

*Research Article*

## **Medico legal aspects of female suicide deaths in Sudan: Autopsy - based retrospective study**

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### **Abstract**

**Background:** Female suicide is a critical issue not only for women but also for regional and global community well-being.

**Methods:** Autopsy reports from Khartoum morgues, Ministry of health – Sudan, over a period of four years (2011 - 2015) were reviewed retrospectively to demonstrate female suicidal cases.

**Results:** Sixty-five female suicide cases were detected with ages ranging from 10 years up to over 50 years. The largest percentage of suicides were among the youth, and the highest is in the age group (20-<30) (33 cases, 50.8%). The most common method of suicide was poisoning (37cases, 57%), then hanging (16 cases, 24.6%). The study also demonstrates that the majority of cases were single (78.5%).

**Conclusions:** This study focused on the methods, age group, and marital status of the victims, which may help in directing the prevention tools and facilities toward effective management to this problem, and we recommended the development of strategies that aim to improve the quality of female's life especially youth group.

**Keywords:** *Medicolegal, Females, Suicide, Poisoning, Autopsy, Sudan.*

## **Background**

Suicide is defined as an act of intentional killing of oneself and is considered one of the major causes of mortality, particularly in young females (1-2). Sharing national suicide information with the universal scientific community is of great value for the solution of the problem and improving the intervention methods targeting female suicidal deaths (3). The World Health Organization (WHO) and the International Association for Suicide Prevention (IASP) have announced September 10th as the annual world suicide prevention day to pay more attention to such a problem and make a call for a global urgent action (4). Suicide among youth has increased dramatically in recent years worldwide and among females and is unequivocally related to maltreatment and violence of different sorts like physical violence, sexual abuse, mental and financial difficulties (5-6). The methods chosen for suicide differ between cultures (7), and previous studies suggest that suicide methods in different countries are based on availability, accessibility, and cultural acceptability (2-7). Females tend to avoid 'final' and 'obvious' methods (8) and select less rough and less deadly methods (9). In the U.S, New Zealand, Canada, the Nordic countries, and the United Kingdom the most preferred suicide method used by females is poisoning, while in Serbia, the most common suicide methods used by females are hanging (58.4%) and poisoning (19.3%) (2), whereas in Japan and Iran, hanging is more common (7-9-10). In Sudan, the socio-cultural variables lead to the high number of poisoning cases with

paraphenylenediamine (PPD) (11). PPD is utilized in conventional cosmetics, and is blended with henna and used to beautify the hands and feet on social occasions, such as wedding ceremonies (12). In Ethiopia, hanging and poisoning were the most common methods of committing suicide (13). In Egypt, the high suicidal deaths were found in middle-aged females between 20 and 34 years (14) while in Iran, the most common age among subjects with suicide behaviors were between 15 and 24 years (10), and an association between suicide and non-marital relationships in young age females were found in South Africa (13).

## **Methods**

### **Study population**

Comprising people descended from each area of Sudan, the capital Khartoum can represent the cultural, social, and racial diversity of Sudan, and researches on such area could lead to the development of specific intervention strategies that can be used throughout the country to solve female suicide problem.

### **Study design**

A cross-sectional descriptive retrospective study

### **Data Collection Tool**

The data was collected from Khartoum morgues, Ministry of health Sudan over a period of four years (2011 - 2015). For each case, the police inquiry, the autopsy report, and the associated medical and clinical reports

are used to demonstrate the different variables (age group, marital status, method of suicide) that can aid in developing suicide intervention strategies.

**Statistical Analysis**

Data analysis was done using SPSS statistics software for Windows, version 22. Descriptive results were presented by computing the percentage and frequency and were tabled in a descriptive manner.

**Results**

**Table 1:** Distribution of suicidal cases according to suicidal method

Method	Freq.	Per.
Stab wound	1	1.5
Head injury	1	1.5
Starvation &dehydration	1	1.5
Electric shock	1	1.5
Burn	4	6.2
Poisoning	37	57
Drowning	4	6.2
Hanging	16	24.6
Total	65	100

**Table (1)** Shows that the highest and most preferable method in suicide acts was poisoning followed by hanging then burn and finally, drowning.

**Table 2:** Distribution of suicidal cases according to age groups

Age group (in years)	Freq.	Per.
10-<20	17	26.2
20-<30	33	50.8
30-<40	10	15.4
40-<50	3	4.6
50->	2	3
	65	100

Table (2) shows that suicidal deaths were most frequent in the youth with the highest frequency in age group (20-<30).

