also incorporates a survey on people's knowledge about COVID-19 based on primary data. In conclusion, this paper provides a nuanced understanding of COVID-19, offering insights into the ongoing efforts to combat the virus and adapt to the ever-changing landscape it presents. By unravelling the complexities of this global health crisis, we aim to contribute to informed decision-making, public awareness, and the collective pursuit of a healthier and more sustainable future.

**KEYWORDS:** Covid, fortification, health concerns, India, resilience.

### INTRODUCTION

In the closing months of 2019, the world witnessed the emergence of a novel coronavirus, SARS-CoV-2, triggering a global health crisis that would reshape the fabric of societies worldwide. This virus gave rise to the coronavirus disease, commonly known as COVID-19, and rapidly spread across borders, transcending geographical boundaries and challenging the resilience of nations.

The impact of COVID-19 extends far beyond its immediate health implications. It has ushered in an era of unprecedented challenges, affecting economies, healthcare systems, and the daily lives of billions. Governments, scientists, and communities have been compelled to collaborate in unison, seeking solutions to curb the spread of the virus, mitigate its impact, and chart a course towards recovery.

This introduction sets the stage for an exploration of the multifaceted dimensions of COVID-19. From the intricacies of the virus's biology to the far-reaching consequences on public health, economies, and global interconnectedness, this examination aims to provide a comprehensive understanding of the ongoing global battle against the pandemic.

As we delve into the complexities of COVID-19, we embark on a journey to unravel the scientific, social, and economic dynamics that define this unparalleled moment in history. Through informed exploration and shared knowledge, we strive to navigate the challenges posed by COVID-19 and collectively envision a path towards a healthier and more resilient future.

COVID-19 has been a significant global health concern, and India has been among the countries significantly affected by the pandemic. However, please note that the

situation can change rapidly, and it's essential to verify the latest information from reliable sources for the most up-to-date details.

Up until my last update, India had experienced multiple waves of COVID-19 infections, with varying degrees of severity. The country implemented various measures such as lockdowns, social distancing, and vaccination campaigns to curb the spread of the virus.

Key points related to COVID-19 in India up to January 2022

1. **Vaccination Efforts:** India launched one of the world's largest COVID-19 vaccination campaigns. The vaccination drive aimed to inoculate a significant proportion of the population to achieve herd immunity.
2. **Variants of Concern:** Like many other countries, India has been monitoring and studying different variants of the virus, including those that have been classified as variants of concern.
3. **Healthcare System Challenges:** The country faced challenges in managing the surge in cases, with reports of hospitals being overwhelmed during certain periods. Efforts were made to enhance healthcare infrastructure and facilities.
4. **Public Health Measures:** Various public health measures, including mask mandates, social distancing guidelines, and lockdowns, were implemented at different times based on the severity of the situation.
5. As the COVID – 19 strain of virus has been classified by the World Health Organisation as a high transmission and moderate virulence organism the real challenge humans and policy makers are facing is the threat of its contagion. The infection can spread very fast and if precautions are not taken can affect large sections of the population quickly. Significant sections of the population would have to be kept under institutional quarantine in dedicated health facilities, and critical cases with comorbidities will have to be given specialised attention as well as treatment. The strain on any national health system will be evident to all and quite significant. However the interesting aspect of this pandemic is it exposed the policy lacuna in the system and laid bare the mistake policy makers and governments have committed in ignoring the health system for merely achieving high rates of growth in gross domestic product.
6. Cases of coronavirus are on the rise across Africa. But in some countries, people don't believe the pandemic is real.<sup>[1]</sup>

### Features

COVID-19, caused by the SARS-CoV-2 virus, exhibits a range of features that contribute to its impact on individuals and communities. Here are some key features of COVID-19

