A View to Mortality Due to Poisoning Cases in Forensics Center of Kermanshah in 2006-2012

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Abstract: Nowadays, mortality due to poisoning is one of the serious health problems of every society which requires high concern and broad studies on health grounds. One of the basic yet important ways in preventing intoxication and its consequences is to identify and control its influencing factors so as to reduce the number of poisoned cases including those lead to death. Considering the importance of this issue, the present study tries to analyze cases led to deaths due to poisoning and referred to Medical Centers in Kermanshah, during 2006-2012. This is a descriptive study carried out based upon recorded biopsy information about poisoned cases referred to forensics center of Kermanshah during 2006-2012. The gathered data are analyzed using SPSS software, version 21. 70.6% of observed cases are men considering that, during the studied period, male cases are more prone to death due to toxication. Most of the deceased cases, both males (63.6%) and females (57.5%), are young. Between 2006 and 2012, the sex ratio criterion is reduced then in 2012 it goes up again. 17.6% of the studied cases are illiterate and most of the death mortalities (30.4%) are due to drug use. Since adolescents, young and middle-aged, to some extent, are endangered, the subject needs to be analyzed from different perspectives to identify toxicity risk factors, which are mainly changing, so as to prevent occurring such problems in the society.

Key words: Mortality • Poisoning • Forensics Center

INTRODUCTION

Mortality poisoning is one of serious health problems of every society which requires high concern and broad studies on health grounds since many significant and sometimes unsolvable problems lies in it which increases the importance of considering this issue. In recent decades, quantity and quality of chemical compounds have constantly been improving; with regard to the definition of toxins, these compounds are called poison. Regarding different uses of these chemical compounds, after being produced and synthesized, they have been imported to most of the countries (Including Iran) in an uncontrollable way to be easily available to the public.

Due to job ground and many other reasons, people may be exposed to poisonous compounds, whether intentionally or unintentionally. If toxins doses exceed the limits, it may lead to death or give rise to many critical problems.
Moosavi et al. [1] proved that intentional poisoning is more common among young people. Afzali et al. [2] conducted a study in Hamedan and concluded that, in this city, poisoned cases died because of high rate of using pesticides and opioids. Death of male cases was five times more than females’. Most of poisoned dead people were between 21 and 30, with a mean age of 40.5, when died mainly because of respiratory problems. In another study Najjary et al. [3], studied poisoned cases referred to forensics center of Kermanshah in 2001 arguing that 0.2 to 0.5% of death cases are poisoned because of using drugs and medicines. Death rate among women is 1/6, most of them were single, aged between 21 and 30 and being poisoned through injection. Yeganeh et al. [4] conducted another study arguing that, during 1991-2001, poising trend has been upward and the number of poisoned cases has been constantly increasing. They believe that removing arsenic from chemical compound used for cleaning significantly reduced death caused from contact by these compounds.

Attaran et al. [5] concluded in their study in Mashhad that mortality due to poisoning occurs mainly those between 16 and 25 years old; the most common cause of poisoning is drug use; it occurs mostly in spring; and among intoxication ways, oral use is most common (76%). Another study carried out by Sarjamee et al. [6], in which they find out young people have poisoned themselves intentionally; girls are more prone to advertent poisoning; literally, poisoned cases are high school students; and rate of prevalence is also higher among single rather than married ones. With respect to deaths from carbon monoxide poisoning, Samadi rad and Mehrara[7] in their study conducted in Tabriz stated that 3.7% of poisoned cases died from CO smelling, mainly aged between 21 to 30 and the highest rates of poisoning belongs to self-employed workers, housewives and students.

Investigating the most common causes of mortality due to poisoning indicated that drugs (11.9%), organophosphates (11.4%) and gramaxon (9.4%) are more prevalent while the maximum rates belongs to Cyanide (33.33%), gramaxon (18.93%) and organophosphates (4.01%). 43.32% of deceased cases are died for reasons other than poisoning. In 35.47% cases, primary diagnosis in clinic is entirely consistent with the final diagnosis based on the findings of autopsies [8]. One of the basic yet important ways of preventing toxicity and its consequences is to analyze the obtained data based on factors such as age, sex, education level, place of residence, etc. doing so allows us to identify and control factors causing toxicity in order to reduce mortality rates among poisoned people. With regard to the importance of this issue, we are to study poisoned cases led to death after referring to medical center of Kermanshah.

MATERIALS AND METHODS

After death, poisoned cases are transferred to the forensic for legal procedures. After getting required information from dead ones’ relatives, biopsy and different tests is performed in order to make clear and record the death reason.

This is a descriptive study carried out based on data recorded on poisoned cases led to death in forensic center of Kermanshah, during 2007-2012. We tried to gather detailed information recorded on documents of dead cases about toxic substance, drugs, medicine, or any other chemicals they have used for self-poising or they have been exposed to, including: age, sex, marital status, education level, ways of poisoning, location, year, country of residence, job, used chemicals and history of drug abuse. Thereafter, data are analyzed using SPSS software (Version 21).

RESULTS

70.6% of observed cases are male which include 75.6% of cases referred in 2012. In all studied period, mortality rate due to poisoning is higher among male cases. The highest rate of mortality belongs to 2008 with 21.6%. Most of the deceased cases among both male (63.6%) and female (57.5%) groups are young, so the highest rate of mortality is seen among youth people (61.8%).

Investigating sex ratio during 2007-2011 indicates a decreasing trend but we observe an increasing trend in 2012. Among aged group, this criterion reaches to 5.3% (Table 1).

