

# Case fatality rates of different suicide methods within Ilam province of Iran

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## ABSTRACT

**Background:** There are few diverse studies that have reported the case fatality rates of different methods of suicide, none of them are originated from developing countries. The aim of the present article is to report the case fatality rates of different methods of suicide in Ilam province of Iran. **Materials and Methods:** Data on 611 cases of suicide and 1807 cases of deliberate self harm (DSH) that were recorded in a comprehensive registry during 1995 through 2002 were analyzed for both genders together and for males and females, separately. **Findings:** For both genders together, the two most fatal methods were hanging (75.4%) and self-immolation (68.3%); for males, hanging (76.3%) and self-immolation (64.7%); and for females, firearms (75%) and hanging (73.7%), respectively. The least fatal methods for both genders together and for females and males separately were drug ingestion and cutting. **Conclusion:** The results of present study, which for the first time has reported the case fatality rates of suicide methods in a developing world, would not only help to better plan the local suicide prevention strategies and clinical assessment of suicidal cases but to shed light on overall understanding of this mysterious human phenomenon.

**Key words:** Case fatality rate, deliberate self harm, Ilam, methods, suicide

## INTRODUCTION

There are few diverse studies that have reported the case fatality rates of different methods of suicide in developed countries.<sup>[1-4]</sup> Having identified the case fatality rates of different methods of suicide, it would help a researcher in the area of suicide studies to have a better understanding of this rather mysterious phenomenon. Moreover, local suicide prevention strategies and

clinical assessment of suicidal cases would better plan based on knowing the case fatality rates of different methods of suicide.<sup>[1]</sup>

Developing countries due to a number of reasons (e.g. less reliable existing data on suicide and deliberate self harm (DSH), difficulty in writing in English, etc.) are less contributed to the international body of knowledge regarding suicide. This is more apparent, especially in determining case fatality rates of different methods of suicide. In this article, therefore, we are going to report for the first time the case fatality rates of different methods of committing suicide including self-immolation or self-burn from Ilam province of Iran.

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## MATERIALS AND METHODS

Ilam province is located in the north-west part of Iran [Map 1]. This province is famous for having a high suicide rate among all other Iranian provinces. What makes the suicide pattern in Ilam province as a unique pattern is applying self-immolation as one of the most important method, especially among young illiterate, deprived women.

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For having a better picture of this unique pattern, a comprehensive registry was established in Ilam province during 1995 through 2002. In this registry, the information about all suicide and DSH cases that occurred within Ilam province were recorded based on a multiple sources including Ilam Bureau of Statistics records, emergency medical services records, hospital records, police records, and forensic medicine records. A careful coordination was applied between different sources in order to avoid any duplications or missing.

It should be noted that a number of articles either in national language (Persian)<sup>[5-7]</sup> or international language (English)<sup>[8]</sup> were published to inform authorities, scientists, and people about the unique pattern of suicide in this province. In the present article, however, we report the case fatality rates of different methods of suicide that were never been already published in any languages.

### Findings

Table 1 highlighted the case fatality rates of different suicide methods within Ilam province of Iran in both genders together and in females and males, respectively. According



Map 1: The geographical location of Ilam province of Iran

to this table and during the period of investigation, 611 cases of suicide (438 females vs. 172 males) have occurred in Ilam. Similarly, 1807 cases of DSH (1074 females vs. 728 males) have also occurred in Ilam. It should be noted that the gender of one suicide case and five DSH cases were missing. The case fatality rates for all method were 25.3% for both genders together and 29% and 19.1% for females and males, respectively.

For both genders together, the two most fatal methods were hanging (75.4%) and self-immolation (68.3%), respectively. The same pattern has occurred for males i.e. hanging (76.3%) and self-immolation (64.7%); while in females, the two most fatal methods were firearms (75%) and hanging (73.7%), respectively. The least fatal methods for both genders together and for females and males separately were drug ingestion and cutting, respectively.

### DISCUSSION

The overall case fatality rate in our study was 25.3%, which was substantially higher than 16.9% reported by Chen *et al.* in 2009,<sup>[1]</sup> 12% reported by Elnour and Harrison in 2008,<sup>[2]</sup> and 13% reported by Miller *et al.* in 2004.<sup>[3]</sup> Moreover, the case fatality rates in our study were higher in females compared to males. These findings were also different from those reported by other investigators that the case fatality rates in their study were higher in males compared to females.<sup>[1-3]</sup>

Therefore, these findings highlight a unique pattern in Ilam province with a very high overall case fatality rate and a higher fatality rate for women. As a result, designing prevention strategies as well as clinical assessment of suicidal cases in this province should take these important findings into account.

We have also found that hanging (75.4%), self-immolation (68.3%), and firearms (65%) are the most fatal methods. These findings are somehow relevant for males and females, separately. Chen *et al.* in 2009<sup>[1]</sup> reported hanging as the most fatal method (81.5%), while Elnour and Harrison in 2008<sup>[2]</sup> reported firearms as the most fatal method (90%) followed by

**Table 1: Case fatality rates of different suicide methods within Ilam province of Iran for both genders and females and males separately**

Method outcome	Poison ingestion	Drug ingestion	Hanging	Firearms	Cutting wrist nerve	Self-immolation	Others	Total
<b>Both Genders</b>								
Suicide (n)	51	30	43	26	0	434	27	611
DSH (n)	427	1042	14	14	13	201	96	1807
Case fatality rate (%)	10.7	2.8	75.4	65	0	68.3	21.9	25.3
<b>Females</b>								
Suicide (n)	29	14	14	6	0	361	14	438
DSH (n)	253	612	5	2	4	160	38	1074
Case fatality rate (%)	10.3	2.2	73.7	75	0	69.3	26.9	29
<b>Males</b>								
Suicide (n)	22	16	29	20	0	72	13	172
DSH (n)	173	428	9	12	9	39	58	728
Case fatality rate (%)	11.3	3.6	76.3	62.5	0	64.7	18.3	19.1

hanging (83%).<sup>[2]</sup> Miller *et al.* in 2004<sup>[3]</sup> also reported firearms as the most fatal methods (91%) followed by drowning (84%) and hanging (82%).

Although there are some consistencies between our findings with other studies in reporting hanging and firearms as two most fatal methods, there are also some inconsistencies as well. For instance, the case fatality rates of hanging and firearms in our study are less than figures reported by other studies.

Furthermore, we are also reporting a unique unusual higher use of self-immolation method with a high case fatality rate. Evidence suggests that this type of committing suicide almost happen in developing countries including India and Middle Eastern countries. The pattern that usually occurs in such countries is as such that some young deprived women who are married and not well-educated are more prone to choose this fatal method.<sup>[9,11]</sup>

Studies that were carried out in different settings have shown that suicide might occur due to the copycat phenomenon.<sup>[12,13]</sup> This means that by educating the more prone people, one might be able, at the very least, shifting them to use other methods of suicide.<sup>[14]</sup>

However, one should bear in mind that this approach is not aimed at evaluating the root causes of suicide. Therefore, providing an opportunity for education, mental health care, opportunity for economical progress, eradication of poverty in its bigger concept are among strategies that help to tackle the root causes of suicide in developing countries.<sup>[15,16]</sup>

## CONCLUSION

Present study for the first time has reported the case fatality rates of suicide methods, especially self-immolation based on a comprehensive registry in a developing country. The results of such studies would not only help to better plan the local suicide prevention strategies and clinical assessment of

suicidal cases but to have an overall understanding of this mysterious human phenomenon.

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