



## Covid 19 Reaffirms that Health is Not Driven Just by Biology, But Also, by the Social Environment in Relation to Women-globally

**Suresh Kishanrao\***

*Public Health Consultant and Visiting Professor-MPH, Karnataka State Rural Development and Panchayat Raj University, Gadag, Karnataka, India*

**\*Corresponding Author:** Suresh Kishanrao, Public Health Consultant and Visiting Professor-MPH, Karnataka State Rural Development and Panchayat Raj University, Gadag, Karnataka, India.

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### Abstract

Sex and gender both play a role in the epidemiology of almost all communicable and non-communicable diseases. The incidence, prevalence, access to health care services, care seeking behaviour, diagnostic facilities, hospitalization, case management and the outcomes are affected by both sex and gender. COVID-19 has been no different in last 18 months and will continue to do so. Covid 19 Pandemic has reaffirmed to the world the fact that health is not driven just by biology, but also by social environment of which gender is a major part.

An individual's sex -biological make-up, determines both immunological and hormonal profiles that may be important in responding to infection. As of now it is believed that ACE2 (enzyme 2) an enzyme is important in the risk of developing severe COVID19 disease. Levels of ACE2 are generally higher in men, leading to men's higher risk of severe COVID outcomes and death. ACE2 sits on cell membranes and may allow the virus to enter cells more easily, and hence begin its destructive pathway through the body's vital organs.

The Gender plays more important role in developing countries like India in determining i) risk of exposure to environments and products that might be unhealthy (house sweeping, mopping, and cleaning and thus exposure to pollution, cooking and indoor smoking, patterns and timing of health service use, access services (testing, diagnosis, treatment), the level and quality of care that a person receives in the primary health care facilities.

In India the death of one in four women was never counted as against the gap of one in six among men even before the Pandemic. The gender divide in death registration has been worsening from a 6-percentage point difference in 2009 to 11 percentage points in 2018 reports. The gender discrimination in seeking care, hospitalization and health insurance is also well known. The routine reported data of all programs at National, States and districts levels show such gender bias of blindness.

COVID-19 Sex-Disaggregated Data Tracker ([Globalhealth5050.org/the-sex-gender-and-covid-19-project](http://Globalhealth5050.org/the-sex-gender-and-covid-19-project)) offers the most comprehensive country-level reporting of sex-disaggregated data. This article attempts to review the prevailing gender specific information of various components of Covid 19 management and the need for desegregated information for a better understanding of the various indicators.

**Materials and Methods:** The review uses the available gender desegregated data from various sources like GOI, WHO, State Governments, Global health 5050 Covid 19 disaggregated data tracker, Print media and a few anecdotal studies.

**Keywords:** Covid 19 Sex Specific Data; Case Fatality Rate; Cases and Deaths Per Lakh Population; CPHC; UHC; Health and Welfare Centres

**Introduction**

From early 1970’s, public health experts in India proposed that if 67% of the population became immune either by infection or through vaccination, herd immunity could be achieved. But this concept is now appearing to be more complicated by the new and more virulent mutated variants of SARS Cov-2 that can escape immunity from earlier infections and in some cases even the prevalent vaccines. This has pushed the target immune population for achieving herd immunity to 80-90%. Entire global health system and vaccines are caught in a race against the virus and are trying to catch up with risks that are evolving every day creating uncertainty all over the world.

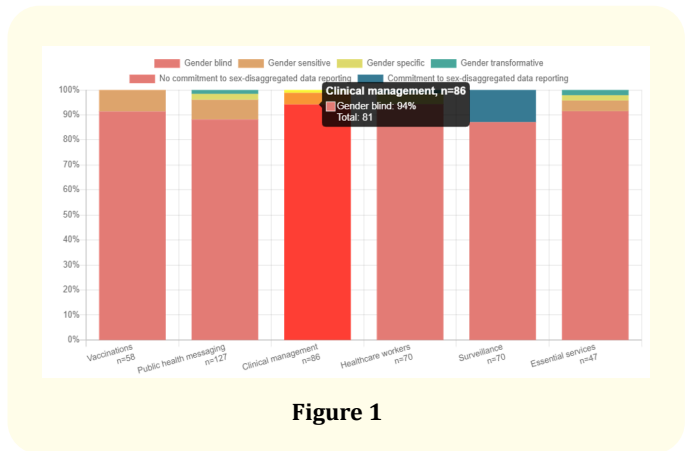
While addressing the Covid 19 pandemic women and children, should be seen as complementarity. Women have been documented to be at additional risk - be it because of the pandemic itself or the associated lockdowns or restrictions- especially because of the already existing gender inequalities. These result in a vicious cycle of exploitation and marginalisation. The Governments are propagating zero tolerance for any kind of violence against women and children both in public as well as private spaces, additional livelihood support, shelter, and vaccination. National health policy 2017 provides for increasing accessibility to comprehensive primary health care to achieve Universal Health Care (UHC) through 150,000 Health and Welfare Centres across the country. GOI and States are strengthening the system by recruiting graduate nurses as Community Health Officers (CHOs), male and female health workers, ASHA and Anganwadi workers. Adoption of a comprehensive and sensitive approach can create availability, accessibility, and affordability of all resources to the vulnerable groups. This also fits well with the ‘whole of government’ and ‘whole of society’ to navigate the current crisis of Covid 19 Pandemic, that needs a special intervention to ensure the physical and mental wellbeing of women and children.

The Covid 19 Pandemic has made known to the world the fact that health is not driven just by biology, but also by the social environment. The gender is a major part of social environment. COVID-19 Sex-Disaggregated Data Tracker ([Globalhealth5050.org/the-sex-gender-and-covid-19-project](http://Globalhealth5050.org/the-sex-gender-and-covid-19-project)) offers the most comprehensive country-level reporting of sex-disaggregated data. Most of the states in India do report sex of most of the cases and vaccinations but no sex-disaggregated Data for COVID-19 Deaths Since May

2020. A few states like Haryana, Karnataka, Odisha, Maharashtra, and Tamil Nadu do share Covid 19 cases, deaths, and vaccination status by gender. Russia, India, Brazil, and Turkey account for 51% of the total cases and 66% of the total deaths with unknown sex globally [1]. WHO data in 2020 of about 700,000 confirmed cases the sex ratio varied with age. In 20-29-year-old and 80 years and older age groups, there were more cases in women than men. But in other age groups (0-9 years, 60-69 years, and 70-79 years), there were more cases in men than women. Overall, however, cases are evenly reported among both men and women {sex ratio of M:F cases = 1.03:1} [1]. It is fact that data on confirmed cases in men and women will be influenced by the access to testing in each country, unfortunately the data on testing broken down by sex is available from only a handful of countries.

