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Psychosocial Effects and Public Health Challenges of COVID-19 Pandemic in India

Shankar Das and Julie Richards

Abstract

The COVID-19 pandemic is an ongoing global crisis that poses enormous and multifarious challenges to humanity since the end of 2019. The pandemic has severely devastated public health systems and universally affected socio-economic development. India is among the worst-hit nations owing to its massive population of 1.35 billion, and more significant socio-economic challenges than most other countries. Despite the current issues and challenges surrounding the COVID-19 pandemic, India has been making targeted efforts towards the fight against the spread of coronavirus, including medical, treatment, vaccination, community prevention and control strategies. The chapter examines the implications of the pandemic on Indian population which have certain unique challenges than other parts of the world. It delves on the gradual progression of the challenges among people especially the vulnerable and the disadvantaged in the existing public health systems. This chapter encompasses a wide array of human suffering and efforts for its mitigation. It highlights and brings to forefront the unique experiences of diverse populations who have faced a crisis within a crisis and its psychosocial ramifications, as well as the psychosocial adversities and public health challenges.

Keywords: Covid-19, Psychosocial effect, Public Health, India, Origin, Societal Impact, At-risk Population, Prevention and Control

1. Introduction

The COVID-19 pandemic is an ongoing global crisis that poses enormous multifarious challenges and threatening all of humanity since the end of 2019. The infectious disease COVID-19 (SARS-CoV-2) spread swiftly throughout the world and the outbreak placed most nations on a high public health alert. The pandemic has severely devastated public health systems and universally affected socio-economic development. India is among the worst-hit nations owing to its massive population of 1.35 billion, and more significant socio-economic challenges than most other countries.

By September 2020, the nation witnessed a considerable drop in new and active cases' and declining infection rates. However, during the second wave in April 2021, the virus started to spread faster than ever before. The country witnessed over 3 lakh new cases of COVID-19 daily while death rates surged to new peaks. Despite the current issues and challenges surrounding the COVID-19 pandemic, India has

been making targeted efforts towards the fight against the spread of coronavirus, including community prevention and control strategies, COVID-19 RT-PCR tests, strengthening public health systems, immunization initiatives, nationwide lockdown, phased relaxation of restrictions, night curfews, doubled fines for not wearing masks and crowding, etc. However, the second wave of the pandemic in April 2021 had been enormous with very grim outcomes whereby oxygen, hospital beds and treatment facilities are in extremely short supply.

This chapter examines and discusses the range of societal challenges and public health burden that resulted from the COVID-19 pandemic in India. We examine the impact of the pandemic that has shaken the fundamental essence of social development and the response of public health systems. This chapter encompasses a wide array of human suffering and efforts for its mitigation. The findings are presented and several thematic psychosocial and public health areas which emerged are discussed, primarily the genesis and spread of the virus and its management, the physical impact of the disease and its psychosocial ramifications, as well as the psychosocial adversities and public health challenges.

More specifically, we describe the individualized experiences of varied high-risk groups in a densely populated country that posed unique challenges in the social and economic sphere. This rich learning may serve a significant value in the area of community prevention strategies. The authors further elucidate lessons learned about advancements and strategies of prevention, treatment and control of the pandemic in the country. The chapter concludes with a number of potentially fruitful research themes and directions.

2. Origin and progression of the pandemic

At the initial stage, on 31 December 2020, Chinese national authorities reported unspecified cases of pneumonia to the World Health Organization (WHO). Such cases of unknown etiology were identified in Wuhan city of Hubei province, China and within a mere 3 days, 44 patients were reported with such cases without any known causal agent [1]. Wang et al. [2] reported most common clinical symptoms among the hospitalized patients included fever (98.6 percent), fatigue (69.6 percentage) and dry cough (59.4 percent). Originally, the patients had a history of exposure to the Huanan Seafood Market - a live animal and seafood market in Jianghan District, Wuhan, Hubei, China [1]. On 30 January 2020, the World Health Organization [3] declared the pandemic a Public Health Emergency of International Concern and pandemic on 11 March 2020 [4]. At that point the agency also recommended that all countries should be ready with control strategies such as screening, early detection, containment, case management, contact tracing and prevention of further spread of COVID-19 infection and data sharing with WHO.

