

## Clinical Study

# Pattern of Suicide: A Review of Autopsies Conducted at Moi Teaching and Referral Hospital in Eldoret Kenya

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**Abstract.** *Problem statement.* Suicide is one of the ten leading causes of death in the world, accounting for more than 400,000 deaths annually. The pattern of suicide and the incidence of suicide vary from country to country. Cultural, religious and social values play some role in suicide. Currently, there is no data regarding the incidence of suicide in Kenya. *Setting.* Moi Teaching and Referral Hospital Mortuary. *Study population.* A seven-year retrospective study of all the autopsies performed at the Moi Teaching and Referral Hospital was analysed and the cases that were definitely determined as suicides were further studied. *Objective.* To characterize the pattern of suicide cases through autopsies conducted at MTRH mortuary between the years 2005 to 2012. *Methodology.* Retrospective descriptive cross-sectional study. Suicide cases were identified from the MTRH autopsy record books. From these record books, the autopsy number was used to retrieve the pathologists autopsy report. Data regarding age, gender and methods of suicide was retrieved and entered into a data collection form. *Data analysis:* Data collected was analysed using Stata version 10. *Results.* There were 213 autopsies performed. Majority were male 180(85%). The subjects had a median age of 29(IQR: 23–37) years. Organophosphate poisoning was the most preferred method followed by hanging. Organophosphate poisoning accounted for 195(91.54%) and hanging for 17(7.98%) of the subjects. *Conclusion.* The preferred methods of suicide were poisoning and hanging. The study may have missed some cases where the relatives could have declined for the postmortem procedure and hence the body released without postmortem examinations.

**Keywords:** Suicide; hanging; poisoning

## 1. Introduction

Suicide is an act of taking one's own life voluntarily and intentionally [1]. Suicide is high in societies that are socially isolated, mobile and disorganized. It is lower in countries or subcultures whose religious or cultural morals proscribe suicide [2]. Different suicide risk factors are present in

different age groups. The teenager cannot compete, in the young and middle-aged adult there is a lack of accomplishment of life goals along with failure in social relationships while in the elderly there is loss of friends and loved ones, health and financial problems and idea of death [3]. Suicide is one of the ten leading causes of death in the world, accounting for more than 400,000 deaths annually.

The incidence and pattern of suicide vary from country to country. Cultural, religious and social values play some role in this regard [4]. The rate of suicide varies from as low as 0.4/100,000 in Nigeria [5], to as high as 22.75/100,000 in Geneva [6]. Suicide is more common in males than females and the rates are said to increase with age [2]. Differences exist in countries in the most common means of suicide depending on the availability of various methods. In England and Wales men use hanging, poisoning by gas or vehicle exhaust and women are more likely to take an overdose [2], but in USA, the most common method of suicide is firearm [7], while in Singapore, jumping from a height is the commonest mode [8]. Suicide has been noted to be more prevalent in spring and winter [2]. Very few studies about the epidemiology of suicide have been conducted in Pakistan and even here most are based on newspaper reports [9, 10].

We wish to conduct this study on the patterns of suicide in autopsies conducted at Moi teaching and referral hospital mortuary, Eldoret Western Kenya to know the incidence, which subgroups of the population were most vulnerable to such deaths and the methods being used. This is the first step in trying to evaluate the risk factors for suicide in different population subgroups. This information can in turn be used in programmes aimed at prevention of suicide.

## 2. Materials and Methods

A retrospective review of all suicide autopsies that were conducted at the Moi Teaching and Referral Hospital (MTRH) Mortuary over the seven-year period from July 2005 to July 2012 was carried out. The cases consisted of deaths that occurred at the MTRH and the bodies of victims that were referred to the MTRH for autopsy.

The bodies are brought to the mortuary either from the hospital wards or directly from where death has occurred other than MTRH. These being police cases, postmortem is performed through the request of a police officer investigating the case. The postmortem is performed by the pathologist on duty who other than filling the police postmortem form, also records the findings in mortuary record book. It is from this mortuary record book that information regarding this study was extracted.

This institution handles most of forensic cases in and around Eldoret town located in the western part of Kenya. The cases were identified from the MTRH autopsy record books. From these record books, the autopsy numbers were used to retrieve the pathologists autopsy report. Data regarding age, gender, methods of suicide, and number of days of hospitalization was retrieved and entered into a data collection form.

