



## Epidemiology of reported suicidal attempts in rural areas of Sindh, Pakistan

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### ABSTRACT

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**Objective:** Suicidal victims often reach Intensive Care Units (ICU), if they manage to reach a hospital, and the anesthesiologist get involved in their management. We aimed to evaluate the incidence of suicidal patterns, methods being used and seasonal variations in the frequency of suicide victims admission at Intensive Care Unit (ICU) of Peoples Medical College Hospital (PMCH), Nawabshah (Pakistan).

**Study design:** Retrospective study

**Methodology:** A cohort study was conducted over a four and a half years (January 2014 to August 2018), including suicidal cases of both sexes received at ICU, PMCH, Nawabshah, from six districts of interior Sindh. Cases were selected on the basis of information from hospital record files after the approval of hospital ethical review committee. Findings were tabulated and analysed.

**Results:** This study revealed that out of a total of 685 cases, 391 (57.08%) were males and 294 (42.92%) were females. Eighty males (11.67%) and 68 (9.93%) females could not be survived while two cases (0.29%) were referred to Karachi during the study period. The highest incidence of suicidal attempts and suicidal deaths were 164 and 38 during 2017 and 2014 respectively. Males were the predominant victims of suicide with a male to female ratio of 2:1.7. The most common method used for suicide was poisoning 98.77% (n = 656) followed by hanging 3.21% (n = 22) and drug overdose 1.02% (n = 07). A seasonal surge in autumn (August 17.81%) was noted.

**Conclusion:** Males were the predominant victims of suicide in rural areas of interior Sindh Province of Pakistan. The most common method used for suicide was poisoning.

**Key words:** Suicide; Poisoning; Hanging; Mortality

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## INTRODUCTION

Suicide is an intentional action to end one's own life.<sup>1</sup> The suicide tendency is higher in societies where majority of people live socially isolated; it is comparatively less in cultural rich and religious societies as the cultural and religious customs and traditions may provide some solution to day

to day worries. The discrimination, poverty, and unemployment are considered fundamental socio-economic root causes which usually trigger the suicidal intentions in disappointed segments of our society. The youngsters, who are upset due to failure to achieve their life goals and those with broken relationships are prone; while in the elders the financial and health problems and the loss of the

**Table 1: Year wise distribution of suicide attempt**

Year	No. of Suicidal attempts			Incidence per month	No. of Suicidal deaths			Incidence per month	Referred to Karachi
	M	F	Total		M	F	Total		
2014	100	61	161	13.42 ± 2.08	27	11	38	3.25 ± 1.86	01
2015	91	68	159	13.25 ± 7.66	16	14	30	2.5 ± 1.78	-
2016	60	68	128	10.67 ± 4.12	13	20	33	2.75 ± 1.82	01
2017	88	76	164	13.67 ± 9.21	13	16	29	2.42 ± 1.88	-
2018	52	21	73	12.17 ± 3.90	11	07	18	3.17 ± 1.67	-
Total	391	294	685	12.68 ± 1.24	80	68	148	2.78 ± 0.374	02

loved ones are the usual causative factors.<sup>2,3</sup>

Suicide is persistently in world top ten prominent causes of death.<sup>4</sup> Annually more than 804,000 people die by suicide worldwide.<sup>4</sup> In 2015 the highest suicidal rate was observed in Europe. The suicide mortality rate by poisoning is higher in Pakistan among developing countries.<sup>1</sup> The non-fatal suicidal attempts in young people and females, common in the Western world, leads to long term disabilities.<sup>5</sup> Firearms, hanging, drug overdose, intoxicants and poisons are the suicidal tools commonly used in different countries of the world according to the availability of the means. The males mostly use hanging, while in female self-poisoning is common practice for suicidal attempts.<sup>6</sup> In other countries different methods are used.<sup>7,8</sup> The organophosphate and parphenylenediamine are self-destructive agents which killed number of people in Pakistan<sup>9,10</sup>.

Very few studies were conducted about the trends of suicides epidemiology in Pakistan and no study was conducted about rural areas of Pakistan to the best of our knowledge. This study evaluated the incidence of suicide patterns, methods being used and seasonal variation in rural population of Sindh.

## METHODOLOGY

This retrospective study conducted at ICU, Peoples Medical College Hospital (PMCH), Nawabshah (Sindh-Pakistan) included all cases known as suicidal attempt in PMCH patient record files from January 2014 to August 2018. The area of drainage of this hospital included the different rural areas of six districts of Sindh;

- 1: Shaheed Benazirabad (Sakrand, Nawabshah, Qazi Ahmed, Bandhi, Duar Bucheri, Jam Sahib, Daulatpur)
- 2: Khairpur (Mirwah, Gambat, Nara, Pacca Chang, Akari)
- 3: Nowshahro Feroze (Bhiria, Kandiaro,

Mehrabpur, Padiden, Moro, Tharu Shah)

- 4: Dadu (Mehtar, Khairpur Nathan Shah, Dadu, Johi)
- 5: Matiari (Hala, Saeed Abad) and
- 6: Sanghar (Shahdadpur, Tando Adam, Sarhari, Shahpur Chakar, Khipro, Bhit).