**Global status of reporting Covid 19 by sex**

The Sex, Gender and COVID-19 Health Policy Portal collates and reviewed over 450 policies and policy excerpts from 76 countries across all WHO regions and World Bank income groups. Policies are collected from official Government sources under six key 1) vaccination, 2) public health messaging, 3) clinical management, 4) protection of healthcare workers, 5) disease surveillance, and 6) maintenance of essential health services.

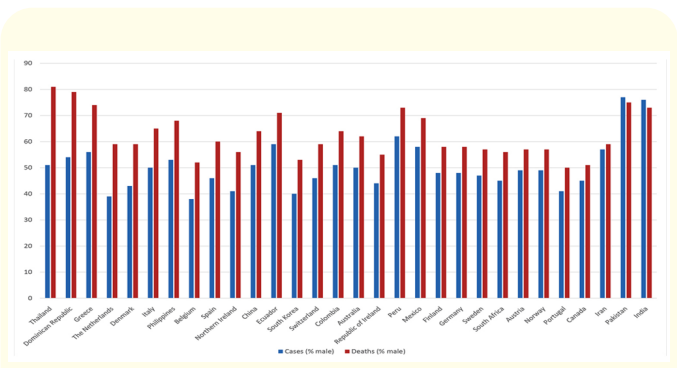


**Figure 1**

In general men are less tested for COVID-19 but are more hospitalised and more die from the virus. As one can see in the above graph even in clinical management 94% of the case records of the treated patients were gender blind.

As of 24<sup>th</sup> August 2021, COVID-19 Sex-Disaggregated Data Tracker has reported the desegregated data for cases from across

140 countries and the data on Confirmed cases that have died across cross 109 countries, vaccinations from 47 countries, hospitalization data from 28 countries, and ICU admissions across 19 countries, RTPCR testing data from 16 countries, confirmed cases among health workers from 11 countries only [1]. At the global level for every 10 females there are 8 male Tests done, 11 male Cases were reported, across 28 countries 12 men were hospitalised for every 10 females. Similarly, there were 18 male ICU admissions, 15 male confirmed cases died for every 10 women. It's only in number of Vaccinations that there 10 males for every 10 females.



**Graph 1:** Contribution of male deaths in total Covid 19 deaths by countries.

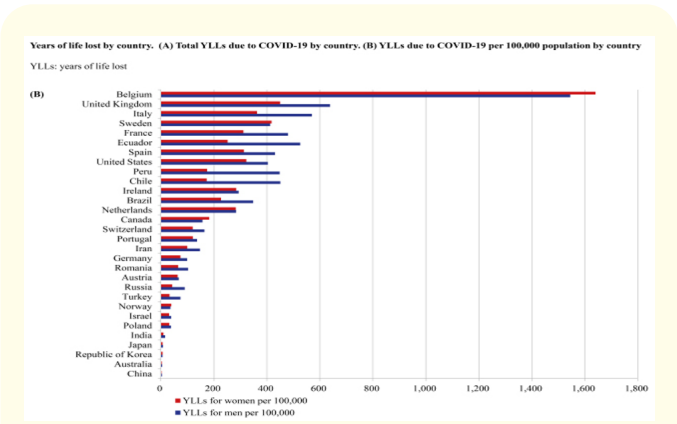
Source: <https://populationandeconomics.pensoft.net/article/53891/May-2020>.

Caseload Rank	Country	Sex-Disaggregated Data Last Updated <sup>1</sup>	
		For Cases	For Deaths
1	United States	May 24, 2021	May 24, 2021
2	India	May 27, 2021	May 21, 2020
3	Brazil	Dec. 19, 2020	Feb. 27, 2021
4	France	May 16, 2021	May 13, 2021
5	Turkey	Oct. 25, 2020	Oct. 25, 2020
6	Russia	Never	Never
7	United Kingdom	May 27, 2021	May 27, 2021
8	Italy	May 19, 2021	May 19, 2021
9	Germany	May 25, 2021	May 25, 2021
10	Spain	May 26, 2021	May 26, 2021

**Table 1:** Sex-Disaggregated Data by Top 10 Countries [1].

Most countries with available data indicate a male to female case fatality ratio of higher than 1.0 to 3.5 in some cases. However, the COVID-19 case fatality rate is higher in women than men in a few countries, such as India, which is one of the worst-affected countries.

Population and economics data from Korea indicates the proportion of cases and deaths by countries, that puts that highest proportion of 77% in Pakistan, followed by India 75%. Similarly, the highest proportion male deaths in total Covid 19 deaths are put at over 80% in Thailand, followed by Dominican Republic (79%), Pakistan 75% Greece (74%) and India (72%) [3].



**Graph 2:** Years of Life Lost by Country and by Sex.

Source: Journal of Korean Medical Science <https://www.google.com/url>.

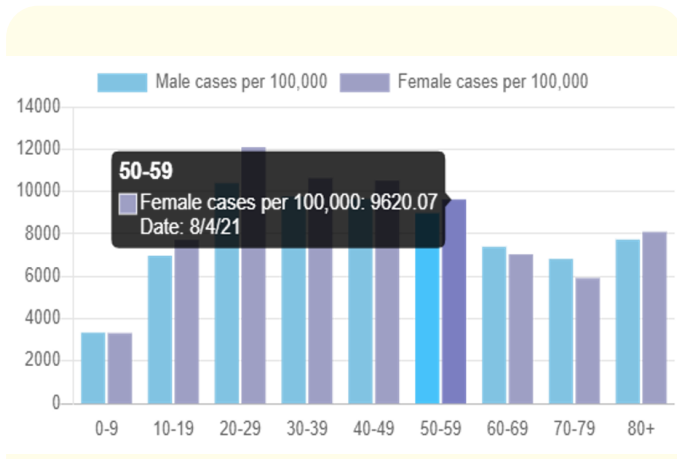
An estimate of the years of life lost by sex due to covid 19 by countries, indicates that more female years of life were lost than YLLs among men in Belgium (F:M -1640:1570), Sweden 420:400), Canada (190:170) per 100,000 population. In rest of the countries YLLs among men were more than female. The male predominance in YLLs lost in United Kingdom was in the M:F ratio of (620:430), followed by Italy (580:380), USA (400:360), whereas in India this ration was (10:8) per 100,000 population [4].

