

## Hanging as a method of suicide: a retrospective study

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### ABSTRACT

**Objectives:** Hanging is a common cause of death worldwide as well as a method of suicide with a high fatality rate, In this retrospective study, data were obtained from cases of hanging reported to Department of Forensic Medicine at the province of Basrah, Iraq, in order to analyze the characteristics of hanging, to focus on its distribution by gender, age groups, marital status, the place of occurrence of the incident, ligature types used, autopsy findings and manner of death, and to determine the possible causes of hanging fatalities over the period of the study, in addition to various other associated factors with the aim to find out which individuals are more prone to death by hanging and to explore the potential control and preventive measures.

**Methodology:** Over a period of seven years, from January 2010 to December 2016. data from autopsy reports, together with information from police investigation reports and history obtained from relatives were used in this study.

**Results:** A total of 184 forensic autopsies were conducted on cases of death due to hanging during the period of the study. The highest proportion of hanging cases was suicidal in nature (86%). Twenty eight percent of the suicidal hanging victims were in their 3<sup>rd</sup> decade of life, and the incidence rate of hanging among female and male victims was almost equal, female to male ratio was 1.1:1.

**Conclusion:** Hanging is a common cause of suicide in our society, especially among young individuals. Prevention of death by hanging is not easy since different types of materials can be used as a ligature.

**Keywords:** Hanging, suicide, Basrah

### دراسة استيعادية لحالات الانتحار بواسطة الشنق

**المقدمة:** يعتبر الشنق سببا شائعا للموت في العالم وطريقة انتحار بمعدل وفيات عالي وفي هذه الدراسة تم اخذ المعلومات من خلال حالات الوفيات شنقا الواردة الى قسم الطبابة العدلية في محافظة البصرة في العراق لغرض تصنيف الحالات وفقا للجنس والفئات العمرية والحالة الزوجية ومكان الحادث ونوع الرباط المستخدم وطبيعة الحادث لتحديد اسباب الوفيات عن طريق الشنق واكثر الاشخاص عرضة للموت شنقا لغرض اكتشاف طرق الوقاية والسيطرة.

**طريقة العمل:** خلال سبعة سنوات من كانون الثاني ٢٠١٠ الى كانون الاول ٢٠١٦ تم اخذ المعلومات من التقارير التشريحية وتقارير الشرطة اضافة الى المعلومات التي تم اخذها من اقارب المتوفين.

**النتائج:** أجريت ١٨٤ عملية تشريح لوفيات ناتجة عن الشنق خلال فترة الدراسة وكانت الغالبية العظمى لحالات الشنق هي ذات طبيعة انتحارية (٨٦%) وسبع وعشرون بالمئة من ضحايا الشنق الانتحاري هم في العقد الثالث من العمر وكانت نسبه وفيات الاناث مقاربه الى نسبة وفيات الذكور.

**الاستنتاج:** يعتبر الشنق سببا شائعا للموت الاختناقي في مجتمعنا وخاصة بين فئة الشباب اذ يمكن استخدام مواد مختلفة واستعمالها كرباط للشنق مما يجعل من الصعب السيطرة عليه.

**الكلمات المفتاحية:** الشنق، الانتحار، البصرة

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## INTRODUCTION

**H**anging is the suspension of the body by the neck with a ligature, and the pressure of the ligature on the neck is produced by the weight of the body. It has been used as a capital punishment since medieval ages, <sup>[1]</sup> and it was a suicidal method in primitive and pre-industrial societies. <sup>[2]</sup> A thin rope around the neck will produce unconsciousness in 15 seconds, and death occurs within few minutes, <sup>[3,4]</sup> which may occur due to asphyxia, cerebral anoxia, vagal inhibition or injury to the spinal cord. <sup>[5,6]</sup> Hanging is one of the 10 leading causes of death in the world, with more than million deaths annually, <sup>[7]</sup> it's one of the most common methods of suicides worldwide and it's particularly favored by men. <sup>[8]</sup> Homicide in cases of hanging is very rare in adult victims unless intoxicated or made unconscious, but a person maybe murdered and the body suspended to simulate suicide, while accidental hanging deaths usually occur in children and sometimes in adult (autoerotic hanging). <sup>[9]</sup> In this study, data were collected retrospectively from cases of death due to hanging over a period of seven years in Basrah, Iraq, in order to review the incidence of hanging, identifying the associated factors and to explore the magnitude of the problem with the possible means of intervention.

## MATERIAL AND METHODS

In this retrospective study, data were obtained from cases of hanging reported to the department of Forensic Medicine in Basrah province, Iraq over a period of seven years, from January 2010 to December 2016. Data from autopsy reports along with information from police investigation reports and history obtained from relatives were analysed according to age groups, gender, type of ligature, occupation, place and time of death, place of incident, autopsy findings, manner of death, details of toxicology report and previous psychiatric history. Cases of judicial hanging were not included in this study.

