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ORIGINAL ARTICLE

Study of Changing Mortality Patterns of Medico Legal Cases in relation to Covid Pandemic

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Abstract:

This century's most dreadful disease COVID-19 has created significant knock, effecting day to day life - economically, socially & psychologically all over the world. This pandemic has affected not only thousands of people in terms of morbidity and mortality due to spread of this disease, also made the medical world most affected. Nearly half of the world's 3.3 billion global workface had lost their livelihoods in the pandemic period. Without the means to earn an income during lockdowns, many are unable to feed themselves and their families. As bread winners lose jobs, fall ill and die, millions of dependents under the threat of livelihood and prosperity in all aspects. The no. of road traffic accidents has decreased during 1st wave period and 2nd wave period. There are varied patterns among all the sectors of occupation with significant and surprising changes among private sector and business. The number of suicidal deaths shows an increase during the 1st wave period and decrease in 2nd wave period.

Keywords: COVID-19; Mortality; Pandemic; 1st Wave; 2nd Wave.

Introduction:

The first human case of COVID-19 caused by the novel coronavirus (named SARS-CoV-2) was reported in Wuhan City, China, in December 2019. On 30 January 2020, the WHO declared that the outbreak of COVID-19 constituted a public health emergency of international concern.[1] Based on the high level of global spread and the severity of COVID-19, on 11 March 2020, the Director General of the WHO declared the COVID-19 outbreak a pandemic.[2] In India, the disease was first detected on 30 January 2020 in the state of Kerala, in a student who returned from Wuhan.[3] The number of cases of COVID-19 continues to rise around the world. Maximum share of cases came from low and middle income countries in Asia, Africa and the America.[4] Even though India is 3rd highest in deaths due to COVID-19 but reported COVID-19 deaths are widely believed to be under reported because of incomplete certification of COVID-19 deaths; misattribution to chronic diseases and also most deaths occur in rural areas often without medical attention.[5] The present study aims to analyse the mortality pattern during COVID pandemic in medico-legal cases.

Materials and methods:

It was a retrospective, analytical, observational and comparative study done on the cases that were brought for post mortem examination to the Mortuary, Department of Forensic Medicine & Toxicology, Rangaraya Medical College, Kakinada, Andhra Pradesh. We have taken the periods of study as follows that were compared with corresponding durations of pre COVID year i.e. 2019.

1. 1st Wave period - July 2020 to November 2020.
2. 2nd Wave period - May 2021 to July 2021.

Ethical clearance (IEC/RMC/2022/772) was obtained from the institutional ethics committee of Rangaraya medical college, Kakinada, Andhra Pradesh.

The acquired data was statistically analysed using SPSS software version 21.

Results:

During the study period of July to November 2019 a total number of 481 deaths were recorded. Out of which 409 (85.03%) were male, 71 (14.76%) were female and 1 (00.21%) was a transgender. During the study period of July to November 2020 a total number of 412 deaths were recorded. Out of which 329 (79.85%) were male and 83 (20.15%) were female.

During the study period of May to July 2019 a total number of 298 deaths were recorded. Out of which 239 (80.20%) were male and 59 (19.80%) were female. During the study period of May to July 2021 a total number of 261 deaths were recorded. Out of which 206 (78.93%) were male, 54 (20.69%) were female and 1 (00.38) was transgender [Table1].

The data when statistically analysed and segregated for age wise distribution of the COVID cases [Table 2].

It was found that deaths in the people in age groups 11-20 years, 21-30 years and 51-60 years percentage of deaths have increased in both 1st wave and 2nd wave periods when compared to the corresponding pre-COVID period. In age groups <10 years, >60 years the percentage of deaths have increased in 1st wave period

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and decreased in 2nd wave period when compared to the corresponding pre-COVID period.

In age groups 31-40 years and 41-50 years the percentage of deaths have decreased in 1st wave period and increased in 2nd wave period when compared to the corresponding pre-COVID period.

The medico legal cases under section 174 Cr.P.C., during the study period of July to November were decreased in 2020 when compared to 2019, and during the study period of May to July they were decreased in 2021 when compared to 2019. There was no major difference in the pattern of deaths under section 302 I.P.C. during the above mentioned study periods. There were no significant number of deaths under remaining other sections, occurred during the above mentioned study periods [Table 3].