**Table 3:** Distribution of suicidal cases according to marital status

Marital status						Total	
Married		Unmarried		Unknown			
Freq	Per.	Freq	Per.	Freq	Per.	Freq	Per.
13	20	51	78.5	1	1.5	65	100

**Table (3)** Shows that un-married victims showed the highest incidence.

**Discussion**

This retrospective study of female suicidal deaths in Sudan represents that poisoning (37 cases,11.2%) was the preferred method of suicide deaths followed by hanging (16 cases, 4.9%). PPD is the poison of choice, as out of 37 cases of poisoning, 20 cases were due to PPD. The analyzed data also determined that the least number of cases had occurred in the age group over 50 years (3%), followed by 40-<50 (4.6%), while the highest number

of cases had occurred in the age group between 20 years to less than 30 years (50.8%), followed by 10-<20 (26.2%), then 30-<40 (15.4%). The study also demonstrated that the majority of cases were single (78.5). Poisoning is one of the favored suicidal methods used by females universally (16), with special regards to the differences in the available type of poisons and its effect (1). For example, a hair dye – Super Vasmol 33, which contains Paraphenylenediamine (PPD), is a commonly accessible and cheap product, which is more likely utilized as suicidal agent in nations of Africa and Asia (17). Ninety percent of American and Swedish ladies utilized drugs in poisoning suicide, while in half of the Korean and Taiwanese ladies used pesticides (18). In females of south Gujarat region, India, poisoning (35.51%) was the most common method of suicidal deaths and came before hanging and burns which caused death in 31.16% and 27.54% cases respectively (19-20). A study conducted in Egypt revealed that female adolescents are at a higher risk of self-poisoning (21), while hanging and other more traditional suicide methods are displaced by less violent suicide methods (22) In a study of suicide deaths conducted in Dammam, Kingdom of Saudi Arabia, hanging was the method of choice in 82.352% of the studied females (14 cases) (23). Other studies from Turkey, Belgium, Estonia, Germany, Hungary, Ireland,

Netherlands, Portugal, and Slovenia, revealed that hanging was the most common method among females in these countries (2-9). The present study obviously demonstrates that the percentage of female suicide in Sudan was high among young females, while the advanced age categories were the least vulnerable to suicide. This sensational decrease in suicide rates as age increases is thought to be due to the respect for elderly individuals within the social and conventional family structure (6), a finding that is consistent with many universal studies. In Dhaka, Bangladesh, out of 592 cases of female suicide, the majority of cases were within the age group 21-30 years (1). In India, the highest number of female suicidal cases (36.23%) were seen in the age group of 21–30 years. followed by 26.81% and 20.29% cases in the age group of 11 – 20 and 31 – 40 years respectively. Small number of cases (4.45%) were seen in the fifth decade (17). Other studies correlate the distribution of suicide rates by age with the level of financial advancement of the countries. For the wealthy nations, such as the United States and Sweden, female suicide rates tend to peak in middle age. For poorer nations, such as Venezuela, suicide rates are higher for elderly women, while for the poorest nations, such as Thailand, the peak shifts to young women (7). Never-married women are more likely to end their lives by suicide than other marital categories. Suicide among unmarried

women of reproductive age may be linked to extramarital sex - forced or consensual and subsequent unwanted pregnancies (24). In Australia, the suicide rates for never-married, divorced, and widowed women were consistently higher than those for married women across all age groups (19).

### **Conclusion and recommendations**

Female suicide in Sudan appears to affect the life of important female age groups. In light of this study, it is obvious that suicidal deaths were more common among young and middle age groups. Demonstration of female suicide deaths in a society not only gives an idea of the medicolegal interventions but also indicates the socio-economic behavior of the society towards females. The high percentage of suicide in unmarried young females may reflect the social and financial difficulties facing these groups. Self-destruction by poisoning is predominant, as hair dye PPD is easily available in every house in Sudan. Better identification and definition of the preferred female suicide methods can help formulate national programs of therapeutic aid and preventive measures. The study recommends completing the full information about the victims as regards their history of psychological or social circumstances of the accident and the crime scene, including ideal data collection, analysis and, reporting down of specimen

results and its open presentation. This is of great value in identifying the cause and manner of death to set up the preventive strategy and take proper prophylactic measures. Media should play its role to bring a change in cultural attitude towards females harming issues, and support them for getting education and work. Health and legal authorities should call for the prevention of the random utilization and trade of PPD in the market. Awareness programs about its poisonous quality ought to be implemented at diverse levels. This descriptive study suggests doing more studies to detect and analyze other variables concerning female suicidal death in Sudan.

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