1. **Respiratory Transmission:** COVID-19 primarily spreads through respiratory droplets when an infected person coughs, sneezes, or talks. It can also spread by touching surfaces contaminated with the virus and then touching the face.
2. **Symptoms:** The symptoms of COVID-19 can vary widely, ranging from mild to severe. Common symptoms include fever, cough, shortness of breath, fatigue, body aches, loss of taste or smell, sore throat, and respiratory distress.
3. **Asymptomatic Spread:** Individuals infected with SARS-CoV-2 can transmit the virus to others even if they do not show symptoms (asymptomatic carriers). This characteristic makes it challenging to identify and isolate cases solely based on symptoms.
4. **Incubation Period:** The incubation period for COVID-19, i.e., the time between exposure to the virus and the onset of symptoms, typically ranges from 2 to 14 days. This variability poses challenges in early detection and containment.
5. **Variants:** SARS-CoV-2 has undergone mutations, leading to the emergence of variants. Some variants may have altered transmissibility, severity, or vaccine resistance, requiring ongoing monitoring and research.
6. **Severity Spectrum:** COVID-19 can manifest in a spectrum of severity, from mild or asymptomatic cases to severe illness requiring hospitalization and, in some cases, leading to death. Older adults and individuals with underlying health conditions are at a higher risk of severe outcomes.
7. **Long COVID:** Some individuals experience lingering symptoms long after the acute phase of the illness has passed. This condition, known as long COVID or post-acute sequelae of SARS-CoV-2 infection (PASC), includes persistent fatigue, brain fog, and other symptoms.
8. **Global Impact:** COVID-19 has had profound global implications, leading to widespread disruptions in travel, trade, education, and daily life. The pandemic has exposed and exacerbated existing social and economic inequalities.
9. **Vaccination Efforts:** Vaccines have been developed and deployed globally to prevent COVID-19. Vaccination campaigns aim to achieve herd immunity and reduce the severity of illness, hospitalizations, and deaths.
10. **Public Health Measures:** Governments worldwide have implemented various public health measures to curb the spread of the virus, including lockdowns, social distancing, mask mandates, and testing and contact tracing programs.

Understanding these features is crucial for effective public health interventions, medical care, and ongoing research to combat the COVID-19 pandemic. Keep in mind that information about COVID-19 is subject to updates and may evolve over time.

## Effects

The effects of COVID-19 are wide-ranging and have impacted individuals, communities, and societies on a global scale. Here are some key effects of the COVID-19 pandemic.

### 1. Public Health Impact

- **Overwhelmed Healthcare Systems:** Hospitals and healthcare systems faced unprecedented challenges, with surges in COVID-19 cases straining resources and leading to shortages of medical supplies.
- **Strain on Healthcare Workers:** Healthcare professionals worked tirelessly, often facing physical and emotional exhaustion while responding to the increasing demand for medical care.
- **Delayed Non-Emergency Medical Care:** Routine medical procedures and elective surgeries were postponed to prioritize COVID-19 cases, affecting individuals with other health conditions.

### 2. Social and Economic Impact

- **Lockdowns and Restrictions:** Many countries implemented lockdowns and restrictions, affecting daily life, businesses, and economies.
- **Job Loss and Economic Hardship:** The pandemic led to widespread job losses, business closures, and economic challenges, particularly in industries directly affected by restrictions.
- **Disparities Exposed:** Existing social and economic disparities were exacerbated, with vulnerable populations disproportionately affected.

### 3. Educational Impact

- **School Closures:** Schools and educational institutions worldwide closed temporarily, affecting millions of students and prompting a shift to online learning.
- **Educational Inequities:** Disparities in access to online education highlighted existing inequalities in educational systems.

### 4. Mental Health Impact

- **Increased Stress and Anxiety:** Uncertainty, fear, and social isolation contributed to heightened levels of stress and anxiety.
- **Impact on Vulnerable Populations:** Individuals with pre-existing mental health conditions and those facing economic hardships were particularly vulnerable to mental health challenges.

### 5. Global Travel and Tourism

- **Travel Restrictions:** International travel was significantly restricted, impacting tourism, business travel, and cultural exchange.
- **Economic Impact on Tourism:** The tourism industry suffered due to travel restrictions, affecting businesses and employment in this sector.

### 6. Technological and Workforce Changes

- **Remote Work:** The pandemic accelerated the adoption of remote work, changing the way many industries and businesses operate.
- **Digital Transformation:** Organizations embraced digital technologies for communication, collaboration, and service delivery.

### 7. Loss of Lives and Grief

- **Loss of Loved Ones:** COVID-19 resulted in a significant loss of lives globally, leading to profound grief and mourning for families and communities.
- **Disrupted Funerals and Mourning Practices:** Restrictions on gatherings affected traditional funeral practices and mourning ceremonies.

### 8. Vaccination Efforts

- **Hope and Progress:** The development and distribution of COVID-19 vaccines brought hope for controlling the spread of the virus and mitigating its impact.

Understanding the multifaceted effects of COVID-19 is crucial for formulating effective public health responses, recovery plans, and strategies to address the long-term consequences of the pandemic. It's important to note that the situation is dynamic, and ongoing research continues to provide insights into the evolving effects of the virus.

## Impact on Elderly

The impact of COVID-19 on the elderly has been particularly significant due to several factors, including age-related vulnerabilities and the prevalence of underlying health conditions in this demographic. Here are some key aspects of the impact of COVID-19 on the elderly

### • Increased Severity of Illness

- Older adults, especially those aged 65 and above, are more likely to experience severe illness and complications if infected with COVID-19. This includes a higher risk of hospitalization, intensive care admission, and mortality.