USA

Male: female population ratio (number of males for every 100 females) for period ending 2020: 97.9. For every 10 deaths among confirmed cases in women there are 13 in men. In USA we see that female proportion in Covid 19 case is 52%, as compared to female Covid 19 deaths forming 43% (Figure). The hospitalization (F:M-48:52) and IU admission (F:M-40:60) were also much lower among women. On the contrary vaccination coverage was higher among females (52%).

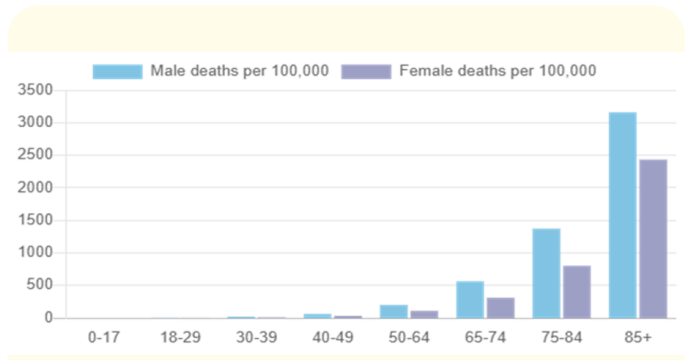


Graph 3: Contribution of confirmed cases, Deaths, Hospitalization and Vaccinations by Sex in USA.



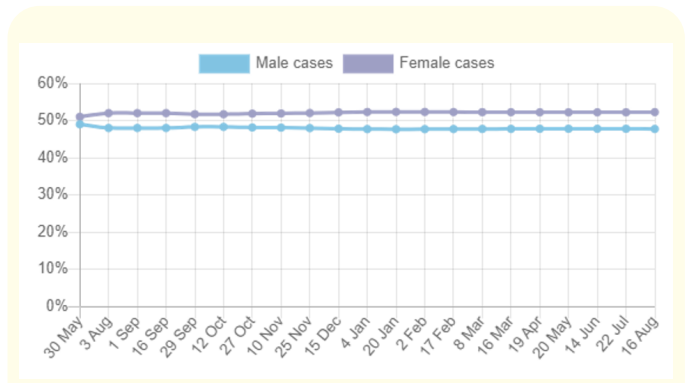
Graph 4: Contribution of confirmed cases per Lakh population by Sex in USA.

In most of the age groups (Figure) the female cases per lakh population is lower than male except in 10-19, 20-29 and over 80 age groups.



Graph 5: Contribution of Covid 19 deaths per Lakh population by Sex in USA.

The cause specific deaths rates due to Covid 19 per 1 lakh population was higher in all age groups among men as seen in the graph 5.

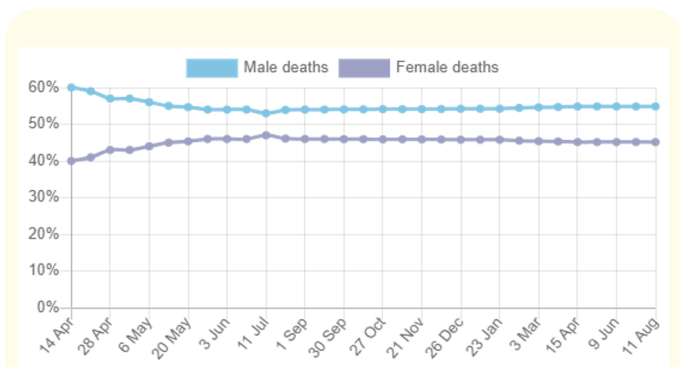


Graph 6: Trends in cases of Covid 19 in USA.

The trends in Covid 19 cases and deaths in USA indicated the gap being just 2-4 percentage points lower in females over the last 18 months. This gap was much higher (up to 20% points) among reported deaths (F:M= 40:60) in the initial months till July 2020, and then stabilized around 48:52 ratio [1].

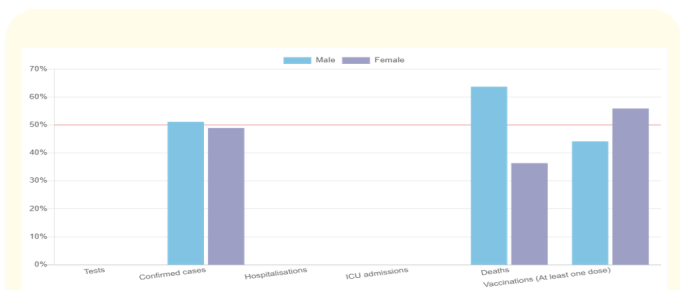
China

Male: female population ratio (number of males for every 100 females) for period ending 2020: 105.3. As far as covid 19 cases