## RESULTS

The present study revealed a total of 184 cases of death due to hanging over a period of seven years at Basrah province. These hanging cases constituted 2% of the total autopsies performed during that period. Cases of hanging in females were 81(51%) and 78(49%) in males, the mean age for both male and female was 22(ranging from 6 to 63). In majority of victims 159(86%), autopsy findings and investigation reports revealed that the manner of death was suicide, 11(6%) was identified as accidental hangings, while manner of death in the remaining 14(8%) cases was classified as undetermined (Fig.1). In suicidal hangings, 44 victims (27%) lie within 21-30 age groups (Table-1).

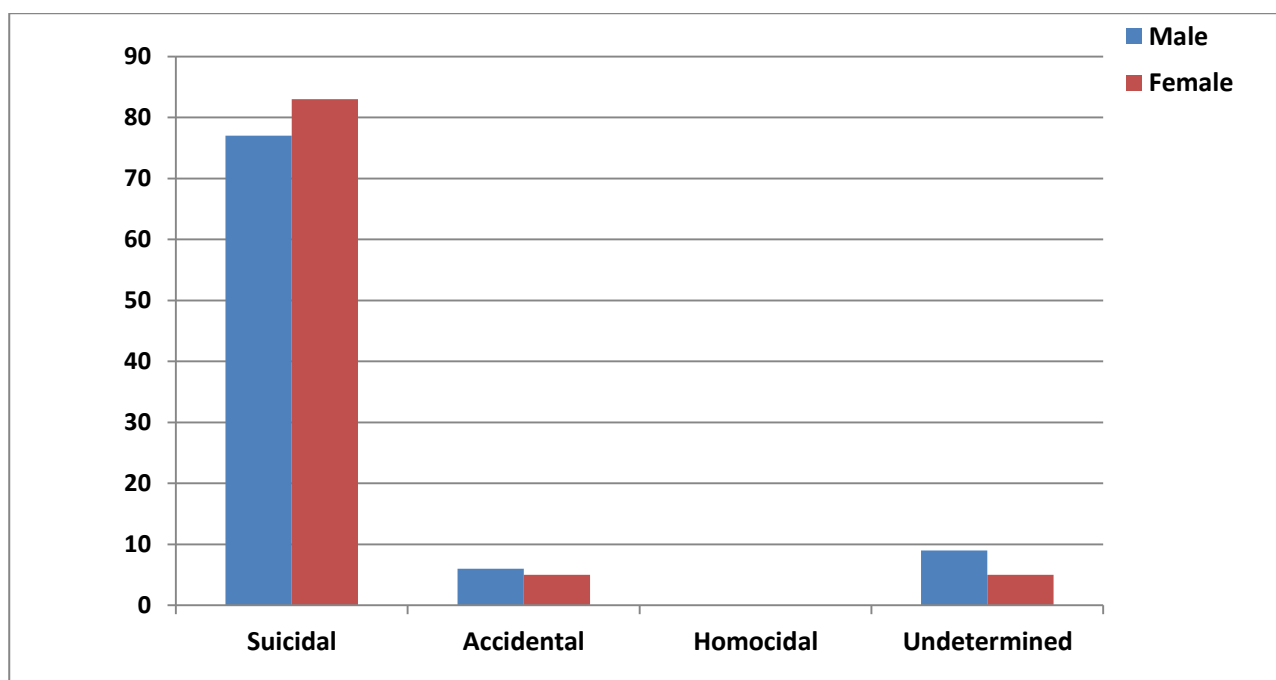


Fig 1. Manner of death

Table 1. Age groups and sex distribution of suicidal hangings.

Age group Total years No. (%)	Males No. (%)	Females No. (%)	Total No. (%)
< 10	0 (0)	0 (0)	0 (0)
10 – 20	16 (10)	18 (11)	34 (21)
21-30	21(13)	23 (14)	44 (27)
31 – 40	15(9)	17 (11)	32 (20)
41 – 50	12(8)	11 (7)	23 (15)
51 – 60	8(5)	9 (6)	17 (11)
> 60	6(4)	3 (2)	9 (6)
<b>Total</b>	<b>78(49)</b>	<b>81 (51)</b>	<b>159 (100)</b>

Nearly half of the victims (48%) were found fully suspended in a position of complete hanging, and different types of materials was used as a ligature, in about half of the victims (44%), ligature used was clothes, followed by electric wires 48(26%), rope in 39 (21%), and other materials 16(9%), (Table-2). In the vast

majority of cases 172(93%), the place of hanging was their own residency, particularly their own room or bathroom, the remaining occurred in random indoor and outdoor places. Regarding time during the day most of incidents (80%) took place between 3pm and 3am.