Ethical approval was obtained from the university ethical committee. The cases were grouped on the basis of sex, method of suicide employed and the season during which the suicide occurred. Data are presented in tables and graphs.

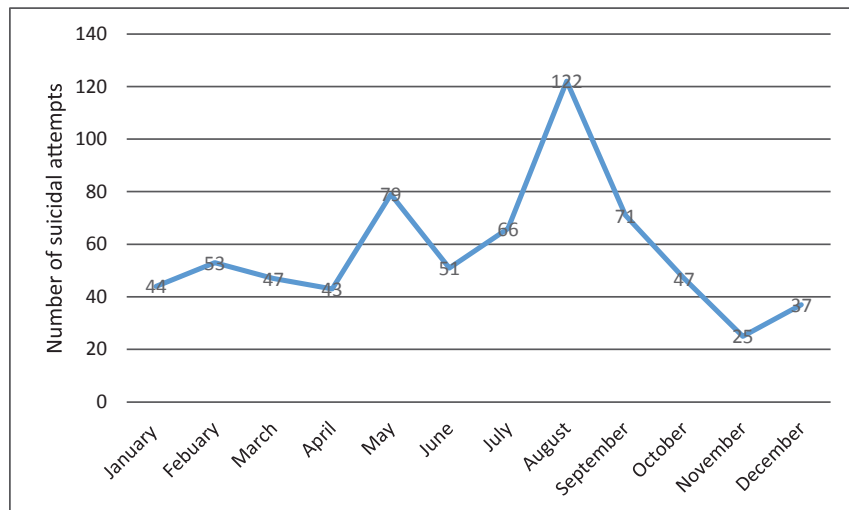
## RESULTS

A total of 685 cases of attempting suicide occurred during the study period of January 2014 to August 2018. It was observed that during this period a total of 685 persons attempted suicide, out of which 57.08% (n = 391) were males and 42.92% (n = 294) females, while 20.46% (n = 80) of males and 23.13% (n = 68) females expired. Two cases (0.29%) were referred to Karachi during this study period.

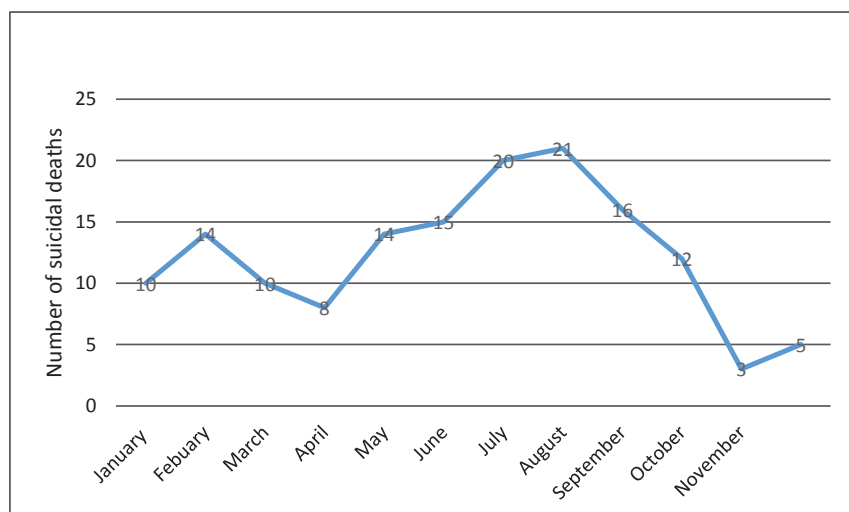
The highest incidence of suicide attempt was during 2017 (n = 164), where an average of 13.67 ± 9.21 suicide attempts were recorded every month and the lowest was during 2016 (n = 128) when an average of 10.67 ± 4.12 suicide attempts were reported per month. The highest incidents of suicidal deaths occurred during 2014 (n = 38) where an average of 3.25 ± 1.86 person died every month and one case was referred to Karachi. The lowest incidence of suicidal deaths was during 2017 (n = 29) where an average of 2.42 ± 1.88 people died per month. The mean attempt suicides for the study period per month was 12.68 ± 1.24 person while mean suicidal death was 2.78 ± 0.374 people per month (Table 1). Males were the predominant victims of suicide with a male to female ratio of 2:1.7

The most common method used for suicide was poisoning (including Para Phenylenediamine (kala

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**Figure 1: Seasonal variation in suicidal attempts**



**Figure 2: Seasonal variation in suicidal deaths**

organophosphate pesticides, kerosene oil, diluted sulphuric acid (battery water) and anti-lice drugs), which was used by 95.77% (n = 656) people. This was followed by hanging in 3.21% (n = 22) and drug over dose (methyl alcohol, ethyl alcohol, opiates i.e morphine) in 1.02% (n = 07). No suicidal cut of neck region/wrists or groin and firearm was noticed during our study time period.