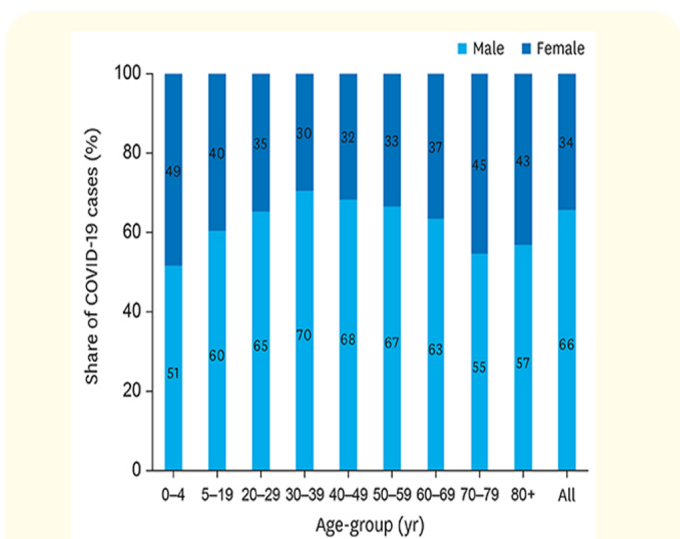


**Graph 7:** Trends in Covid 19 deaths in USA.

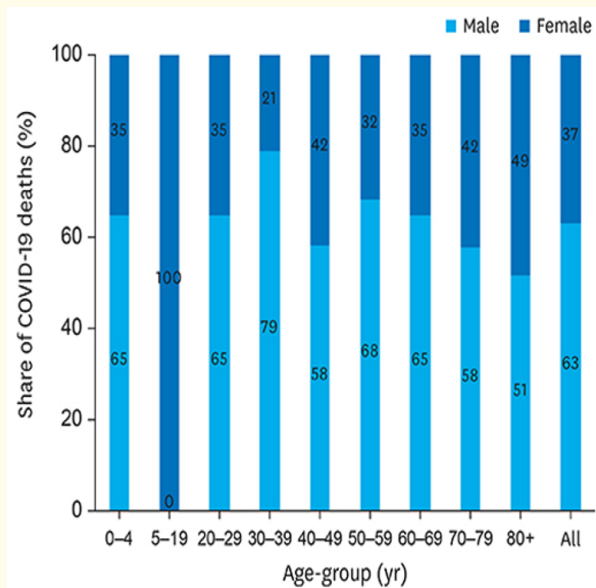
were concerned the ratio was F: M was 49:51. But, strikingly for every 10 deaths among confirmed cases in women there were 17 in men. The vaccination proportion was much higher among females at F:M- 55:45.



**Graph 8:** Contribution of confirmed cases, Deaths, and Vaccinations by Sex in CHINA.



**Graph 9:** Distribution of Cases by age and gender.



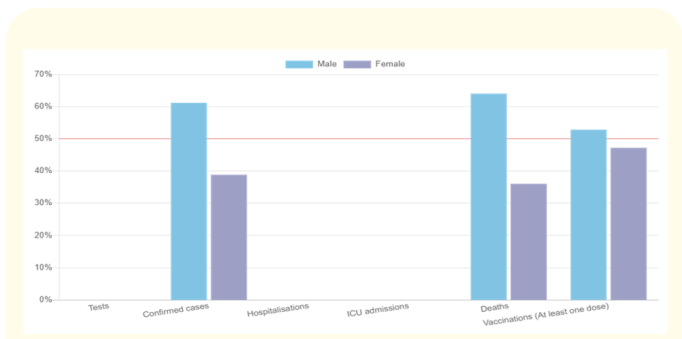
**Graph 10:** Distribution of Deaths by age and gender.

The desegregation by age and sex in China indicated that there was a least gap in cases among children under 5 years (F:M=49:51), and a maximum gap of 30% in the age group of 30-39 years. All the deaths in the age group of 5-19 years were in girls, followed by 49% in women over 80 years and the least of 21% in 30-39 years females [1].

**Situation in India: Reported Covid 19 cases and deaths**

As of 17 September 2021, across India 3,33,81,728 confirmed Covid 19 cases and 4,44,248 deaths are reported, which is gender blind. While the basic tracker data reports by states and districts according to i) total cases ii) active cases iii) discharged cases, iv) deaths v) active ratio, vi) discharge ratio and death ratio, the gender and age distribution of all these variables are conspicuously missing. As of 17 September 2021, Karnataka, home State of the author reported 29,66,194 cases and 37,573 deaths, the breakup of cases by gender is 52% and 33% and for 13% gender is not mentioned [2].

India has a Male: female population ratio (number of males for every 100 females) for period ending was 2020: at 108.2. The proportion of confirmed cases who died of Covid 19 was 2.62% among men as against 3.07% among women. For every 10 deaths among confirmed cases in women there were 9 in men. Similarly, the vaccination coverage is around 52% in men vs 48% in women.

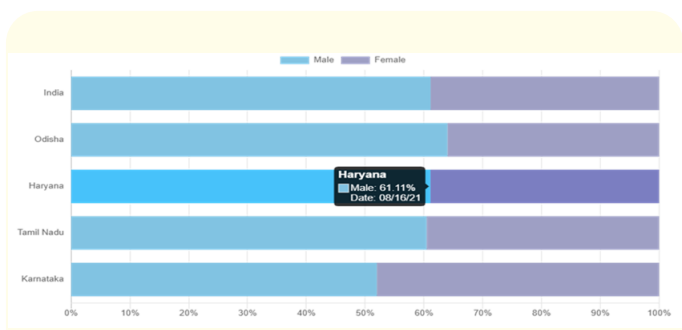


**Graph 11:** Contribution of confirmed cases, Deaths and Vaccinations by Sex in India.

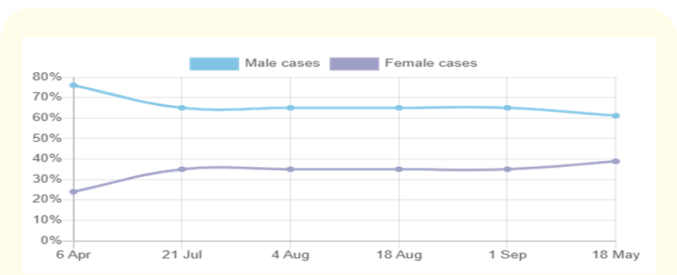
All India reported proportion of female cases was 38% (graph-11), vaccination among females was around 48% but the proportion of covid 19 deaths was only 36% [1].

In India the death of one in four women is never counted as against the gap of one in six among men even before Covid 19 pandemic. The gender divide in death registration has been worsening from a 6-percentage point difference in 2009 to 11 percentage points in 2018 reports a new study by researchers from UNICEF in Bihar and the University of Melbourne [3]. This phenomenon could be distorting the visibility of the gendered impact of Covid 19 on reported number of cases, RTPCR testing and deaths.