As per the available global data on 14 June 2021 there are total 91,451 confirmed COVID-19 cases in China with 86,344 recovered cases which indicates 94 percent recovery rate and 4,636 cases of deaths. Further, worldwide there have been 175,686,814 confirmed cases of COVID-19, including 3,803,592 deaths, reported to WHO [5]. To date, the pandemic rapidly spread across almost 222 countries and territories around the world. The top 10 most-affected countries include: United States of America, India, Brazil, France, Turkey, Russian Federation, the United Kingdom, Italy, Argentina and Spain. The infection levels, which continue to fight against the pandemic, are presented below (**Table 1**).

India reported a total 28,996,473 confirmed COVID-19 cases. The total number of patients who succumbed to the viral disease has reached 351,309 and thereby comprises 17 percent of the global share of case burden [4, 6].

	Name	Cases – Cumulative Total	Cases – newly reported in last 24 hours	Death – Cumulative total	Death newly reported in last 24 hours	Transmission Classification
	Global	173,331,478	308,911	3,735,571	7,801	—
1	United States of America	33,042,622	15,410	592,114	418	Community transmission
2	India	28,996,473	86,498	351,309	2,123	Clusters of cases
3	Brazil	16,947,062	39,637	473,404	873	Community transmission
4	France	5,611,217	946	109,209	88	Community transmission
5.	Turkey	5,293,627	5,647	48,255	91	Community transmission
6.	Russian Federation	5,145,843	9,977	124,496	379	Clusters of cases
7	The United Kingdom	4,522,480	5,584	127,841	1	Community transmission
8	Italy	4,233,698	1,270	126,588	65	Clusters of cases
9	Argentina	3,955,439	16,415	81,214	347	Community transmission
10	Spain	3,707,523	883	80,236	2	Community transmission

Source: WHO [86], 09 June 2021 <https://covid19.who.int/table1>.

Table 1.
Top 10 countries with Most-affected by COVID-19 pandemic as on 9 June 2021.

The first case of Coronavirus was reported on 30th January, 2020 and today the country has the second highest number of confirmed cases in the world after the USA. The first death due to COVID-19 was reported on 12 March 2020 from Kalburgi in Karnataka state in India [7].

During the first wave of the Coronavirus pandemic in September 2020, India witnessed the highest peak on 16th September 2021 with a total number of 97,894 infected persons. Again, after six months the country had a sharp upsurge from the first week of March indicating the second wave of the pandemic with the highest number of 4,14,188 infected cases on 6th May 2021. Fortunately, the national pandemic situation is steadily and rapidly improving with a decline in cases. Recent data recorded 100,636 new cases on 6th June 2021. Additionally, death rates and hospitalizations are also dropping [8].

3. Societal impact of COVID-19 in India

Amidst the unprecedented and devastating Coronavirus pandemic, particularly during the second wave, numerous issues related to crumbling public health infrastructures, increasing number of death tolls, psychosocial, economic, political, educational, agricultural effects and many more ramifications have created devastating impact on the lives of people across all states. For example, the social reality of human beings in the modern world revolves around unlimited social interaction.

This interaction came to a sudden halt with the advent of worldwide lockdowns and restrictions on social movement as a result of the coronavirus. Feelings of loneliness and boredom in the population ensued and had varied impacts on people's mental health (see ref. [9]). While this pandemic wreaked havoc in health systems across the world, the social aspects of the disease complicated the recovery process. The contagious character of the pandemic, along with its unpredictable nature of progression on various individuals, has resulted in catastrophic socioeconomic disruption caused by the coronavirus. It is estimated that there were nearly 690 million people globally undernourished in 2019, and by the end of 2021, an additional 132 million are expected to go hungry. Also in this short timeframe, it is anticipated that tens of millions of individuals will be further pushed into risk of extreme poverty [10].

India is not exempt from this prediction. The Covid-19 crisis has amplified the situation of poverty in the country, and left a large number of citizens grappling with inadequate access to clean water and nutritious food, insufficient access to livelihoods or employment, poor education and lack of infrastructure. There is strong underlying evidence between poverty and psychological health [11]. Additionally, studies also indicate that poverty leads to developmental and mental health problems that in turn prevent people from escaping the poverty trap; creating an intergenerational and causal nexus of poverty and ill-health [12]. A study conducted by Mukhtar [13] highlighted the psychological impact of COVID-19 making it a secondary health concern, which requires attention. "Globally implementing preventive and controlling measures, and cultivating coping and resilience are challenging factors; modified lifestyle (lockdown curfew, self-isolation, social distancing and quarantine); conspiracy theories, misinformation and disinformation about the origin, scale, signs, symptoms, transmission, prevention and treatment; global socioeconomic crisis; travel restrictions; workplace hazard control; postponement and cancellation of religious, sports, cultural and entertainment events; panic buying and hoarding; incidents of racism, xenophobia, discrimination, stigma, psychological pressure of productivity, marginalization and violence; overwhelmed medical centers and health organizations, and general impact on education, politics, socioeconomic, culture, environment and climate" ([13], p. 512) are the causative factors arousing challenge and concern.