During the study period of July to November the number of deaths among the occupation of government sector, housewives and students were increased in 2020 when compared to 2019; whereas they were decreased in the occupation of private sector, daily labour, business, and unemployed. During the study period of May to July the number of deaths among the occupation of government sector, housewife, student, and unemployed were increased in 2020 when compared to 2019; whereas they were decreased in the occupation of private sector, daily labour, and business [Table 4].

Regarding the manner of death there was an increase in deaths due to suicide during the study period from July to November in 2020 (38.11%) when compared to 2019 (29.11%); whereas there was an minimal decrease in number of suicides during the study period from May to July in 2021 (26.05%) when compared to 2019 (27.85). There was decrease in the number of deaths due to homicides and accidents, during all the study periods. Regarding deaths due to natural causes, there was no difference during the study period from July to November in 2019 and 2020; and from May to July in 2021 when compared to 2019 [Table 5].

During the study period of July to November, Regarding the motive for suicide there was an increase in deaths due to marital disputes, petty issues, and property issues in 2020 when compared to 2019; whereas there was decrease in suicides due to financial causes, mental stress, extra marital affairs, and ill health. During the study period of May to July, regarding the motive for suicide there was an increase in deaths due to ill health in 2021 (27.94%) when compared to 2019 (18.07%); whereas there was decrease in suicides due to financial causes, mental stress, and petty issues during the study period of May to July, and there was no significant change in the pattern of suicides due to marital disputes, extra marital affairs, and property issues during the above mentioned study period [Table 6].

Table 1. Gender wise distribution of deaths.

Gender	July - November		May - July	
	2019	2020	2019	2021
Male	409 [85.03%]	329 [79.85%]	239 [80.20%]	206 [78.93%]
Female	71 [14.76%]	83 [20.15%]	59 [19.80%]	54 [20.69%]
Transgender	1 [00.21%]	0 [0.0%]	0 [0.0%]	1 [00.38%]
Total	481	412	298	261

Table 2. Age wise distribution of deaths.

Age in years	July - November		May - July	
	2019	2020	2019	2021
<10	7 [1.45%]	9 [2.18%]	7 [2.35%]	6 [2.30%]
11-20	34 [7.07%]	43 [10.44%]	18 [6.04%]	22 [8.43%]
21-30	99 [20.58%]	94 [22.81%]	72 [24.16%]	66 [25.29%]
31-40	116 [24.12%]	80 [19.42%]	63 [21.14%]	57 [21.84%]
41-50	95 [19.75%]	55 [13.35%]	51 [17.11%]	36 [13.79%]
51-60	74 [15.39%]	64 [15.53%]	49 [16.44%]	47 [18.00%]
>60	56 [11.64%]	67 [16.26%]	38 [12.75%]	27 [10.34%]
Total	481	412	298	261

Table 3. MLC deaths under various sections.

Section	July - November		May - July	
	2019	2020	2019	2021
174 Cr.P.C	307 [63.83 %]	277 [67.23%]	192 [64.43%]	175 [67.05%]
304-A IPC	154 [32.02%]	120 [29.13%]	93 [31.21%]	72 [27.59%]
304-B IPC	1 [0.21%]	0 [0%]	0 [0%]	0 [0%]
302 IPC	9 [1.87%]	7 [1.7%]	8 [2.68%]	8 [3.07%]
306 IPC	2 [0.42%]	7 [1.7%]	2 [0.67%]	3 [1.15%]
309 IPC	2 [0.42%]	1 [0.24%]	1 [0.34%]	2 [0.77%]
498-A IPC	3 [0.62%]	0 [0%]	1 [0.34%]	1 [0.38%]
176 Cr.P.C	3 [0.62%]	0 [0%]	1 [0.34%]	0 [0%]
Total	481	412	298	261

Discussion:

In both the 1st wave and 2nd wave periods, percentage of deaths is decreased in males whereas increased in females when compared to the study period in the pre-COVID year [Table 1]. The findings are contradictory to the studies conducted in lockdown period by

Table 4. Occupation of the deceased.