Among the 4 states (Gr-12) reporting by sex, we notice that Karnataka reported the highest proportion of female cases at 48% followed by Tamil Nadu 40%, Haryana 39%, and Odisha 36% as against a national average of 38% [1].

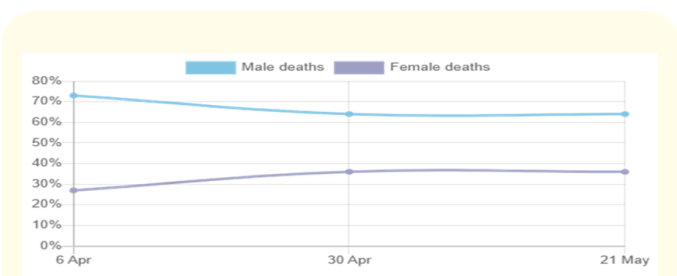


**Graph 12:** Contribution of confirmed cases, by Sex in Select States and India.



**Graph 13:** Trends in cases of Covid 19 in India 2020-21.

The trends indicate that in the beginning of pandemic female cases contributed around 24% and stabilized at 37%-40% between July 2020 and May 2021 [1].



**Graph 14:** Trends in Covid 19 deaths in India in 2020-21.

The female contribution in Covid 19 deaths was around 28% initially, that is stabilized around 38% by May 2021 [1].

In a retrospective analysis of web-based portal data of 112,860 patients’ records for age and gender distribution and a sub-sample of 9,131 records were separately analysed to examine their relationship with the outcomes i.e., recovered/deceased [6]. Results indicate that 73,797 (65.39%) cases were males and 39,063 (34.61%) females COVID-19 patients. Majority of the cases (37.48%) were in the 18-35 years age. The Highest proportion of infected male (37.21%) and female (37.99%) were in 18 to 35 years age category. The lowest proportion affected male (1.28%) and female (2.19%) patients were among 0 to 4 years age category (Figure 2). The difference observed between gender among age categories was found to be statistically significant ( $p < 0.001$ ) (Table 2). The mean age of all COVID-19 patients was  $39.47 \pm 17.59$  years. The difference

between the mean age of males (39.98 ± 17.19 years) and females (38.50 ± 18.29 years) were also statistically significant at p < 0.001. The odds for infection were significantly higher among younger females, that declined with age. Surprisingly the age-adjusted odds for recovery were also higher among females (1.779) than males, being highest in 5-17 years age (O.R.=88.286) independent of gender. The study concluded that the chances of being COVID-19 infected was higher for females of lower age categories (<35 years) which decreased with age. The odds for recovery among females was significantly higher than males. The chances of recovery declines with increasing age and the variation could be attributed to the biological differences between age categories and gender [6,7].



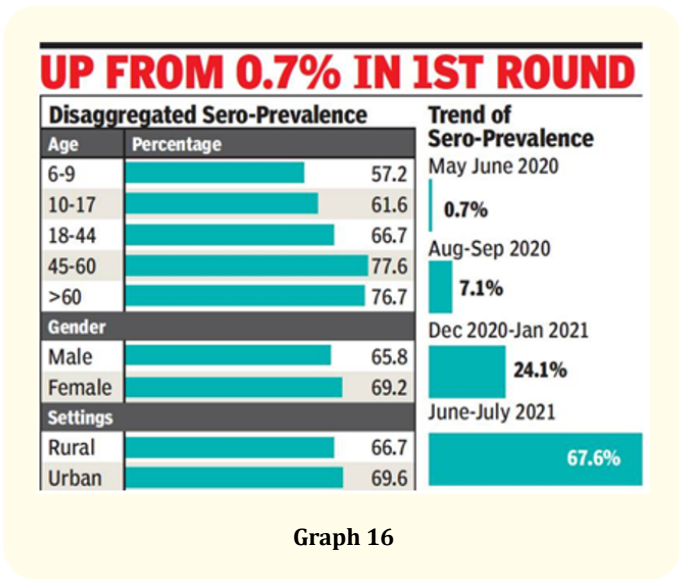
Graph 15: Sex and Age wise distribution of 112860 patients.

**Sero-prevalence of antibodies**

India: The latest national serosurvey conducted between 20 June to 7 July 2021 conducted across 70 districts in 21 states among about 28975 people over the age of 6 years, indicated an overall positivity of 67.6% with desegregated figures of 69.2% among women as against 65.8% among men. The age wise positivity was between 57.2% lowest among 6-9-year-olds and 77.6% highest among 45-60-year-old persons. The urban population has roughly 3% higher antibodies. This is indicative that nearly one third of the population is susceptible. The seroprevalence of antibodies was 85.2% among 7252 health workers out of the population surveyed. The seroprevalence has jumped from 0.7% a year ago to 67.6% [8].

**Long Covid 19 and sex**

When people have an initial COVID infection and recover from the initial infection but then continue to have longer-term symp-



Graph 16

toms that last for a month or longer after their initial COVID infection is called Long COVID. Most common symptoms of post COVID-19 condition include shortness of breath, cognitive dysfunction, and fatigue. Other symptoms, like headaches, extreme fatigue, changes in memory and thinking, sense of smell not returning, chest pain, trouble in speaking, anxiety or depression, muscle aches, fever, loss of smell, loss of taste, muscle weakness and joint pain and muscle aches also called chronic fatigue syndrome (CFS) and many other symptoms. It's mostly a clinical diagnosis, but there are some lab tests like markers of inflammation. Worldwide observations over last 18 months have revealed that initially, we were seeing primarily people who had been hospitalized with COVID; people who are older and had co-morbidities that required rehabilitation after a long hospitalization. But we quickly realized that there was a very large population of people who were younger and healthier who were not hospitalized initially that had what they thought were mild to moderate initial infections that were really struggling with disabling symptoms especially among young women. A very gradual restorative exercise program, starting with breathing exercises, stretching, very light strengthening, and low-intensity aerobic exercise would help.