These factors have diverse impact on people belonging to various strata of society. Demographics such as whether people reside in urban or rural communities and whether they are young or elderly contribute to their vulnerability. Further, hailing from different geographical locations with varying access to social networks, healthcare facilities and personal economic status also contribute to people's exposure to risk. Everyone struggled at his or her individual level with the double burden of the disease and its accompanying factors. In a cross-sectional study by Karmakar et al. [14], they reported that extensive sociodemographic risk factors such as socioeconomic position, family composition, environmental factors and racial/ethnic marginal status were all significantly linked with COVID-19 prevalence and mortality.

Regardless of the socioeconomic risk factors, the microorganism invaded every aspect of social life; individual, family, community and nation. The home environment changed into stressful office rooms and online schools. The personal space was compromised immediately and leaving no alternative. Children were confined to homes and their energy was bottled up causing frustration and loneliness. In some homes, other stressors (such as loss of jobs or ailing people) further dampened the spirit and caused anxiety about the future. While the sanitization rituals by individuals helped disease prevention, it is reported that rigorous hygiene routine to combat COVID-19 resulted in a rise in cases of

obsessive–compulsive disorder [15]. There were countless stories of social isolation and its impact from around the nation and the world, each pointing towards the need to address this unsaid challenge.

4. Psychosocial aspects of COVID-19

Prolonged exposure to stress, regardless of age or race and ethnicity, adds another dimension to the pandemic's major public health threat. As a consequence, the COVID-19 infection and physical ailments produce pandemic-induced mental health issues that are critical challenges that must remain at the forefront of response. Studies reported heightened attention to evaluating social impact and community tension in order to facilitate psychosocial support to the population during this pandemic. The COVID-safe behavior such as social distancing, home isolation and security measures have grossly affected the social relationships among individuals and their perceptions of compassion towards fellow-beings. During the current unprecedented times in India, a large number of families are grieving their loss of near and dear ones. Prevailing mental health conditions triggered by a distressing or fearful event (either because of experiencing it first hand or by witnessing it) is commonly reported.

The current situation of COVID-19 is not only distressing for those grieving the loss of life, but it is also distressing individuals and families beyond, or irrespective of, their grief. People who are directly affected by the virus, or hit indirectly due to fear of infection, social isolation, and/or financial crisis, are struggling. More specifically, a large proportion of the Indian population have diverse and vulnerable life situations, such as people who are elderly and poor with chronic or acute ailments, migrant labourers, senior citizens, quarantined individuals in their homes or health facility, and families of those suffering or quarantined. Such large numbers of individuals are vulnerable and may show signs and symptoms of mental distress and emotional problems.

The pandemic has given rise to situations where these signs and symptoms of mental distress and emotional problems manifest in the risk of anxiety and depression, substance use, loneliness, and domestic violence; and with schools closed, there is a very real possibility of an epidemic of child abuse [16]. Several studies emphasized COVID-19's effect on mental well-being on vulnerable groups, including children, college students, and health care personnel, as they are more likely to develop post-traumatic stress disorder (PTSD), anxiety, depression, and other symptoms of distress [17]. While dealing with such public health emergencies, the past experiences have also testified that the generalized public fear and anxieties increase due to uncertainty, fatality, and lack of public health preparedness. Researchers must continue to investigate the strong link between mental and physical health [18, 19].

Across the world, anecdotal literature elucidates the large-scale reporting of mental health suffering of people. The literature calls for concentrated behavioral and mental health programmes to minimize and ameliorate psychosocial issues caused by the outbreak. In the current circumstances, crucial behavioral strategies such as physical distancing, hand hygiene and wearing masks, etc. are the only effective approaches to combat and survive the pandemic. Even so, there are a number of protective factors which may help alleviate these stressors and assist with maintaining good mental health among families and communities. Therefore, it is essential to systematically study the emerging psychosocial impacts and public health issues suffered by individuals in response to the lockdown or quarantining. Secondly, research needs to ascertain the psychosocial impact on specific vulnerable

groups due to physical distancing, school closures, restricted health and social care provision, and loss of group activities. Thirdly, generating evidence for effective behavioral interventions, strategies and mechanisms to mitigate the psychosocial stressors and prevention of infections are equally important for developing policy and programmes for community mental wellbeing.