### • Higher Mortality Rates

- COVID-19 mortality rates are disproportionately higher among the elderly. Advanced age is a significant risk factor for severe outcomes and death associated with the virus.

### • Underlying Health Conditions

- Many older individuals have pre-existing health conditions, such as cardiovascular disease, diabetes, respiratory disorders, and compromised immune systems, which can increase the severity of COVID-19 symptoms.

### • Impact on Long-Term Care Facilities

- Outbreaks in long-term care facilities, including nursing homes and assisted living facilities, have

been a major concern. Close living quarters and shared spaces contribute to the rapid spread of the virus among vulnerable elderly residents.

- **Social Isolation and Mental Health**
- Protective measures such as lockdowns, social distancing, and visitation restrictions have led to increased social isolation among the elderly. This isolation can contribute to loneliness, anxiety, and depression, impacting mental health.
- **Access to Healthcare**
- Older adults may face challenges in accessing healthcare services during the pandemic due to concerns about virus exposure, transportation issues, or overwhelmed healthcare systems. Delayed medical care may exacerbate existing health conditions.
- **Vaccination Efforts**
- Vaccination campaigns have prioritized older adults to reduce the severity of illness and mortality associated with COVID-19. Efforts to vaccinate the elderly aim to provide a layer of protection against severe outcomes.
- **Caregiver Strain**
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#### Impact on Women

The impact of COVID-19 on women has been multifaceted, affecting various aspects of their lives. Here are some key dimensions of the impact of the pandemic on women:

1. **Economic Disparities**
  - Women, particularly those in lower-income brackets and in certain sectors like hospitality and retail, have faced job losses and economic instability due to lockdowns and business closures.
2. **Increased Caregiving Responsibilities**
  - With school closures and increased caregiving needs for family members, women, especially mothers, have taken on additional responsibilities at home. Balancing work and family life has become more challenging.
3. **Impact on Mental Health**
  - Women may experience heightened levels of stress, anxiety, and mental health challenges due to the uncertainties surrounding the pandemic, increased caregiving responsibilities, and concerns about family well-being.
4. **Violence Against Women**
  - Lockdowns and social isolation measures have led to an increase in reports of domestic violence. Women may face heightened risks in situations where they are confined with abusive partners.

**5. Healthcare Access**

- Women's access to reproductive health services and maternal care has been affected. Disruptions in healthcare services and fear of exposure to the virus have led to challenges in seeking necessary medical care.

**6. Educational Impact**

- School closures and the shift to online learning have impacted women, especially those with school-age children, as they navigate the challenges of remote schooling while managing other responsibilities.

**7. Disproportionate Impact in Essential Jobs**

- Women are overrepresented in essential frontline jobs, such as healthcare, retail, and caregiving, putting them at a higher risk of exposure to the virus.

**8. Impact on Women-Owned Businesses**

- Women entrepreneurs and owners of small businesses have faced challenges, with many experiencing closures or significant disruptions due to economic downturns and restrictions.

**9. Digital Divide**

- The shift to remote work and online education has highlighted existing digital divides. Women in lower-income communities may face challenges in accessing necessary technology for remote work and education.

**10. Reproductive Health Challenges**

- Access to reproductive health services, including family planning and maternal care, has been affected. Lockdowns, travel restrictions, and overwhelmed healthcare systems may lead to delays in reproductive healthcare.

**11. Intersectionality and Marginalized Groups**

- The impact of COVID-19 is not uniform among women, with those belonging to marginalized groups, including women of colour and LGBTQ+ women, facing intersecting challenges and disparities.

Efforts to address the gender-specific impact of COVID-19 include policy initiatives, support for work-life balance, and targeted measures to ensure that women's health, economic, and social needs are considered in pandemic response and recovery strategies. It's important to recognize the diversity of experiences among women and implement inclusive policies that address the specific challenges faced by different groups.

**Impact on Children**

The impact of COVID-19 on children has been complex and varied, encompassing various aspects of their lives. Here are key dimensions of the impact.

**1. Educational Disruptions**

- School closures, remote learning, and disruptions to the academic calendar have affected the education of millions of children. Limited access to digital resources may exacerbate educational inequalities.

**2. Mental Health Challenges**

- Social isolation, uncertainty, and changes in routine can contribute to mental health challenges for children. Anxiety, depression, and stress may be heightened during the pandemic.

**3. Healthcare Access**

- Routine healthcare services, including vaccinations and preventive care, have been disrupted. Fear of exposure to the virus may lead to delays in seeking medical attention for non-COVID-related health issues.

**4. Increased Vulnerability in Low-Income Communities**

- Children in low-income communities may face increased vulnerability due to limited access to resources, including educational support, proper nutrition, and healthcare services.

**5. Food Insecurity**

- Economic challenges faced by families during the pandemic can lead to food insecurity, impacting children's nutrition and well-being.