**Chronic fatigue syndrome**

Recently US ME/CFS Clinician Coalition published consensus recommendations on the diagnosis and management of myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) and its

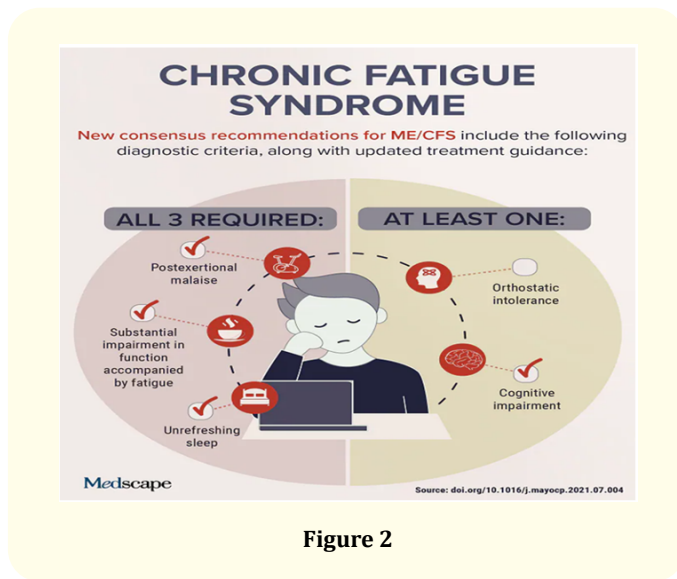


Figure 2

connections with long COVID. Of the most frequent symptoms reported at least 6 months after illness onset were fatigue (78%), post exertional malaise (72%), and cognitive dysfunction (“brain fog”) (55%). Women suffered more of CFS [9].

**An anecdote**

My personal experience of observing/managing about 100 of Covid 19 cases, since May 2020 indicate that women suffer more of long covid 19 symptoms. Most of these cases were among scholars of our university and residents of our apartment complex. The sample is small but indicates a Long Covid 19 rate of 24% among females and 10% among males.

Cases Observed / Treated			Nature of Illness			Long Covid 19 symptoms			
			M	F		Total	Male	Female	
Total	Male	Female	Asymptomatic	40	16	24	Total	Male	Female
102	60	42	Mild	46	34	12	16	6	10
			Moderate	14	8	6			
3 Deaths- all male			Severe	2	2	0			

Table 2

**Covid 19 infection during pregnancy**

COVID-19 can be extremely threatening for pregnant women. Newer studies are now highlighting how riskier COVID-19 could

be. While some pregnant women experience milder infections, some end up getting hospitalized. Vertical transmission and delayed recovery can be possible as well and there’s a lot of research that is being done. A compilation analysis of 77 studies detailing pregnancy and COVID-19 risk has evidently proven that in many of the cases, which required hospitalization, patients had little to no symptoms. The study also found that pregnant women had a higher risk of being admitted to intensive care in the hospital than non-pregnant women. An article published in the British Medical Journal, reported that out of 11, 432 women admitted to the hospital suspected of being COVID+ were studied. Pregnant women were less likely to report typical infection symptoms, such as fever, cough, or headache, compared to women of the same reproductive age. Women, as compared to men, fell affected fewer and less severe symptoms of COVID-19 but the same hasn’t been observed in pregnant patients. Being asymptomatic or showing no symptoms could also delay diagnosis and make them more capable of spreading the disease, silently. The study found that the women in the first and third trimester carried “minor” infection risks for babies in the womb. There weren’t many cases of neonatal death or stillbirths as outcomes. While many pregnant women have gone on to deliver healthy babies and make good recoveries as well, there have been fewer reports of high mortality rates in new-borns. Although 17% of women delivered before 37 weeks - called a preterm birth - only 6% went into labour preterm and delivered, which makes us think that could be other factors at play.

The Studies have shown that Covid infection during pregnancy may result in rapid deterioration of health of pregnant women and they are at an increased risk of severe diseases, and it might affect foetus too. The evidence indicate that pregnant women are at an increased risk for severe illness from Covid compared to non-pregnant women in case they get infected. Pregnant women with COVID-19 infection are at an increased risk for preterm birth and other adverse pregnancy outcomes including higher chances of neonatal morbidity. Pre-existing co-morbidities, advanced maternal age, and high body mass Index as factors for severe COVID-19 in pregnancy.

Symptomatic cases of Covid-19 were significantly higher at 28.7% among pregnant and postpartum women during the second wave, compared with the first wave when the proportion was 14.2%, a comparative analysis of data during the two waves by



ICMR showed. The case fatality rate among such women was also much higher during the second wave at 5.7%, against 0.7% in the first wave. The study underlines the importance of vaccination of pregnant and lactating women against Covid-19 as they were more severely affected during the second wave of the pandemic compared to the first. Overall, 2% maternal deaths were estimated during the waves [10].

**Covid 19 pandemic’s effect on socio-economic issues of women’s unpaid and domestic work**

Share of who reported an increase in time spent, based on 22 countries in Asia and the Pacific and Europe and Central Asia [8].

Activity	Female	Male
Cleaning	49	33
Childcare (physical)	37	26
Teaching children	36	28
Cooking and serving meals	37	16
Shopping for the family	24	23

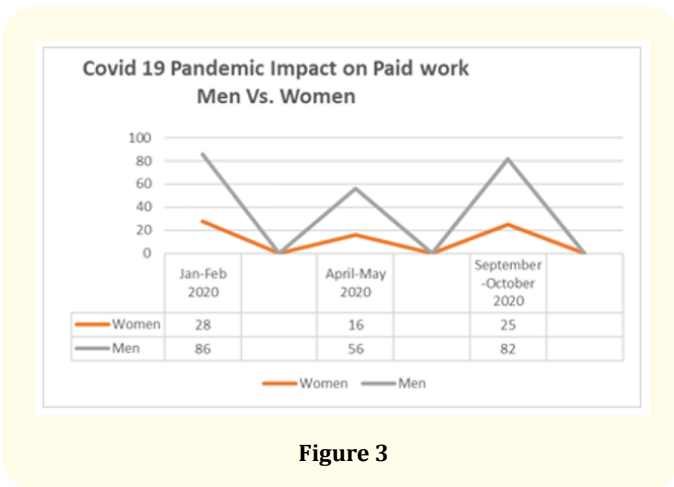
**Table 3**

While only 6% women reported that they were never engaged in cleaning, 44% of men reported the same. Access to safe water, sanitation and hygiene is critical for protecting human health and reducing women’s unpaid work as women and girls are responsible for collecting water. As 80% of households are lacking on-site drinking water, it increased their exposure to the virus [11].