Similar to the recommendations above, comprehensive management and treatment of mental health issues at the institutional and community levels are just as significant as the various COVID-19 related protocols for physical health. Moreover, management and treatment of pre-existing mental disorders and new onsets are of an enormous concern. Lastly, it is imperative to understand the indirect effects of the pandemic and how these factors differ among population groups. The following discussions elucidate the psychosocial impact of Coronavirus disease on a few selected vulnerable populations. These notable lessons learned during the pandemic are highlighted here with a view to improving the effectiveness of policy planners, researchers and interventionist in the forthcoming months and improve future response.

5. COVID-19 and At-risk population

The country's coronavirus pandemic response with regard to the people living in poor urban and rural settlements, migrant workers and other vulnerable populations has been meager and slow. The current situation raises concerns about health inequity in terms of accessibility and availability of basic health care services to survive during the deadly pandemic.

Therefore, in order to best plan for preventative care and appropriate interventions to move public health policy and programming forward, it is essential to further understand the indirect effects of the pandemic, including the psychosocial impact of COVID-19 in India, which has been well documented [20–24]. While the pandemic has not discriminated among the Indian population, several population groups, and even their subgroups, have been particularly at-risk of psychosocial impact. In particular, special attention must be given to respond to the unique risk factors of women, children, health care professionals, migrant workers, and people with disabilities, who are among some of the populations that are disproportionately vulnerable to the impact of the pandemic in most facets of their lives.

Adverse effects, such as the risk of abuse, significantly rise during global emergencies [25–27]. Violence against women, including intimate partner violence (IPV), further presents a public health concern that is impacting already strained public health systems during the COVID-19 pandemic. Several factors contribute to the anticipated, and confirmed, rise of IPV during the pandemic. With restricted movement and stay-at-home orders, consistently close contact, additional stress, and potential income reduction or loss of livelihood, women who have previously been abused can experience increased violence in the home. Further, contact with supportive friends and family may also be reduced as a result of social/physical distancing. Concurrently, caregiving responsibilities for women increase while school closures also add to the care work of women. Since many women work in the informal wage-earning sector, the loss of their livelihoods leaves families further vulnerable to resource scarcity, ultimately resulting in placing women at “greater risk for experiencing economic abuse” [27–29]. A case vignette is provided below to exemplify the increased risk women face during this pandemic.

COVID-19 and the Increased Risks for Women

When a domestic worker and her husband have both lost their jobs, Mrs. T. takes the responsibility to make ends meet to manage the household and feed her children while her husband spends their savings on his alcohol use. Mrs. T. explains that prior to the pandemic, her husband beat her at night after he got home from work. However, since he lost his job (he was a rickshaw driver), he beats her unpredictably in the day [30].

Furthermore, for women experiencing IPV, access to essentials such as hand sanitizer and soap may be restricted, while information shared with them about COVID-19 may be misleading and stigmatize partners [27]. Access to services is also further limited due to the reduction in services resulting from organizations having to scale back services due to the pandemic.

Additionally, as options for essential travel are reduced, women may find themselves in a double bind. They may be both further exposed to risks of violence as well as infection. With metros shutting down, and any available transportation responsible for disinfection and limiting passengers to one at a time, the connection from home to destinations has significantly increased in cost while simultaneously reducing the cost saving opportunity to rideshare [27]. Several researchers note that women, comprise 81.6% of the informal work sector and are precluded from accessing social protections such as unemployment and cash transfers [31, 33]. Moreover, women have reported being harassed both inside, and while waiting for, public transportation [34, 35]. An updated 2019 nationwide survey of women commuters found that only 9% of women felt very safe on public transportation [36]. Therefore, not only do women find themselves potentially further exposed to infection when commuting, but they also incur further expenses due to limited options and increased prices for intermediary public transportation. Finally, with women's reluctance to use public transportation for fear of being vulnerable to both sexual and other forms of violence, more effective urban planning to create a safer physical environment is essential. However, equally important are the coordinated efforts of civil society organizations, police, and transport authorities to ensure the protection of women travelers [37].

