

Original Article

Associated factors with self-inflicted burns among women in reproductive age in baghdad, iraq: a case control study

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Abstract: Background: Self-inflicted burns are a regular source of admissions to burns unit's worldwide. However, there is limited evidence regarding risk factors that associated with self-inflicted burn. Aims: To determine factors that associated with self-inflicted burn (SIB) among women in reproductive age in Baghdad, Iraq. Method: Sex, age and time matched case-control study was conducted among females with the age range 15 to 45 years in Baghdad, Iraq. Each case was individual matched to two controls in the similar age (± 1), sex and time when SIB happened. Controls were selected from the same hospital where the cases have been admitted in the same period. Data was collected on the variables age, occupation, education, marital status, socioeconomic status (SES), etc. Crude and adjusted odds Ratio (OR) were estimated by simple and multiple conditional logistic regression model. Results: We found a positive association between poor SES (AOR = 3.61; 95% CI (2.04 to 6.11)), family history of SIB (AOR = 1.6; 95% CI (1.14 to 4.18)), homelessness (AOR = 3.9; 95% CI (2.07 to 5.48)), subjected to physical (AOR = 2.0; 95% CI (1.35 to 2.95)) and sexual violence (AOR = 1.1; 95% CI (1.17 to 4.51)), having the history of health problem (AOR = 2.63; 95% CI (1.55 to 6.14)), feeling discrimination (AOR = 3.11; 95% CI (1.10 to 5.03)) and dissatisfaction with unstable living condition (AOR = 3.12; 95% CI (1.90 to 6.41)) with SIB. Conclusions: Several and interlinked socioeconomic and behavioral factors were associated with SIB in women. Implementing multifaceted intervention is vital to prevent SIB among women with poor SES, living in temporary accommodation, and subjected to domestic violence.

Keywords: Self-inflicted burns, case control, women, factors, age

Introduction

Self-inflicted burn (SIB) is the growing public health problem in women and has critical physical, psychological, and financial effects on individual, family and community at large [1]. World Health Organization (WHO) statistics shows that, there are more than three thousand and half of suicide cases including SIB occur per day [2]. More than million people kill themselves every year because of several reasons such as social, economic and psychological [3]. The rate of suicide ranged from 0.001% in Egypt up to 0.035% in Northern Europe per 100,000 people per year [4]. Extremely variable magnitudes of SIB have been reported from different settings. For example, SIB in Ahvaz was 0.017%, while in Khorasan 0.014%

and in India 0.013% [5-7]. Moreover, study reported from Tehran indicated 0.013% SIB rate, while study reported from Maniple was also shown 0.007% of women committed SIB [8, 9]. In addition, studies reported from Zimbabwe (0.004%) and Saudi Arabia (0.001%) were indicated low rate of SIB [10, 11].

Population in Iraq has struggling to cope with the impact of wars, sanctions and internal conflicts which leads to poor public services, deterioration of living standards and mental illness [12]. Previous studies done in Iraq, shown that, the crude rate of suicide was 0.9 per 100,000 population among women in 2015, while 1.07 per 100,000 population in 2016 [13]. Other studies reported from different settings have also indicated that, severe psychological, finan-

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cial and childhood abuses are the main reasons of SIB [14-17]. Moreover, a qualitative study conducted in Baghdad, identified four major problems that lead females to commit SIB and it related to the personal, social, economic and family situation of the study participants [18]. A previous quantitative studied conducted in Iran and India reported the housewife marital status, low education status, poor relation with spouse and traditional marriage are factors that associated with SIB [19, 20].

Lack of health statistics and published data that demonstrates to high risk group for SIB in Iraq imposed obstacle to plan a strong prevention strategy. Moreover, there is limit evidence of factors that associated with SIB to plan interventional study that targeted the main risk factors. Therefore, investigating factors that associated with SIB is essential to give a better understanding of the problem and to plan preventive services. Thus, this study aimed to determine factors that associated with SIB among women in reproductive age in Baghdad, Iraq.

Methods

Cases and controls selection

Sex, age and time matched hospital-based case-control study was conducted among females with the age range 15 to 45 years in Baghdad, Iraq. The case and controls were selected randomly from the list of patient admission that occurred from 1st of January 2015 up to 30th of April 2019 were enrolled in this study. Each case was matched with two controls in the similar age ranges with the selected case at the same period of admission in the same hospital where admitted [21]. Cases were females in the age range of 15 to 45 years and who intentionally attempted SIB with suicidal intent that confirmed by physicians. Females that do not have a physician or a witness confirmation on SIB and female with burn referred from out of Baghdad health service catchment area were excluded from the study. Controls were females in reproductive age who have general other medical and surgical condition, treated in the same hospital where the cases selected at the same admission time of the cases. Two controls for each case were selected randomly from the list in the internal and surgical wards of the selected hospital to

compensate for the selection biases. Controls were screened for previous SIB attempt and excluded if they had and replaced by next patient. Females that come to the hospital for fertility related disorder and, females that have a psychology illness history were excluded from this study.