In times of crises, like Corona Pandemic women are affected differently than men and are often disproportionately worse off particularly in developing countries. In a survey of 15000, women and 2300 women from low-income household survey in 10 states by Dalberg a consulting firm after first 9 months of the pandemic found following key features:

- Women in India start at a much lower baseline of Rs 5,000, as opposed to Rs 8,000 for men, which significantly impacted their ability to withstand the shock of income loss. 6.4 crore women were unable to find pre-pandemic levels paid work.
- Women earning less than 10 ,000 per month saw income losses of more than 3-7% points more than average of all the women surveyed. Muslims and migrant women lost 10% and 13% point respectively

- About 8.7 lakh working women were still out of work as of October 2020. An estimated 4.3 Crore women reported either job or income loss and 1.5 crore were meaningfully recovered from it.
- Women made 24% of workforce before pandemic, but those who lost job were 28% and 43% of those who remained unemployed in October 2020.
- About 3.2 Crore women for LIC families more than 10% were forced to cut their food intake or ran out of food in the week of survey A similar number also said they were worried about running out food next week
- About 16% of women (5% NO/11% scarce) said they could not afford MH pads and 15% said they lost access to contraceptives (4% No, 11% scarce) and 4% had decreased use of toilets between March-November 2020
- Access to health facilities is estimated to have led to about 24 lakh unwanted pregnancies and nearly 80% of the pregnant women in rural India lost opportunities of Antenatal care.
- Even before the pandemic, Indian women engaged in nearly 6.5 hours a day of unpaid work, three times more than the time spent by Indian men on such work. During pandemic men reported an increase (37%) in unpaid work and 18% of them had decreased rest time. In women unpaid work increased by 30%. Both men and women worked reported increased time in household chores and unpaid care of elderly or children, but such increased time was more among women across all ages and marital status.



**Figure 3**

The employment crisis became an unfortunate consequence, as India cycled through lockdowns of varying severity and duration during the COVID-19 pandemic. The unemployment rate, at approximately 7.2% in January 2020, shot up to 23.5% in April 2020, and fluctuated over the year to end at about 7% (up from approximately 5.3% in 2019)<sup>10</sup>. About 20% or more separated/divorced women reduced food intake or ran out of food compared to the average. Nearly 41% of rural women and housemaids in urban areas became unemployed as against 32% men and 11% of them are yet to recover fully [12].

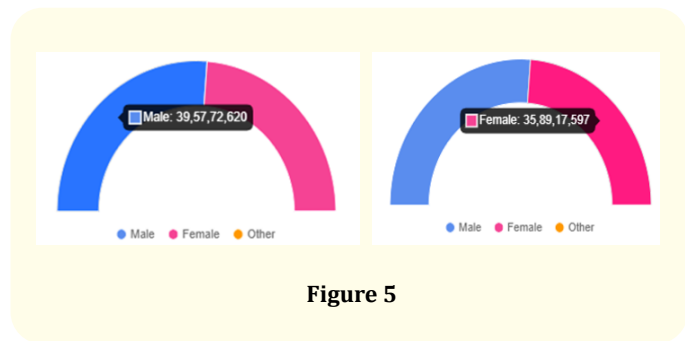


Figure 5

followed by Andhra Pradesh (34,228), Odisha (29,821), Madhya Pradesh (21,842), Kerala (18,423) and Karnataka (16,673), the union health ministry data showed. According to data from the Cowin portal, out of the total 76.57 crore doses administered since January 2021 till 15<sup>th</sup> September 2021, 35.89 Crore went to women vis-a-vis 39.58 Crore to men that brings the proportion of vaccine coverage to 906 doses to women for every 1,000 doses for men not matching India’s current sex ratio of 924 women per 1,000 men. Given the fact that for the first 6 months of January to June 2021 pregnant women were not eligible this gap gets narrowed down further.

The largest state in India, Uttar Pradesh, has 42% vaccination of women, West Bengal has 44% female coverage, Dadra, and Nagar Haveli (predominantly rural UT) 30%. Only a few states- Kerala and Andhra Pradesh have more vaccine coverage for women than men. Rural women are even more marginally placed vaccination-wise. In Karnataka the home state of the author the proportion of women coverage works out to be 977.5 per 1000 men. Reasons for the current gender disparity in vaccine coverage (54% in men and 46% in women) include hesitancy due to rumours about side effects on fertility, menstruation; inaccessibility to technology due to a clear digital gender divide; lack of mobility, requirement of husband or male guardian’s permission and company to visit vaccination centres and undervaluing of her health by family members among others. Government’s initiative of approval for vaccination of lactating mothers and pregnant women and for walk-in and door to door vaccination drives along with is a welcome reprieve for closing this very injurious vaccine gender gap.

**Effects of vaccination on menstruation**

Is there a link between Covid vaccination and changes in women’s menstrual cycle? While 30,000 women in the UK have reported

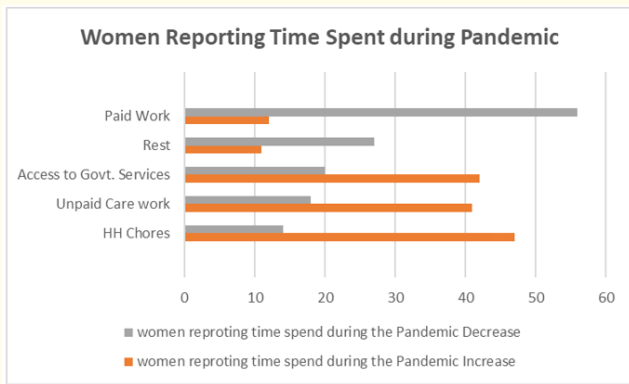


Figure 4

A gender disparity at the enlistment stage of MGNREGA is well known. A recent Study in August 2021 showed that of 27% of rural, low-income women were not listed on the household MGNREGA card, as compared to 20 percent of low-income men [13].