**6. Digital Divide**

- Disparities in access to technology and the internet have been accentuated during remote learning, with children in low-income households facing challenges in accessing online education.

**7. Increased Risk of Abuse and Neglect**

- Lockdowns and social isolation measures may lead to increased risks of child abuse and neglect, with reduced opportunities for intervention by teachers and other support networks.

**8. Impact on Social Development**

- Lack of in-person social interactions, including playdates and school activities, can affect children's social development and emotional well-being.

**9. Loss of Loved Ones**

- Children who have experienced the loss of family members or caregivers due to COVID-19 may face grief and emotional challenges.

**10. Disruption in Routine Immunizations**

- Disruptions in healthcare services have led to challenges in maintaining routine childhood immunizations, increasing the risk of outbreaks of other preventable diseases.

**11. Challenges for Children with Disabilities**

- Children with disabilities may face additional challenges during the pandemic, including disruptions in specialized services and therapies.

**12. Impact on Extracurricular Activities**

- Cancellations of extracurricular activities, sports, and cultural events have deprived children of opportunities for physical activity, skill development, and social engagement.

### 13. Effects on Child Labour

- Economic hardships may lead to increased child labour in certain regions, as families face financial difficulties.

### 14. Impact on Adolescents

- Adolescents may experience unique challenges, including disruptions in education, increased social isolation, and mental health concerns.

Efforts to address the impact on children include implementing strategies for safe school reopening, providing mental health support, addressing educational disparities, and ensuring access to healthcare services. Policymakers and communities are working to create environments that prioritize the well-being and development of children during and after the pandemic.

### Global Pandemic

The COVID-19 pandemic, caused by the novel coronavirus SARS-CoV-2, is a global health crisis that has profoundly impacted nations, communities, and individuals across the world. Here are key aspects that characterize COVID-19 as a global pandemic

#### 1. Global Spread

- COVID-19 spread rapidly across borders, affecting virtually every country and region. The interconnectedness of the modern world facilitated the swift transmission of the virus, leading to a truly global pandemic.

#### 2. Worldwide Impact

- The pandemic has had extensive and far-reaching effects on public health, economies, social structures, and daily life. No corner of the globe has been untouched by the consequences of the virus.

#### 3. Unprecedented Scale

- The scale and severity of the pandemic are unprecedented in recent history. Governments, healthcare systems, and societies worldwide faced challenges in responding to the rapid and widespread transmission of the virus.

#### 4. Challenges to Healthcare Systems

- Healthcare systems across the globe experienced significant challenges, with some regions facing overwhelming surges in cases, shortages of medical supplies, and difficulties in providing adequate care.

#### 5. Collaborative Research and Vaccine Development

- The global scientific community collaborated on an unprecedented scale to understand the virus, share information, and develop vaccines at an accelerated pace. International cooperation played a crucial role in advancing research and vaccine distribution.

#### 6. Travel and Trade Disruptions

- COVID-19 led to disruptions in international travel and trade, impacting economies and supply chains. Countries implemented travel restrictions, lockdowns, and social distancing measures to control the spread of the virus.

### 7. Inequities Exposed

- The pandemic exposed and exacerbated existing social, economic, and health inequities. Vulnerable populations faced disproportionate impacts, highlighting the need for more inclusive and equitable global systems.

### 8. Global Response and Solidarity

- The global response to COVID-19 involved a collective effort to share resources, information, and best practices. Organizations, governments, and individuals worldwide demonstrated solidarity in addressing the challenges posed by the pandemic.

### 9. Vaccination Campaigns

- Vaccination campaigns have been rolled out globally to curb the spread of the virus and protect populations. However, challenges such as vaccine distribution disparities and hesitancy persist, emphasizing the need for a coordinated international approach.

### 10. Continuous Adaptation

- The dynamic nature of the pandemic required continuous adaptation of public health measures based on evolving scientific knowledge, the emergence of new variants, and the effectiveness of interventions.

The COVID-19 pandemic serves as a stark reminder of the interconnectedness of the global community and the importance of collective action in addressing shared challenges. It underscores the need for ongoing preparedness, cooperation, and equitable access to healthcare resources to build resilience against future global health threats.

### Intensity in India

As of our last knowledge update in January 2022, India had experienced multiple waves of COVID-19 infections. The intensity of COVID-19 in India varied across different states and regions, with some areas facing more significant challenges than others.

India faced a severe second wave of COVID-19 in early 2021, characterized by a rapid surge in cases, overwhelmed healthcare infrastructure, shortages of medical supplies, and a higher number of fatalities. During this wave, several states implemented lockdowns and other restrictive measures to curb the spread of the virus.