## 3. Results

A total of 213 autopsies cases of suicides were performed in detail. Table 1 shows the methods of suicide used.

Ingestion of organophosphate poison, hanging and carbon monoxide poisoning were the methods used to commit suicide. There were a total of 195 deaths by organophosphate poisoning, 17 by ligature hanging and only one from carbon monoxide poisoning.

Of the 213 cases studied, males constituted 183 cases while females were 30 cases. Overall, (both males and females) thirty-two (15%) were below 20 years while only 6(2.8%) were above 60 years. Considering both genders, majority (40.1%) of those who committed suicide were between 21–30 years.

Males accounted for 183 (85.9%) cases, with 23 (10.8%) being below 20 years. Majority 76 (35.7%) were in the 21–30 years category followed by those in the 31–40 years category 57(26.8%). Only 5(2.3%) were above 60 years.

Females accounted for 30 (14.1%) cases, with 9 (4.2%) being below 20 years. Majority 11 (5.2%) were in the 21–30 years category followed by those in the 31–40 years category, 5 (2.3%). Only 1 (0.5%) were above 60 years.

## 4. Discussion

Three methods hanging, pesticide suicide and firearm suicide dominate country-specific suicide patterns [11]. In our study most preferred pesticide and hanging methods. No case of fire arm suicide was encountered. This could be explained by the fact that firearm possession is restricted to security personnel in Kenya. Most of the cases (195) were from ingestion of either herbicides or pesticides a fact that can be explained by the surrounding community being agricultural with households having stocks of agricultural pesticides available for impulsive acts in suicide. This is consistent with a study by Farmer RDT et al which showed workers within a plantation were most likely to ingest farm chemicals [12]. Our study finding is also similar to a report by WHO (2008) that found poisoning by pesticide to be common in many Asian countries and in Latin America [16].

In this study, hanging was found to be the second most preferred method. However, this method was found to be the most common method of suicide in many Asian countries, such as Japan, Korea, and Taiwan as well as many Western countries [13, 14]. The difference could be explained by the fact that Eldoret, Kenya, where this research was conducted is mainly agricultural region with every homestead having some form of pesticides. If the study was extended to the whole country the results could have been probably different.

Carbon monoxide poisoning is usually accidental where the victim leaves a burning jiko to warm the house while retiring to bed especially during the cold season. However, such death by suicide using has been documented [15, 16]. In

Table 1: Methods of suicide.

Variable	Levels	Sample size	n(%)
Cause of death	Organophosphate poisoning	213	195(91.54%)
	Hanging		17(7.98%)
	Caron monoxide poisoning		1(0.46%)

Table 2: Distribution of cases by age and gender.

Age(years)	Male	Female	Total
<20	23(10.8%)	9(4.2%)	32(15%)
21- 30	76(35.7%)	11(5.2%)	87(40.1%)
31-40	57(26.8%)	5(2.3%)	62(29.1%)
41-50	17(8%)	3(1.4%)	20(9.4%)
51-60	5(2.3%)	1(0.5%)	6(2.8%)
>60	5(2.3%)	1(0.5%)	6(2.8%)
<b>Total</b>	<b>183</b>	<b>30</b>	<b>213</b>

our study, there was one such case. The young man was found dead in a poorly ventilated room with partially cooked meal on the jiko. On autopsy the body had the characteristics of carbon monoxide poisoning and a suicide note was found next to the body.

Majority of the suicide cases were male accounting for 86%.this which compares with other studies. As much as girls make suicide attempts more often than boys, it has been known that boys commit suicide more often than girls [17].

Majority of cases were victims in their third decade of life (21–30 years) accounting for (40.1%). This compares well another study in Kuala Lumpur where majority of the suicide cases were between 20 and 40 years of age [18].

## 5. Conclusion

In conclusion, the study has shown that there is a distinct difference in the patterns of suicide across the life cycle of Western Kenya population. This has implications for understanding potential causes of suicide and for developing suicide prevention plans for this specific population. The observed suicide pattern depended upon the availability of the methods used.

Restricting access to the means of suicide is an important component of comprehensive strategies for suicide prevention.

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