The violence against women often results in physical injuries, including affecting sexual and reproductive health, mental well-being, and perpetuating sexually transmitted diseases [38]. Risk factors that predispose vulnerability to violence, include economic stress, social isolation, poverty and associated factors (such as overcrowding and unemployment), poor neighborhood support and cohesion, unwillingness of neighbors to intervene when witnessing violence, and traditional gender norms and gender inequality [27–29]. Such risk factors are further exacerbated due to the pandemic. Although crimes against women are mostly unreported, or underreported at best, records suggest that this is a significant social and public health epidemic. Prior to the onset of the COVID-19 pandemic, of the 4.05 lakh registered crimes against women in 2019, over 30% of them were domestic violence occurrences [39]. Since the onset of the nationwide lockdown in response to the COVID-19 pandemic, the National Commission for Women has reported an increase of domestic violence being more than 2.5 times the previous rate of occurrence [40].

6. Children affected by COVID-19

The second wave of the Indian COVID-19 situation was certainly alarming compared to the first wave in 2020, as many more pediatric cases were reported across the country. Several children, including infants, are at greater risk of acquiring

and spreading the infection. However, their condition remained under control and seldom turned fatal [41]. Notwithstanding, as per the Government of India [42] Protocol for Management of COVID-19 in the Pediatric Age Group indicates, a small percentage of children who are symptomatic may need hospitalization. Moreover, 1–3% of infected children may manifest severe symptoms necessitating intensive care treatment.

Nevertheless, a substantial number of families are undergoing a persistent sense of despair due to losses of livelihood, financial security, social support networks and threatened loss of loved ones. Such complexities tend to impact the quality of family cohesion and relationships among children and parents. The current pandemic-related uncertainties, fears, and worries certainly launched other crises among children which complicate and potentially hinder their developmental outcomes.

School - As the pandemic led to nationwide school closures beginning 16, March 2020, more than 290 million children were left to participate in education through virtual mode technology (e.g., smartphone, television, or computer). Although lessons pivoted to web links and TV, only 1 in 4 students have access to digital learning. Further, electricity and connectivity also present challenges for many students, highlighting the digital divide [43]. Across 23 states, 12% of school children do not have access to smartphones or basic phones [44], rendering education unattainable. Moreover, in Maharashtra, “only 50 percent of public-school students from classes I to VIII could access digital learning” [45]. Parents and teachers grappled with their own low levels of technology and digital literacy, further complicating education delivery. With such educational limitations, the incidence of school dropout risk increases significantly [46].

Child Protection - Issues of child protection have also seen a spike during the COVID-19 pandemic. In addition to families plunging further into poverty, violence against children (as with women) has also increased. CHILDLINE (a telephone helpline for children in distress) has received 4 million distressed calls from children requesting assistance; 92,000 calls reporting abuse and violence in just the early days of the 2020 lockdown [47]. As families come under duress responding to the pandemic, child labour, marriage and institutionalization are on the rise. With access to education compromised as described above, children are pressured to join the labour force and contribute to the family income [48]. Research demonstrates that during emergencies and crises, children are at higher risk for physical, verbal, and sexual abuse, as well as exploitation and trafficking [43, 49]. The case vignette below illustrates the desperation that can lead to child exploitation.

COVID-19 and the Increase in Child Labour

Despite it being a cognizable offense to employ a child as per the law, the last census indicated that “10 million of India’s 260 million children “are child labourers [50]. The lockdown has caused parents to grapple with the decision to offer their child to human traffickers when they have gone for months with virtually no income. For example, Mr. L made the heart wrenching decision to offer his 13-year-old son to work in a bangle factory 1,000 km away from home after traffickers refused to bring Mr. L because they needed “nimble” fingers and an adult was “of no use.” He told reporters that his children were going hungry and he felt he was left with no choice [50].

Considering children and adolescents’ cognitive and emotional development, their inability to fully understand the pandemic and communicate their feelings fosters additional risk of mental health issues. Protective factors such as socialization and physical activity have all but come to a standstill. Social media, with its flood of information and misinformation further contributes to “anxiety, depression, sleep disturbance, and loss of appetite” [21, 51].

Children, particularly girls, have also seen a significant rise in their domestic workload responsibilities [52]. School-aged girls have become more vulnerable to child marriage in order to defray household expenditure. During the lockdown, 5,584 CHILDLINE interventions were related to child marriages (ToI, 27 June 2020). In addition, menstrual hygiene was also compromised during the pandemic. Menstrual hygiene products, such as sanitary napkins, were not initially designated as essential items and therefore inaccessible for menstruating girls, potentially leading to unhygienic practices that could have serious health consequences (such as toxic shock syndrome, infections, and vaginal diseases [45, 53].