Kerala: Mild, moderate, and severe patients accounted for 17.0% (n = 81), 64.7% (n = 308), and 18.3% (n = 87), respectively. A total of 64 (13.4%) patients required treatment in ICU.<sup>[2]</sup>

Following nationwide lockdown, the Indian economy was hit hard by unemployment and a steep decline in growth. The early implementation of lockdown initially decreased the doubling rate of cases and allowed time to upscale critical medical infrastructure.

**Table 1**

<b>COVID-19 pandemic in India</b>	
First outbreak	Wuhan, Hubei, China
Index case	Thrissur, Kerala 10°31'39"N 76°12'52"E
Date	<b>30 January 2020</b> – ongoing (3 years, 9 months, 4 weeks and 1 day)
Confirmed cases	45,001,575

Most of the cases have been reported from the states of Maharashtra, Tamil Nadu, Delhi, and Gujarat. Hitherto, the MoHFW have reported 7471 deaths due to COVID-19, translating into a case-fatality rate of 2.8%.<sup>[4]</sup>

It's important to note that the situation is dynamic, and the intensity of COVID-19 can change over time. Factors such as vaccination campaigns, public health measures, the emergence of new variants, and global efforts to control the pandemic all contribute to the evolving landscape.

### MATERIAL AND METHODS

The teaching professionals in the state of Karnataka were the subjects of this cross-sectional survey. The understanding of COVID 19 among the educational professionals of Karnataka State, India, was evaluated using a self-administered, pretested questionnaire. The questionnaire is prepared in the form of Google docs and the link was sent to the teachers through WhatsApp. Kindergarten Teachers, Higher Primary School Teacher, High School Teacher, Pre University Lecturers and Degree College lecturers teaching in the state of Karnataka, India were included in the study. The data

obtained through the survey was analysed using SPSS software 17.0 (SPSS Inc, Chicago). Descriptive statistics were used in the present study to report the frequency/percentage of responses for individual items. A score of '1' was given for each correct answer. The total score was calculated for individual participant. A total score of 8-10 was considered as 'Good', 5-7 was considered 'Fair' and 4 or less was considered as 'Poor'. The total scores were compared between various socio-demographic variables using the Chi-square test. Statistics were deemed to be significant at p values under .05. The Institutional Ethical Committee gave its permission for the study's conduct. Participation in the survey was voluntary.

### RESULTS

A total of 60 teachers across Karnataka state participated in the survey. Out of the total respondents 38.3% were degree college teachers, 16.75% were higher primary school teachers, 15% were high school teachers and the remaining were the teachers of Kindergarten, Pre-University Lecturers, and Teacher trainees. Table 1 shows the socio-demographic distribution of the study participants.

**Table 2: Socio-demographic distribution of the study participants.**

Age	21-30 years	15
	31 - 40 years	20
	41 - 50 years	16
	51 - 60 years	6
	61 years and more	3
	Total	60
Gender	Male	47
	Female	13
	Total	60
Profession	Kindergarten Teacher	3
	Primary school teacher	15
	High school Teacher	11
	PU Lecturer	6
	Degree College Lecturer	25
	Total	60

Table 2 shows the responses of the teachers to individual questions on knowledge regarding COVID19. All of them (n=60) were aware of the corona virus pandemic (100%). About 81.7% teachers responded that the Novel Corona Virus 2019 (COVID 19) is also known as SARSCoV2. Majority of them (96.7%) responded that Novel Corona Virus 2019 is transmitted from person to person and 90% of them were aware that there is no vaccine currently available for COVID19. About 83.3% of the teachers responded that the transmission of

COVID19 infection is possible during asymptomatic phase and a vast majority (95%) responded that fever, cough and breathing difficulty are the symptoms of COVID19 infection. Approximately 98.3% of the teachers responded that Social distance of 1 metre, wearing mouth mask and Washing hands frequently are the preventive measure during COVID 19 pandemic and 96.7% of them agreed that it is better to completely avoid handshake. About 80% of the teachers responded correctly that 20 seconds is the ideal duration to wash the

hands and about 96.7% of the teachers were aware that elderly patients, young children, people with existing

diseases like high BP, diabetes etc. are vulnerable for COVID19 infection.