**Table 2. Ligature types.**

Ligature type No. (%)	Males No. (%)	Females No. (%)	Total No. (%)
Clothes	33 (18)	48 (26)	81 (44)
Electric wire	26 (14)	22 (12)	48(26)
Rope	22(12)	17 (9)	39(21)
Other materials	9(5)	7(4)	16(26)

In postmortem examination, all victims showed dryness of skin under ligature mark, while petechial hemorrhages observed in 63% of the deceased, subconjunctival haemorrhage in 58%, and face congestion was observed in 27%.

However neither hyoid bone fracture nor thyroid cartilage fracture or vertebral fracture were noticed. Minor abrasions and contusions on different parts of the body were present in only 9% (Table-3).

**Table 3. Autopsy findings.**

Autopsy Findings	Males No. (%)	Females No. (%)	Total No. (%)
Dryness under Ligature mark	89 (48)	95 (52)	184 (100)
Petechial hemorrhages	60 (33)	56 (30)	116 (63)
Subconjunctival haemorrhage	55 (30)	51 (28)	106 (58)
Face congestion	24 (13)	26 (14)	50 (27)
Abrasions and contusions (Not caused by ligature)	10 (5)	8 (4)	18 (9)
Thyroid cartilage, vertebral and hyoid bone fracture	0 (0)	0 (0)	0 (0)

In post-mortem toxicological investigation 9 victims was positively identified for alcohol. No drug or toxic substance was identified in any of the deceased. More than half of victims (56%) were married and when it comes to causes and factors associated with suicidal hanging, 65% of the families and relatives denied any previous suicidal intent or certain issues that might be

referred to as a cause for their deceased to hang themselves, while previous psychiatric history was identified in 18%, family problems in 13%, and marital conflicts in 5% (Fig.2). With the growing rate of population, there was an increasing trend of hanging deaths in Basra during the period of the study (Fig.3).