Child malnutrition is also a concerning ramification of the pandemic [21, 54]. Not only with food insecurity on the rise in homes that have been economically hit by the pandemic, but children have also been hit with an additional blow as access to government food programmes have been disrupted in some states. And despite increased food insecurity, the risks of weight gain and other additional adverse physical effects of a sedentary lifestyle have increased. For example, children's average daily screen time has increased from 3.5 hours to 5.12 hours, leading to associated loss of physical fitness, increased psychosocial problems, ophthalmic issues, sleep disruption and decline in academic achievement [55–57].

In addition to these issues of malnutrition and childhood weight gain resulting from the shift to a more sedentary lifestyle living in a restricted mobility environment, it is also essential to consider the 486,000 children living in alternative care [21]. For these children, residential or institutional environments further increase their risk for poor outcomes during the pandemic. As Roy, S., [58] points out, non-residential care providers were unable to provide in-person services and therefore children have had to further rely on overworked residential staff for activities facilitation, schooling and therapeutic services. Overcrowded institutions are also challenged by finding adequate quarantine space for children infected with the virus. Issues of technology constraints (especially accessible learning materials for children with disabilities), understaffing, inadequate food, hygiene and medical supplies, and physical distancing with limited social connectivity are all prominent for children in childcare institutions and further exacerbate their anxiety and fear of the pandemic. For those children aging out of the system, limited options, concurrent with the inability to prepare for discharge during the pandemic, can hinder their ability to successfully transition into independent living and predispose them to exploitation, violence, and further adverse consequences [59].

On an encouraging note, however, immediately after the Ministry of Women and Child Development reported 577 children had been orphaned during the second wave, the Prime Minister (PM) announced support under the PM CARES for Children's scheme. Such support includes financial aid and free education for all COVID-19 orphans, the surviving parents, legal guardian or adoptive parents. In addition, the PM assured that the "GOI stands in solidarity with these families" [60].

7. Healthcare workers

Health care workers (HCW) are at high-risk for not only contracting the coronavirus, but also for the adverse psychosocial effects of the pandemic. However, the infection incident rate among healthcare workers is difficult to ascertain since there is no routine covid testing at health care facilities or accessible centralized repository for HCW prevalence data. Nevertheless, there are some recent studies that examine prevalence of infection among HCWs [61–63]. For example, Mahajan et al. [63] found 11% prevalence among the HCWs in their Mumbai study. Another study

of healthcare workers in Kolkata suggests that routine COVID screening for HCWs is essential since they found 31% of their study participants who tested positive were asymptomatic; thereby increasing the risk of infection transmission unknowingly [63].

Dubey et al.'s [20] comprehensive literature review identified several factors that further compromise HCW well-being beyond the risk of infection exposure. Of particular relevance, they found that "burnout, anxiety, fear of transmitting infection, feeling of incompatibility, depression, increased substance-dependence, and PTSD" added to HCW's already concerns due to their high risk for contracting the virus. A cross sectional study of both HCWs and non-HCWs presented similar results with prevalent conditions such as depression, insomnia and anxiety as the significant psychological impacts of the pandemic [64]. Chew et al.'s [65] multinational study of HCWs reported that 79% of HCWs experienced moderate to very severe depression. Further, 2.2% reported feeling moderate to extremely severe stress, while 3.8% reported experiencing moderate to severe levels of psychological distress. These psychological impacts seemed to manifest in psychosomatic symptoms such as headaches, throat pain, anxiety, lethargy and insomnia.

The issue of stigmatization further adds to the stress and anxiety level of health-care workers. Medical personnel, ward attenders and COVID-19 patient caregivers have all been targets of public outrage (including assaults) since they are perceived as high-risk infection transmitters [66, 67]. The following case vignette lucidly highlights the impact on a revered medical provider.

COVID-19 Warriors

An announcement was uploaded on Twitter as "It causes us immense pain to inform you that our dear Dr KK Aggarwal passed away at 11.30 pm on May 17, 2021, in New Delhi, after a lengthy battle with Covid-19...". India's most prominent face of Medical Fraternity is no more. The 62-year cardiologist Dr. K K Agarwal, Padma Shri awardee and former national president of Indian Medical Association, was critical and he had been on ventilator support for the past few days but later succumbed to COVID-19 in All India Institute of Medical Sciences. His family put out a statement "KK Agarwal wanted his life to be celebrated not mourned." Ironically during the pandemic, Dr. Agarwal made relentless efforts to educate the common people and was able to reach out to 100 million people through several videos and education programmes and also saved innumerable lives. According to the report of the Indian Medical Association (IMA), 270 physicians have died in India's recent COVID-19 surge since early April and so far, more than 1,000 have died since the beginning of the pandemic. IMA also reported state-wise data on doctors' death, with the maximum figures in Bihar (78), Uttar Pradesh (37), and Delhi (28). The death toll is likely far higher since the association tracks only 350,000 registered members, but India has about 1.2 million doctors. A large number of them are survived by their families and children who need help for sustenance, education and rearing. The IMA very generously initiated the COVID Martyrs Fund by appealing for a minimum one-day income donation from members and citizenry [68].