17.6% of observed cases are illiterate and the rest are educated (82.4%). Most of the deaths caused by poisoning occurred due to drug abuse (30.4%) (Tables 2 and 3).
Table 1: Distribution of deaths recorded in forensic center of Kermanshah due to poisoning, based on age and sex (During 2007-2012)

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
<th>Total</th>
<th></th>
<th>Sex Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1386</td>
<td>38</td>
<td>74.5</td>
<td>13</td>
<td>25.5</td>
<td>51</td>
<td>17.2</td>
<td>2.9</td>
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<tr>
<td>-1387</td>
<td>47</td>
<td>73.4</td>
<td>17</td>
<td>26.6</td>
<td>64</td>
<td>21.6</td>
<td>2.8</td>
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<tr>
<td>-1388</td>
<td>29</td>
<td>69</td>
<td>13</td>
<td>31</td>
<td>42</td>
<td>14.2</td>
<td>2.2</td>
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<tr>
<td>-1389</td>
<td>28</td>
<td>68.3</td>
<td>13</td>
<td>31.7</td>
<td>41</td>
<td>13.9</td>
<td>2.2</td>
</tr>
<tr>
<td>-1390</td>
<td>33</td>
<td>62.3</td>
<td>20</td>
<td>37.7</td>
<td>53</td>
<td>17.9</td>
<td>1.7</td>
</tr>
<tr>
<td>-1391</td>
<td>34</td>
<td>75.6</td>
<td>11</td>
<td>24.4</td>
<td>45</td>
<td>15.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Total</td>
<td>209</td>
<td>70.6</td>
<td>87</td>
<td>29.4</td>
<td>296</td>
<td>100</td>
<td>2.4</td>
</tr>
</tbody>
</table>

- Age Group:
  - Childhood: 6, 7.7%, 7, 8%, 13, 4.4%
  - Adolescence: 23, 11%, 15, 17.2%, 38, 12.8%
  - Youth: 133, 63.6%, 50, 57.5%, 183, 61.8%
  - Midlife: 26, 12.4%, 11, 12.6%, 37, 12.5%
  - Old age: 21, 10%, 4, 4.6%, 25, 8.4%

Total: 209, 87, 100, 296, 100, 2.4%

-Poisoning compounds:
- Drugs: 77, 36.8%, 13, 15.1%, 90, 30.5%
- Pesticides: 44, 21.1%, 27, 31.4%, 71, 24.1%
- Medicines: 42, 20.1%, 20, 23.3%, 62, 21.0%
- Suffocating gases: 42, 20.1%, 24, 27.8%, 66, 22.4%
- Detergents and cleaning materials: 3, 1.4%, 1, 1.2%, 4, 1.4%

Total: 209, 100, 86, 100, 295, 100
DISCUSSION AND CONCLUSION

The highest and lowest rate of mortality belongs to 2008 and 2010, respectively. Mortality rate, during the rest of this period, is between these two years. Number, variety and other poisoning factors depend on social, cultural, political, or economic status of each society. Thus, the pattern may be different with respect to time and society. Clearly, number, variety and other poisoning factors would not be the same for every society at every time [4]. In Kermanshah, during the study period, the number of mortalities due to poisoning is relatively the same which reveals zero changes in affecting parameters. Yeganeh et al. [4] proved that mortality trend due to poisoning was increasing during, 1991-200; poisoning materials include drugs, plant pesticides and medicines.

Mortality rate among male cases, during the period of study, is several times more than female cases, 70.6% and 29.4%, respectively, which is indicative of a non-stable trend since females’ death exceeds males’ in some periods. Higher mortality rate, in either sex, depends on several factors such as used material dose, type of toxin, individual sensitivity, etc. Yet for children, this is not the case. As regards, among children, mortality due to poisoning is the same in both girls and boys. While, based on a study conducted by Clemente Rodriguez et al. [9] on differences in acute toxicity in men and women, there is no such a difference among sexes: male 56.6% and female 43.4%. Senanayake and Peiris [10] indicated that male versus female rate of mortality due to poisoning is 3 to 1. According to Bohnert et al. [11], mortality caused by poisoning among males is more than females; however, this is a decreasing trend moving toward a balanced state. The study also proves that the number of women bearing the family labor is on the rise.

As observed, the highest rate of mortality due to poisoning belongs to young ages when males are more to poisoning rather than girls. Studies indicate that rate of prevalence and subsequent mortality in this age group is much higher than the others [10, 12-15] as opposed to children and aged group in which the rate is not significant.

With respect to education level, the highest rate of mortality is observed among guidance school student who are young unlike diploma and educated people who had the lowest rate of mortality which reflect the role of education and learning in reducing death rate due to poisoning. Many conducted studies emphasized the relationship between education level and its role in preventing toxicity [6, 7].

In the order of priority, drugs, pesticides, medicine and suffocating gases, may be a poison which leads to death. Most of the researchers reached to this conclusion, with a slight difference, so they emphasize the role of poisoning substances [16-19] because they are easily accessible and people may abuse them in case of having enough motivation for self-poisoning. The reason of being poisoned depends on the age level is different; pesticides in aged people, drugs in middle aged, drugs and pesticides in young people, drug in adolescents and suffocating gases in children. The relationship between age and type of poisons has been investigated many times so far. Except suffocating gases, all other poisons are used far more among males rather than females. Using suffocating gases has had a decreasing trend during 2007 to 2011, probably due to educating people and making awareness. All other studied poisons have been used during these years and poisoned many people; Illiterate people by using pesticides, elementary students by drugs, guidance and high school students by drugs and pesticides, diploma’s by drug and higher educated people by suffocating gases have been poisoned.

Mortality due to poisoning occurs at ages between 15 and 45 which is more common among males. Drugs and pesticides play a greater role in poisoning students, i.e. young, adolescent and middle aged people are endangered. This should be carefully investigated and analyzed from different aspects in order to identify toxicity risk factors, that are mainly changeable and prevent the incidence of such problems.

REFERENCES