**Table 3: Responses of the teaching professionals to questions on knowledge regarding COVID19.**

Sl.No.	Question	Responses	N	%
1	Are you aware of the Corona virus pandemic	Yes	60	100
		No	0	0
		Maybe	0	0
2	The Novel Corona Virus 2019 (COVID 19) is also known as	MERS	4	6.7
		SARS Cov 2	49	81.7
		Nipah Virus	7	11.7
		HIV	0	0
3.	Can Novel Corona Virus 2019 (COVID 19) be transmitted from person to person	Yes	58	96.7
		No	2	3.3
		Maybe	0	0
4.	Is Vaccine available for COVID 19	Yes	3	5
		No	54	90
		Maybe	3	5
5.	Is transmission of COVID 19 infection possible during asymptomatic phase	Yes	50	83.3
		No	4	6.7
		Maybe	6	10
6.	Which among the following are the symptoms of COVID 19 infection	Fever	1	1.7
		Cough	0	0
		Breathing Difficulty	2	3.3
		All of the above	57	95
7.	Which among the following is the preventive measure during COVID 19 pandemic	Social distance of 1 metre	1	1.7
		Wearing mouth mask	0	0
		Washing hands frequently	0	0
		All of the above	59	98.3
8.	Is it better to completely avoid handshake	Yes	58	96.7
		No	2	3.3
		Maybe	0	0
9.	What is the ideal duration to wash the hands	1 sec	0	0
		20 sec	48	80
		1 min	5	8.3
		2 min	7	11.7
10.	Who are vulnerable for COVID 19 infection among the following	Elderly patients	2	3.3
		Young Children	0	0
		People with existing diseases like highBP, diabetes etc.	0	0
		All of the above	58	96.7

Table 3 shows the correlation of the knowledge scores with the socio-demographic variables. There was no significant difference between age/ gender/ profession to the interpretation of knowledge score. The knowledge regarding COVID19 was good across all categories.

**Table 4: Correlation of Socio-demographic variables with Knowledge score interpretation.**

		Knowledge Score Interpretation		Total	Significance
		Fair	Good		
Age	21-30 years	2	13	15	X <sup>2</sup> = 3.796, NS
	31 - 40 years	1	19	20	
	41 - 50 years	0	16	16	
	51 - 60 years	1	5	6	
	61 years and more	0	3	3	
	Total	4	56	60	
Gender	Male	2	45	47	X <sup>2</sup> = 2.02, NS
	Female	2	11	13	
	Total	4	56	60	



Profession	Kindergarten Teacher	0	3	3	$X^2 = 1.933, NS$
	Primary school teacher	1	14	15	
	High school Teacher	0	11	11	
	PU Lecturer	0	6	6	
	Degree College Lecturer	3	22	25	
	Total	4	56	60	

NS= Not significant.

## DISCUSSION

The present study was conducted among the teaching professionals in Karnataka State. Studies assessing knowledge regarding COVID19 have been conducted in different groups. However, there is lack of information regarding knowledge among school teachers. The findings of the current investigation demonstrated that school teachers had a good knowledge regarding the COVID19 disease. The majority of instructors were knowledgeable with the COVID19 disease, its symptoms, and the different precautions that should be followed to prevent the spread of the illness. A study conducted in Tamilnadu reported that the teachers had fair knowledge regarding the COVID19.<sup>[7]</sup> This difference could be due to the time when the study was conducted. There was not much information available regarding the COVID19 in the earlier months of 2020. However, the latter half of 2020, there is an enormous literature available and accessible even to the lay public.

School teachers form an important group because they need to teach and interact with a large number of children of various age groups in school. They form the backbone in school in inculcating good habits in children and maintaining school discipline. Health of the school children as well as the health of school teachers is a major concern. If proper preventive protocol is not in place, there will be transmission of infection to the other people in community from the schools. Hence, all stake holders need to be vigilant and need to take necessary steps to ensure that the school teachers and the children are safe and healthy. Detailed Standard Operating Protocols need to be in place and should be meticulously followed.

Limited sample size is one of the study's limitations. As this survey questionnaire was shared on WhatsApp, the response rate was low when compared to studies conducted in person. However, since this is a time of Pandemic and restriction of movement is advocated for controlling the spread of disease, sharing the questionnaire on social media and also getting responses without any incentives and on based voluntary participation needs to be appreciated.

Teaching professionals in Karnataka have a good knowledge regarding the sign and symptoms and prevention of COVID-19. Rigorous training programs on Infection control for school teachers will be beneficial in maintaining healthy schools and in turn a healthy society.

## Remedial Measures

Remedial measures for COVID-19 involve a combination of public health strategies, medical interventions, and individual actions to prevent the spread of the virus, provide medical care, and support recovery. Here are key remedial measures.

### 1. Vaccination

- Widespread vaccination is a crucial strategy to reduce the severity of illness, hospitalizations, and deaths associated with COVID-19. Vaccination campaigns aim to achieve herd immunity and limit the spread of the virus.

### 2. Testing and Contact Tracing

- Robust testing infrastructure helps identify and isolate individuals infected with COVID-19. Contact tracing helps identify and notify individuals who may have been exposed to the virus, preventing further spread.

### 3. Public Health Measures

- Implementing and adhering to public health measures, such as wearing masks, practicing good hand hygiene, and maintaining physical distancing, help reduce the transmission of the virus.