Poisoning as the method of suicide was especially more in females (61.11%) as compared to male (38.89%) while the preference for hanging as a method of suicide was especially dominant in males where 60.87% hung themselves compared to 39.13 % of females.

We noted a seasonal variation with peak suicidal attempt incidence in the months of May, August and

September. These months collectively constituted 38.83% (n = 266) of the total suicidal attempts with August having the highest of 17.81% (n = 122) and with November having lowest of 3.65% (n = 25) of the total attempts (Figure 1).

A seasonal variation was also observed with peak incidence of suicidal deaths in the months of August, July and September respectively. These months collectively constituted 57 (38.51%) of total suicides with August having the highest of 21 (14.19%), November had the lowest of 3 (2.03%) of the total deaths (Figure 2).

## DISCUSSION

Current study revealed the frequency of suicidal attempts and suicidal deaths through various means like using different poisons, drug overdose and hanging. These suicidal trends of the people were investigated in the intensive care unit of Peoples University of Medical & Health Sciences and the focused population was the inhabitants of rural areas of six districts of, Sindh.

The most common poisons and drugs were organophosphate, parphenylene-diamine, anti-lice drugs, morphine, methyl alcohol, ethyl alcohol, diluted acid (battery water) etc. Furthermore, organophosphates and parphenylene-diamine were found common source of poisoning in females and the ratio of hanging was greater in male segment.<sup>2,5,6,7</sup>

Our study showed a higher prevalence of suicidal attempts (n = 685) and deaths (n = 148) in rural areas of Sindh than that of urban cities of Pakistan (suicidal deaths n = 95) within 5 years of study period.<sup>11</sup>

The suicidal trends in the masses are inter-linked with social, moral, religious and cultural values of the society. Because of these values the suicidal incidences and approaches vary from nation to nation and are also dissimilar in different regions.<sup>8,12</sup> The development and rapid urbanization lead to detach

the social identity of the masses and evolve the seed of disappointment. Due to this reason the ratio of self-inhalation is greater in developed countries like United Kingdom, USA, Singapore, Switzerland and China,<sup>5,6,8,13,14</sup> rather than underdeveloped areas like Malay, Nigeria and Malaysia etc.<sup>7,15,16</sup>

The religious belief is a fundamental ray of hope which induces the optimism in the mankind. It minimizes the feeling of hopelessness, thus preventing the very idea of the suicide. Islamic teachings strictly prohibit the self-killing. In fact, all of the religions of the world have same instructions regarding the prohibition of suicide.<sup>12,17</sup>

Number of studies reported the prevalence of poisoning greater in females as compared to males. On the other hand, some studies reported an equal ratio of suicidal incidence in both males and females.<sup>11,17,19,20</sup> Our studies showed the gender ratio of male to female was 2:1.7, which reflects the accepted view of male dominance and has also been reported in the studies of many other countries and in Pakistan.<sup>2,5,6,12,13,17,22,23</sup>

The poisoning, hanging and over-dose in that order were the three most common methods of suicide in our study. The results of our study contrary to the reports of other studies which was conducted time to time especially in the urban areas of Pakistan. According to the results of some other studies, poisoning and hanging were common methods of suicides.<sup>10,12,14,17,21,24,25</sup> Although there can be various factors on the basis of which some susceptible individuals get so hopeless and disappointed that they plan to take their life, an unrestricted availability of medication and poisons also acts as a significant risk to increase the number of suicidal deaths. Specially pesticides are one of the easiest access suicidal tool for the people living in the rural areas.<sup>11,15</sup>

Majority of the studies available in the literature

belong to the main urban centers of the country, and there is dearth of data from rural areas, despite the fact that almost two-thirds of the population in Pakistan lives in rural areas. Since suicide has been designated as a criminal act by law in Pakistan, this further poses a big hindrance in accurate data collection. The lack of certification of suicidal death in Pakistan and socio-political influence on suicidal investigation are serious weaknesses to register the data of self-killing. The suicide risk prevention strategy of WHO should be implemented for the limited access to the toxic agents. The use of least toxic pesticides is one of the important recommendation of WHO could be helpful in suicide prevention in Pakistan.<sup>15,18</sup>

## LIMITATIONS

Our study was limited by lack of data on other variables such as age, marital status and socioeconomic conditions etc.

## CONCLUSION

Males were the predominant victims of suicide. The most common method used for suicide in rural areas is poisoning. Seasonal variation with peak incidence of suicidal attempts is in the months of August, May, and September while peak incidence of suicidal death has been noted in the months of August, July and September in the rural Sindh.

**Conflict of interest:** Nil

**Authors' contribution:**

MSK: Survey, literature searches, approved the final manuscript

SS: Edited the final manuscript

MM: Wrote the protocol and first draft

RI & RT: Concept, performed statistical analysis

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