8. Persons with disabilities (PWD) and the elderly

According to Census 2011, India is home to 26.8 million persons with disabilities; 2.21% of the total population [69]. This statistic may also underrepresent the total number of people coping with a disability since there is not yet an established universal definition of disability in either the international or national discussions. The Coronavirus pandemic, along with the subsequent lockdown, has brought diverse challenges for PWDs. For example, procuring essential supplies, accessing medical treatment, and adopting physical distancing practices have devolved into further obstacles. The following case of Mr. AK, illustrates his experience of additional challenges with activities of daily living during the pandemic.

More Challenges for PWD During COVID-19

Mr. AK, a 33-year-old with vision impairment, shared how he has organized his life for an independent existence. However, with the pandemic, Mr. AK is under tremendous stress as cleaning utensils, fixing broken gadgets, and the ability to differentiate and select particular food items at the market have become more complicated. No longer having domestic help available to assist with errands only further adds to his stress during the pandemic [70].

Further, the Secretary-General of the United Nations, has declared that COVID-19 has “disproportionately [impacted] PWDs both directly and indirectly” ([71], p. 2). PWDs may face barriers to several protective measures. Access to water, sanitation and hygiene facilities can be hindered, along with public health information access. Additionally, people with disabilities who are placed in institutional care can be further at risk of infection due to overcrowded and unhygienic conditions in many institutions. PWDs also often rely on physical contact for mobility and to complete activities of daily living, thereby diminishing physical distancing protective measures. Elders, too, often face these same barriers.

Moreover, skill training programs for PWDs have all but stopped dead in their tracks in response to the COVID-19 lockdown in March, 2020. In 2018–2019, 47,286 people with disabilities participated in skill training programs which dropped to merely 1,434 participants in 2019–2020. The Department for Empowerment of Persons with Disabilities has empaneled 75 programs to meet the more stringent expectations, compared with the previous 280 programs [72]. It is essential that rigorous safety protocols are followed as training programs reopen. As an additional option, online training program proposals for people who are differently-abled are currently being explored.

Of the persons with disabilities in India, nearly half of them have vision impairment. Senjam [73] points out that 13 million of those with vision impairment have functional low vision. However, appropriate and accessible information related to COVID-19 are inadequate, especially for people with visual disability in the areas of transmission, nature of the virus, and prevention and protective strategies. They also require personal assistance with activities of daily living and rely on tactile sensory for performing “routine activities or outdoor movement which may further increase the chance of getting the infection from the virus” ([73], p. 1368). Protective techniques such as handwashing and face mask wearing rely on visual functioning, while assistive devices require regular disinfection in order to prevent the transmission of infection. For people with visual impairment and other disabilities, the “sudden disruption of [their] support system, including personal assistance, and potential economic hardship ... will have serious consequences in health and wellbeing” ([73], p. 1368). The quality of life for people living with disabilities will be significantly impacted by the added risk factors and necessary precautions needed to interact with their surroundings during the pandemic [73–75].

The lack of priority given to establishing and distributing clear guidelines and recommendations for people with disabilities is further impacting persons with disabilities. If people with disabilities do not have disability certificates or ration card documentation, they can be denied food. Hospitals are closing their doors to non-COVID patients, leaving people with disabilities without the necessary and accessible healthcare infrastructure to support them [74, 76].

For elderly, as with people with disabilities, the physical risks of the pandemic and related issues are further exacerbated by the social isolation that they face [77, 78]. Elders have limited, if any, access and proficiency with technology to foster connections to information and alleviate social isolation. With such isolation and heightened anxiety, elders are also at an increased risk of suicide [79]. Further, with social isolation, particularly from their family systems, seniors are

also predisposed to greater risks of “inactivity, smoking, alcohol abuse, unhealthy diet, depression, introversion, poor social skills, and post-traumatic stress disorder leading to greater risks of cardiovascular diseases, dementia, and premature mortality” ([78], p. 1).