### 4. Healthcare Capacity Enhancement

- Strengthening healthcare infrastructure, including increasing the number of hospital beds, ventilators, and medical supplies, helps manage and treat severe cases of COVID-19.

### 5. Treatment Protocols

- Developing and implementing standardized treatment protocols for COVID-19 patients helps healthcare providers deliver consistent and effective care. This includes the use of antiviral medications, oxygen therapy, and other supportive measures.

### 6. Research and Monitoring Variants

- Continuous monitoring of virus variants helps understand their characteristics and potential impact on transmission and severity. This information informs public health strategies and vaccine development.

### 7. Public Awareness and Education

- Public awareness campaigns provide information on preventive measures, vaccination benefits, and

symptoms of COVID-19. Educating the public helps reduce misinformation and encourages responsible behavior.

### 8. International Cooperation

- Global collaboration is crucial for sharing knowledge, resources, and vaccines. International cooperation helps address challenges such as vaccine distribution, research, and pandemic response.

### 9. Support for Vulnerable Populations

- Providing support and resources to vulnerable populations, including the elderly, individuals with underlying health conditions, and those facing economic challenges, is essential for their well-being.

### 10. Mental Health Support

- Recognizing and addressing the mental health impact of the pandemic is crucial. Providing mental health resources and support services helps individuals cope with stress, anxiety, and grief.

### 11. Safe Reopening Strategies

- Implementing phased and data-driven approaches to reopening, along with guidelines for businesses and public spaces, helps balance economic recovery with public health considerations.

### 12. Travel Restrictions and Guidelines

- Implementing travel restrictions and guidelines helps control the spread of the virus across regions and countries, especially during periods of heightened transmission.

### 13. Adaptation to New Information

- Policies and strategies need to be adaptable based on evolving scientific understanding and emerging data about the virus, its variants, and the effectiveness of preventive measures.

Effective remedial measures require a coordinated effort from individuals, communities, healthcare systems, and governments. Regular updates from reliable health authorities and adherence to recommended guidelines are crucial for navigating the ongoing challenges posed by COVID-19.

### Future Challenges of Covid

As of our last knowledge update in January 2022, predicting the future challenges of COVID-19 involves a degree of uncertainty, and the situation may have evolved since then. However, based on the patterns observed up to that point, several potential future challenges could be anticipated.

#### 1. Variants and Evolution of the Virus

- The emergence of new variants of the virus could pose challenges, including potential changes in

transmissibility, severity, and vaccine effectiveness. Ongoing monitoring and adaptation of public health strategies may be required.

#### 2. Vaccine Distribution and Access

- Ensuring equitable distribution of vaccines globally and addressing issues of vaccine access in lower-income countries could be a persistent challenge. Variability in vaccination rates may contribute to ongoing outbreaks and the potential for new variants.

#### 3. Vaccine Hesitancy

- Overcoming vaccine hesitancy and ensuring high vaccination coverage across diverse populations remain challenges. Public health efforts to communicate the safety and efficacy of vaccines will be crucial.

#### 4. Long-Term Health Effects

- Understanding and addressing the long-term health effects of COVID-19, often referred to as "long COVID" or post-acute sequelae of SARS-CoV-2 infection (PASC), is a growing concern. Research on long-term consequences and appropriate medical care for affected individuals is needed.

#### 5. Public Health Infrastructure

- Strengthening and maintaining public health infrastructure globally is essential for effective surveillance, testing, contact tracing, and response to potential future outbreaks.

#### 6. Global Preparedness and Coordination

- Enhancing global preparedness and coordination for future pandemics is a critical challenge. This involves improving information sharing, early detection systems, and collaborative research efforts.

#### 7. Mental Health Impact

- Addressing the long-term mental health impact of the pandemic on individuals and communities is crucial. Providing mental health resources and support services will be important for ongoing well-being.

#### 8. Economic Recovery

- Achieving sustained economic recovery, especially in sectors heavily affected by the pandemic, will be a challenge. Governments and businesses will need to implement strategies for job creation and economic growth.

#### 9. Education Disruptions

- Mitigating the impact of prolonged disruptions to education, including addressing learning gaps and mental health challenges among students, will be an ongoing concern.

## 10. Potential Resurgence and Seasonal Patterns

- The potential for seasonal patterns or resurgence of the virus may present challenges, requiring flexible public health responses to address fluctuations in cases.

## 11. Adapting to Remote Work and Technology

- Organizations and individuals may face challenges in adapting to and maintaining the changes brought about by remote work and increased reliance on technology.

## 12. Global Supply Chain Resilience

- Building resilience in global supply chains to ensure the availability of essential goods and medical supplies during health emergencies remains a challenge.