	July - November		May - July	
Occupation	2019	2020	2019	2021
Government Sector	4 [0.83%]	6 [1.46%]	2 [0.67%]	16 [6.13%]
Private Sector	58 [12.06%]	11 [2.67%]	50 [16.78%]	14 [5.36%]
Daily labour	308 [64.03%]	281 [68.2%]	166 [55.7%]	152 [58.24%]
Business	12 [2.49%]	9 [2.18%]	16 [5.37%]	1 [0.38%]
House wife	45 [9.36%]	58 [14.08%]	27 [9.06%]	30 [11.49%]
Student	20 [4.16%]	27 [6.55%]	7 [2.35%]	15 [5.75%]
Unemployed	27 [5.61%]	16 [3.88%]	12 [4.03%]	26 [9.96%]
Un mentioned	7 [1.46%]	4 [0.97%]	18 [6.04%]	7 [2.68%]
Total	481	412	298	261

Table 5. Comparison of manner of death.

	July - November		May - July	
Manner of Death	2019	2020	2019	2021
Suicide	140 [29.11%]	157 [38.11%]	83 [27.85%]	68 [26.05%]
Homicide	11 [2.29%]	7 [1.7%]	9 [3.02%]	7 [2.68%]
Accident	289 [60.08%]	207 [50.24%]	187 [62.75%]	167 [63.98%]
Natural	41 [8.52%]	41 [9.95%]	19 [6.38%]	19 [7.28%]
Total	481	412	298	261

Table 6. Motive for suicide among suicidal deaths.

Motive for Suicide	July - November		May - July	
	2019	2020	2019	2021
Financial	24 [17.14%]	18 [11.46%]	17 [20.48%]	12 [17.65%]
Mental stress	47 [33.57%]	45 [28.66%]	11 [13.25%]	8 [11.76%]
Marital disputes	24 [17.14%]	40 [25.48%]	21 [25.3%]	21 [30.88%]
Extra marital affairs	4 [2.86%]	3 [1.91%]	0 [0%]	0 [0%]
Petty issues	15 [10.71%]	25 [15.92%]	14 [16.87%]	6 [8.82%]
Property issues	2 [1.43%]	3 [1.91%]	2 [2.41%]	2 [2.94%]
Ill health	21 [15%]	19 [12.1%]	15 [18.07%]	19 [27.94%]
others	3 [2.14%]	4 [2.55%]	3 [3.61%]	0 [17.65%]
Total	140	157	83	68

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Patel Ankur P et al.,[6] Vijay arora et al.,[7] and Shinto Devassy et al.,[8] because of ethnic variations and lockdown regulations. The age wise distribution of deaths due to COVID-19 did not reveal any pattern [Table 2].

The number of road traffic accidents has decreased during both the 1st wave period and 2nd wave period [Table 3]. This could be due to the restrictions imposed by the government in view of COVID-19 and the fear among the people to go outside unless it is necessary.

There are varied patterns among all the sectors of occupation with significant and surprising changes among private sector and business [Table 4]. Decreased transport, work from home, psychological and physical stress, relief of staying home with the family could have resulted in such surprising results, but, in the contrary women staying at home have to go through lots of physical and psychological stress with all the family members staying home and also in homes where the bread winners are lost leaving the dependent wives and children devastated resulted in the rise of cases.

The number of suicidal deaths shows an increase during the 1st wave period [Table 5]. The financial uncertainty and anxiety caused by the pandemic led to the increase in suicides but by the 2nd wave time situations have become better resulting in the decrease of cases. The decrease in number deaths due to accidents corresponds with the decrease in number of road traffic accidents due to lock down and transport restrictions.

Though the unexpected and unwelcomed mental stress and financial crisis caused by the pandemic which was faced 1st time in the present generation led to the rise of suicidal cases during the initial stages [Table 6]. The change in perspective of public towards the crisis and methods to face it resulted in the decrease of cases during 2nd wave period. The psychological and physical stress increased due to staying home together with all family members might have led to increased marital disputes and petty issues resulting in the rise of cases.

Conclusion:

The financial crisis, psychological effects and lock down restrictions during the pandemic has led to significant change in the mortality patterns among the Medico legal cases. COVID-19 has affected all over the world and impacted people lives and economy. Our study highlights the effect of the pandemic on the mortality pattern in a developing country of India where people live on daily wages and the sudden change in the perception of life due to lockdown and restriction of movement. As World Health Organisation Director General gave an alert that world must be ready to respond to the next pandemic, governments should have an eye on psychological impact of policies taken during the times of pandemic on the public.

Conflict of interest: None

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