9. Harder hit migrant workers

Throughout the Coronavirus pandemic, domestic migrant workers have been experiencing numerous adversities and destitution. With industries and factories closed down as a result of the nationwide lockdown, millions of migrant workers were left with loss of livelihood, food shortages, ambiguity about their future and unfortunate eventualities. The story of Mrs. SY, below, highlights the agony that some migrant workers and their families have faced during this time.

Ordeal and Tragic Departure of a Migrant Family

With excessive numbers of migrant workers without work and little hope once the lockdown began March 24, 2020, many began the journey back to their villages by foot, cycling, hitchhiking, etc. Mrs. SY and her family were living and working in Mumbai with their food cart. When their savings depleted in the first two months of the lockdown, they tried to book the special train tickets to return to their village some 1,500 km away. Their tickets never came so they left by Auto-rickshaw. Driving 11 hours/day and sleeping on the pavements, Mrs. SY, her husband and two children were eager for the safety of their village. However, on the fourth day of their journey home and just 200 km away, their Auto-rickshaw was struck by a truck and killed both Mrs. SY and one of her daughters [80].

Migrant workers comprise a significant sector of the population, and as such they have become particularly at-risk during the Coronavirus pandemic [77, 81, 82]. Presently, there is significant discrepancy among estimates of the migrant worker count in India. Estimates of the informal economic sector range from 70 to 400 million workers [83–85]. Further, the World Bank reports 471,689,092 workers in India's labour force [86]. The informal economy, therefore, comprises roughly anywhere between 14.8 and 76.2% of the workforce in India.

Regardless of the actual number of migrant labourers, the unique challenges and adverse psychosocial effects of the pandemic on the informal sector can be disproportionately significant and even fatal. With the initial lockdown, workers abruptly lost income and/or were subject to working conditions with suspended occupational safety precautions [81]. In addition to their susceptibility to communicable diseases due to migrant workers' factors relating to their socioeconomic status (e.g., malnutrition, substandard and crowded living and sanitation conditions, and pre-existing health issues related to their conditions), they also have had to contend with the absence of family support and economic constraints, as well as the burden of failing to provide financial support to their loved ones [81, 87].

Migrant workers' opportunities to meet their basic needs of food and shelter, coupled with the abrupt loss of income and concern with contracting the infection and developing anxiety, all converged in large-scale movements from the cities to return to home communities. However, such movements, supported by special train transportation, led to an increase in the spread of the infection, including migrant passengers losing their lives later to COVID-19 [87, 88]. The lack of available transportation during the lockdown has also led to “significant deaths of migrant workers in road accidents” ([77], p. 207). Further, even once migrant workers return home, they may further compromise their family's food and shelter access while employment opportunities back home are scarce. Moreover, social exclusion and the stigma of possibly transmitting the infection from the cities to

their communities upon their return has also further alienated the worker and their family from their community. For those migrants who remained in their host cities, unsanitary, crowded living conditions and the inability to therefore adhere to social distancing guidelines only further jeopardized the remaining migrant workers' health [87]. Furthermore, accessing health care, particularly during the pandemic, has proven to be another obstacle for migrant workers. The dearth of trained health professionals to address communicable and noncommunicable diseases was already an issue for India's public health infrastructure prior to the onset of the pandemic.

10. Conclusion

The novel coronavirus impacted life in every facet, marking it as an epoch in human history. With the efforts of the scientific community, the mystery around the virus unfolded gradually as humanity grappled with the crisis each day over the last year and a half. To build a holistic picture, we touched upon multiple areas where the repercussions of the virus were felt. The chapter delineated the problem from multiple perspectives and endeavored to highlight the intervention strategies that were adopted at governmental, community and individual levels to fight the pandemic. There is a substantial amount of documentation to show the altruisms and resilience among the local communities of India during the time of the coronavirus pandemic. The citizens organized, offered and provided various types of assistance, such as setting up quarantine facilities, pooling resources for medical aids, oxygen, feeding millions of needy people and those stranded by lockdown, and assisting both the elderly and children affected directly or indirectly by COVID-19. Such fortitude of self-reliance and collective sense of purpose of Indian communities must be leveraged and empowered to fight the outbreak of the Corona pandemic and future challenges resulting from any health emergencies. As the second wave of the pandemic begins to decline, there is growing speculation and uncertainty yet again for a third wave. There is an urgent need to reflect and learn lessons for the future by undertaking evidence-based multi-disciplinary policy research that should pave the way to prepare for a public health challenge. In case of an anticipated third wave, the national and state health care systems and communities should be ready to invest in developing adequate public health infrastructure, effective prevention strategies and most importantly, enhancing societal participation in caring for vulnerable people.

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