**Women and Covid 19 vaccination**

Between January 2021 and June 2021, The Covid 19 vaccination strategy in India restricted the use of vaccine for protecting pregnant women. In early July 2021, A national level consultation including professional bodies like FOGSI, representatives of state governments, CSOs, NGOs, Development Partner agencies, technical experts etc. on Covid vaccination for pregnant women convened by the health ministry unanimously welcomed the recommendation of NTAGI to vaccinate pregnant women.

**Vaccination Status by sex in India as of 17 September 2021**

In the month of July 2021 itself over 227,000 pregnant women were vaccinated in India. Tamil Nadu led the way with 78,838 jabs,

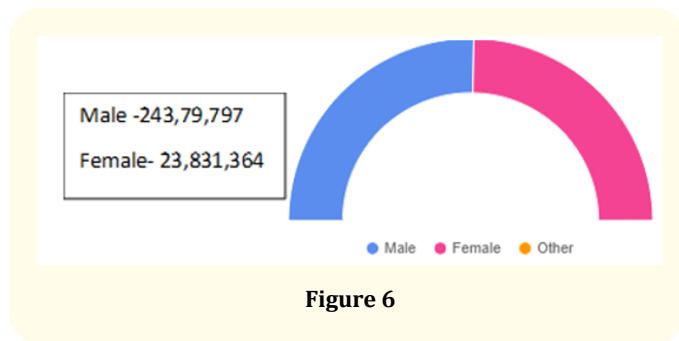


Figure 6

to the authorities about changes to periods or unexpected vaginal bleeding after taking the vaccine [14].

At present, none of the vaccines available mention irregular periods among the side-effects. In India, FOGSI (Federation of Obstetric and Gynaecological Societies of India) issued a statement in April 2021 that there is “no physiological, endocrine or immunological basis affecting vaccination based on the day of the menstrual cycle”.

However, some Gynaecologist in metropolitan cities like Delhi, Mumbai, Bangalore, Chennai, Hyderabad, and Kolkata have opined that about 20%- 50% of their patients who had taken the vaccine had complained of irregular periods and in majority of such patients had some irregularity in their periods since the Covid pandemic started. It may be the fact that the overall stress that affects ovulation and the periods”.

After vaccination, an inflammatory response could potentially occur in the endometrium, that could affect menstruation for a short time, like other side effects of the vaccines. Most importantly, mental, or physical stress can suppress the release of hormones from the brain that tell the ovaries and other endocrine organs in the body that could potentially delay a woman’s period or temporarily alter the menstrual flow [14].

### Conclusion

The health and social care workers involved in Covid 19 at various levels are more female, while decision makers at the family and community, doctors, specialists, ambulance drivers, hospital security staff, orderlies are more likely men. However, desegregated data of the disease and effects of the pandemic mitigation activities on women is wanting.

Without sex-disaggregated data, we can’t calculate COVID-19 the case fatality rate (CFR) across sexes. The CFR is an important metric to assess pandemic’s impact on different demographic groups. A study published in the Journal of Global Health Science as early as June 2020 used data from covid19india.org to find that women in India had a higher CFR than men despite fewer reported cases among women in the ration of 3.3% v. 2.9%.

Global health 5050 reports that there is no evidence from the national survey data that men are more likely to become infected than women as there is no consistent pattern in terms of who is more likely to be diagnosed with COVID-19 with gold standard RT-PCR Tests.

In response to the pandemic, only 54 out of 195 countries and territories have introduced new or amended social protection measures targeting women and girls.

### Way Forwards

- Improve gender data collection and expand research on the gendered impacts of COVID-19, particularly on those most marginalized.
- More disaggregated data on cases, deaths, hospitalization, cases in ICU, and testing are vital to understanding the pandemic’s impact on different groups of women.
- The response to COVID-19 must consider the risks borne by essential health workers, the majority of whom are women.
- The disease-related health vulnerabilities faced by women from poor, marginalized and excluded communities must also be recognized and addressed as a matter of priority. Most of the house maids, textile industries and sales women in urban areas and agricultural labours fall in this category in India
- Introduce economic support packages for vulnerable women and measures to confront women’s increasing time and income poverty. This includes efforts to recognize, reduce and redistribute the increased burden of unpaid care and domestic work.
- Address the pandemic’s economic impacts and the devastation of jobs and livelihoods. Eliminating inequality in the labour market is more urgent than ever, including to address

occupational segregation, gender pay gaps and inadequate access to affordable childcare.

- Close glaring gaps in social protection. Long-term investments in social protection systems that reach all women and girls are key to economic recovery and future resilience.
- Prioritize prevention and redress of violence against women and girls in COVID-19 responses and ensure that services for survivors are deemed essential and remain accessible and adequately funded.

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### **Bibliography**

1. "The COVID-19 Sex-Disaggregated Data Tracker, as of 24 August" (2021).
2. "Covid 19 live dashboard".
3. "Contribution male deaths in total Covid 19 deaths by countries".
4. "Years of Life Lost by Country and by Sex". *Journal of Korean Medical Science*.
5. Chandrima Banerjee. "Women's deaths under-counted, may skew Covid-19 data".
6. William Joe., *et al.* "Equal Risk. Unequal burden? Gender differentials in COVID-19 mortality in India". *Journal of Global Health Science* 2.1 (2020): e17.
7. Savitesh Kushwah., *et al.* "Biological attributes of age and gender variations in Indian COVID-19 cases". *MedRxiv* (2020).
8. "2/3 Indians have Covid-19 antibodies. ICMR serosurvey".
9. Ryan Syrek. "Trending Clinical Topic: Chronic Fatigue Syndrome". 3 September (2021).
10. "Covid cases among pregnant women doubled in second wave: ICMR study" (2021).
11. "From Insight to Action, Gender equality in the wake of covid-19, UN Women".
12. "Impact of Covid 19 on women in low-income households in India- Study by Dalberg".
13. "Low-Income Women Bear Unfair Burden of COVID-Induced Socio-Economic Troubles".
14. "Does vaccination affect periods?".