It's important to note that the situation is dynamic, and the challenges associated with COVID-19 are subject to change based on evolving scientific understanding, public health responses, and global cooperation. Continuous monitoring, research, and adaptive strategies will be crucial in addressing the future challenges posed by the ongoing pandemic. For the latest and most accurate information, it is recommended to consult reliable health authorities and sources.

The biggest challenge in India's fight against COVID-19 is the population, with a population density that is almost 3 times that of China. The scenario is potentially worse in urban slums where the population density may exceed more than 250 000/km<sup>2</sup>, making social distancing impossible. As many as 140 million people in India are migrant daily-wage labourers; with imposition of nationwide lockdown, they are being forced to flock back to their villages without being able to abide by government advisories of social distancing.<sup>[5]</sup>

Unfortunately, another major hurdle in India's struggle against COVID-19 has been the attitude and action of some of the citizens; there have been occasional reports of civilians hiding travel history in an attempt to escape quarantine and people participating in otherwise forbidden massive religious gatherings.<sup>[6]</sup> Although the health care infrastructure has been urgently strengthened and nearly 2000 dedicated COVID-19 facilities have been amassed all over the country over a short period of time, the dearth of doctors cannot be made up overnight. India has just 0.8 doctors per 1000 population as against Italy's 4.1, China's 1.8, Spain's 4.1, Iran's 1.1 and the United States' 2.6.<sup>[7]</sup> In addition, the eastern states of West Bengal and Odisha have recently been hit by a super cyclone named Amphan that have wreaked havoc in the 2 states. People stranded homeless by the natural calamity have been rescued and placed in cyclone shelters where social distancing is practically not possible.<sup>[8]</sup>

## Silver Lining

### There is a ray of hope in India.

Certain factors, although hypothetical, do favour a limited spread of COVID-19 pandemic in India, notably, the ambient tropical temperatures, malarial endemicity, universal BCG (*Bacillus Calmette-Guérin*) vaccination, and the age-old Indian tradition of greeting by *namaste* as opposed to handshake. Of late, COVID-19 kits are being produced in the country itself by more than one manufacturer, thereby, reducing the cost of testing.<sup>[9]</sup> Testing rates, though much lower than the developed nations, are at par with the neighbouring developing countries, like Thailand, Indonesia, Myanmar, Philippines, and Pakistan.<sup>[10]</sup> In addition, the proportion of people  $\geq 70$  years of age is only 3.3% in India, as against 11.9% in China and 37.6% in Italy,<sup>[11]</sup> thereby, one could expect overall mortality rate to be low in India. Last, India is the largest producer (and supplier) of hydroxychloroquine in the world.<sup>[12]</sup> The drug that has been found to have some benefit in COVID-19.<sup>[13]</sup> Although some recent observational studies have found no benefit of hydroxychloroquine.<sup>[14,15]</sup> proper randomized controlled trials are lacking. However, a recent study conducted among health care workers in India has shown that prophylactic consumption of 4 or more maintenance doses of hydroxychloroquine was associated with a significant decline in the odds of getting infected along with a favorable side effect profile.<sup>[16]</sup>

## CONCLUSION

In conclusion, the COVID-19 pandemic has been an unprecedented global challenge with far-reaching consequences across various aspects of society. From its initial emergence to the ongoing efforts to control its spread, the pandemic has tested the resilience of individuals, communities, and nations worldwide.

The impact of COVID-19 has been multifaceted, affecting public health, economies, education, and mental well-being. It has highlighted existing disparities and vulnerabilities, emphasizing the need for equitable and inclusive approaches to address the diverse challenges posed by the virus.

Efforts to combat COVID-19 have been characterized by global collaboration in scientific research, vaccine development, and public health interventions. Vaccination campaigns have offered a beacon of hope, providing a pathway toward controlling the spread of the virus and mitigating its severe outcomes.

However, as we navigate the ongoing challenges of the pandemic, uncertainties persist. The emergence of new variants, vaccine distribution disparities, and the potential for long-term health effects underscore the need for continuous vigilance and adaptive strategies.

Looking ahead, the lessons learned from the COVID-19 pandemic will shape future preparedness for global health crises. Strengthening public health infrastructure, promoting international cooperation, and addressing systemic inequalities will be critical components of building a more resilient and equitable world in the post-pandemic era.

While the path forward may be complex, the collective resilience, innovation, and solidarity demonstrated in the face of COVID-19 provide a foundation for optimism. By learning from the challenges of the past, communities worldwide can work collaboratively to create a healthier, more sustainable future. The journey toward recovery and rebuilding remains ongoing, underscoring the importance of ongoing research, adaptive strategies, and a shared commitment to global well-being.

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#### CONFLICT OF INTEREST

There is no competing interest amongst the authors.

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