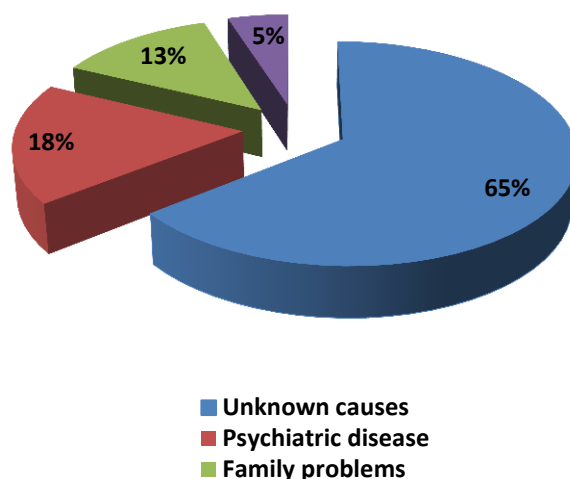


Fig 2. Causes of suicidal hanging

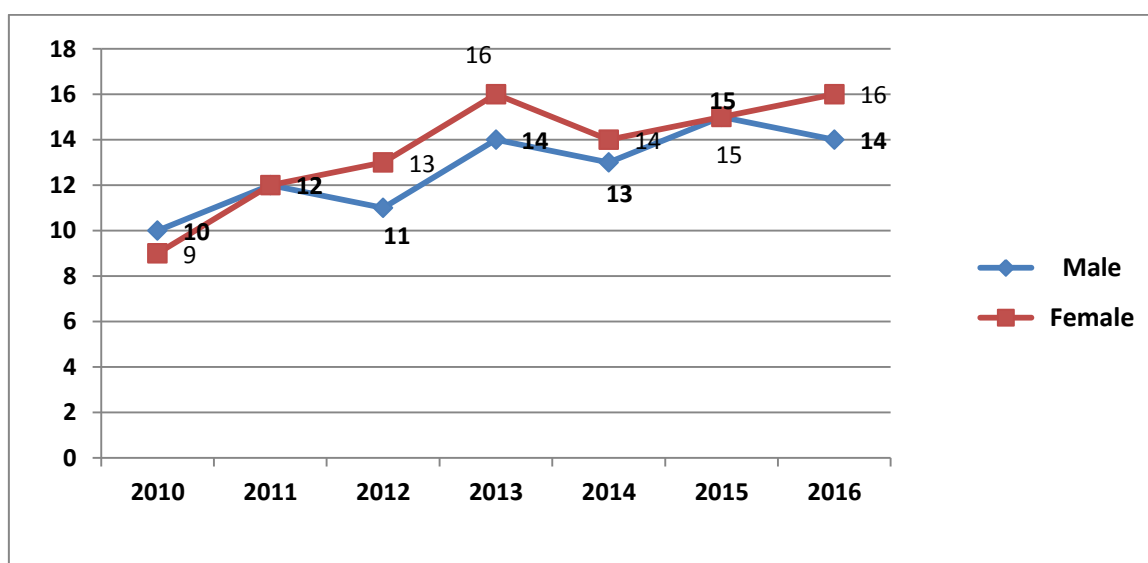


Fig 3. Numbers of hanging cases over the seven years period of the study

**DISCUSSION**

Hanging is a frequently used method of suicide in many countries, <sup>[10]</sup> and it's well known that almost all cases of hanging are suicidal, however there are occasional accidental hangings, and homicides are extremely rare. <sup>[11]</sup> In Iraq, like many other countries, all cases of death due to hanging should be subjected to medicolegal post-mortem examination. With the growing population of Basrah city, hanging

deaths seems to be increased within the last several years in this city from 19 cases in 2010 to 30 in 2016. The rate of suicidal hanging, particularly among young individuals have been increased which is consistent with several other studies in both developing and developed countries. Hanging is a particularly lethal method of suicide with over 70% fatality rate. <sup>[12-14]</sup> In mechanical constriction of the neck

structures, 2 kg of pressure is enough to block the jugular veins, while 2.3-30.0 kg is required to occlude the cerebral arterial supply, and about 15 kg of pressure is required to obstruct the trachea.<sup>[15]</sup> Although little is known about methods of committing suicide in Iraq, however, along with hanging, individuals may use self-immolation, suicidal firearm and different other methods to commit suicide, and while suicidal hanging mostly seen in males in many countries around the world,<sup>[16]</sup> our study have shown that suicidal hanging is slightly higher in females (52%) than males, which might be explained by suicidal firearm fatalities which are often seen in males in Iraq. A recent study in Baghdad, the capital city of Iraq have concluded that with the exclusion of suicidal firearm deaths, hanging was the second commonest method of committing suicide after poison ingestion, and similar to our study, suicidal hanging deaths among females was slightly higher than males, the same study also identified low socioeconomic conditions, psychosocial causes as the most frequent causes for committing suicide.<sup>[17]</sup> In Iran, a study have resulted that hanging is the commonest method of suicide in Tehran city, the study also revealed that the proportion of women who hanged themselves was slightly higher than that of men when its compared to other methods of suicide.<sup>[18]</sup> In England, hanging is also the most commonly used suicide method, there are around 2000 hanging suicides per year.<sup>[19-21]</sup> In contrast, hanging in the United States is considered the second commonest method of committing suicide following suicidal firearm deaths,<sup>[22-25]</sup> in India suicidal hanging fatalities comes after intoxication.<sup>[26]</sup> In our society as well as in many other Arab and Middle-Eastern countries, suicidal death considered as a stigma and a shameful act, some families would report hanging and relate it to accidental or unknown circumstances. The rate of suicidal hanging deaths in Iraq was seen to be increased during the period of this study, the opposite was observed in Istanbul, Turkey

despite the growing population of this crowded city,<sup>[27]</sup> similar observation was noticed in the neighboring state of Kuwait where the decreasing trend of suicidal hanging have been linked to the highest standard of living and working as well as the role of the society in condemning suicidal acts.<sup>[28]</sup> However, since Materials used for hanging are easily accessed and readily available, hanging considered simple to perform and some individuals believe it's a clean, rapid method of suicide which does not damage the body or leave harrowing images to others,<sup>[29]</sup> socio-cultural acceptability, media portrayals are an important factor in influencing individuals to choose hanging as a method of suicide.<sup>[30]</sup> In this study some of the deceased relatives gave history of domestic and/or marital conflicts and most of suicidal hangings was seen especially among young age groups which could be related to frustration, lack of job, poverty and other various reasons which motivate individuals to commit suicide. Some studies in India and Bangladesh have shown that marital unhappiness, family problems, poverty and unemployment are common precipitating factors for suicidal hangings.<sup>[31- 34]</sup> Since wide range of ligatures can be used in hanging, it is considered difficult to prevent,<sup>[35]</sup> prevention of hanging, particularly suicidal hanging is not easy as controlling the factors which promote individuals to commit suicide in general, some studies suggested that suicidal hanging might be controlled through media to reduce the portrayal of fictional suicides by hanging.<sup>[36]</sup>

***In conclusions,*** hanging is a common cause of suicide in our society and the highest proportion of hanging cases in this study was found to be suicidal in nature, and the most involved age group was 21-30 years which is similar to findings found in different other countries. The number of female victims was almost equal to males. The fact that different types of ligatures and hanging points can be used in hanging makes prevention strategies difficult to be applied, and since most suicidal hangings was seen among young age individuals, it imposes a

burden on our society. More concern should be focused on young individuals to raise the awareness about hanging, further researches might be required in order to bring the focus on this problem and factors which drive individuals to commit suicide.

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