Recruitment

Cases and controls were collected from seven hospitals. All hospitals in Baghdad which have separate burn center were selected. The case and controls were selected randomly from the list of patient admission that occurred from 1st of January 2015 up to 30th of April 2019 were enrolled in this study. Participants were contacted by phone which obtained from their medical record. After getting agreement from them to participate in this study, we visited each participant in their residential area.

Sample size and data collection tools

The sample size of this study was 600 (200 cases, 400 controls). Age of controls were similar to age of cases (± 1 year). For example, if the age of a case is equal to 32 years, the controls were 31 to 33 years old. Structured questionnaires were used for data collection. The content of the questionnaires has provided by literature review and experts opinion through qualitative content analysis study [18]. Education was measured by the highest degree earned and was coded to two categories (university degree versus less than university degree). Similarly, occupation status was coded to two categories (having versus don't have job). Marital status was measured by the last status of marriage before conducting the SIB and was coded to (married or divorce and never married). However, only 4 cases were divorced, and they were categorized under married. Socioeconomic status (SES) was measured by ten questions that asks the assets the participant have such as having a house, car, internet, dish washing machine, video deck/DVD/VCD, vacuum cleaner, refrigerator, water cooler, meat chopper, blender. The response for these questions were recorded by yes/no and categorized into five categories which were poorest, poor, intermediated, rich and richest. The richest category was considered as a good SES and the other three poorest, poor and intermediate were categorized under not good

SES. Type of home was coded to (rent, own). Family history of SIB, serious problem, homelessness, drug abuse and smoking history response were recorded by yes/no. Responses on the three types of domestic violence (psychological, physical and sexual) were also recorded by yes/no. Types of opioid used were recorded by anticonvulsant or analgesic. In addition, response on family history of mental and physical problems, feeling of any discrimination, losing for family and history of compulsory marriage were recorded by yes/no. All variables were asked before the date of admission to hospitals. Before, main study data collection the questionnaires were validated for face validity, internal consistency and repeatability using experienced experts and pilot study in the same study area. Moreover, face validity was assessed by 10 females. Twelve cases were participated in the pilot study to assess the internal consistency and feasibility of the questionnaire which was conducted in 3 hospitals to get preliminary data on SIB among women in reproductive age. Test-retest reliability was assessed by 10 females twice over a period of 2 weeks and analyzed by using the Cronbach's α coefficient and intra-class correlation coefficient (ICC).

Data analysis

Before main analysis, data was checked for quality and statistical assumptions. Data was described by descriptive statistics. Quintiles and PCA (Principle Components Analysis) was used to calculate the socioeconomic status. Crude and adjusted OR by simple and multiple conditional logistic regression to determine the association between each independent variable and SIB. In addition, the multicollinearity test was done to determine the relation between some independent variables such as SES, history of financial problem and type of home on the regression model and how it affected the model by using variance inflation factor (VIF). STATA version 14 statistical package was used to analyze the data and type 1 error was set at 5%.

Ethical consideration

Ethical approval was obtained from the ethical committee of Tehran University of Medical Sciences (IR.TUMS.VCR.REC.1396.4251) before starting data collection. Ethical approval

was cross-checked by the Iraq Ministry of Health and issued the IRB number (1698). Written informed consent was obtained from each participant and confidentiality of information was secured by password lock.

Results

Table 1 depicts distribution of different participants characteristics in cases and controls. The mean age of cases was 25.6 (\pm SD 7.94), while 24.9 (\pm SD 7.71) in the control group. In the cases, most participants 76% were jobless, 72% had attend less than university degree and 62.5% were married. Half of participants (66.5%) in case were living under low SES level while 30% had a family history of SIB and 10% had their own house. There were significant differences between degree attended, marital status, SES, family history of SIB, type of home in cases and controls on SIB ($P < 0.001$).

Table 2 shows the analysis of simple and multiple conditional logistic regression model. The odds of SIB was 2.5 times among women who had a family history of SIB compared to those who not have family history of SIB. Education status, marital status, smoking history, subjected to psychological violence, had a serious health problem, history of substance abuse, husband substance and alcohol abuse, history of brother alcohol use, family history of mental problem and history of compulsory marriage were significant associated with SIB in simple regression analysis. However, in multivariable regression analysis there were no significant association between SIB and the variables listed above **Table 2**.

Discussion

Self-inflicted burn is one of the important problems among female in reproductive age across developing countries [22]. Most of the women that committed SIB were younger age, living under low SES, had a family history of SIB, homelessness, subjected to physical and sexual violence, had health problem, feel discrimination in dealing with family and dissatisfaction from unstable condition.

In this study young age was not associated with SIB which was similar with the study reported from Mosul Iraq in which the mean age of

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Table 1. Characteristics of the participants in cases of SIB and controls

Variables	SIB over case and control						P. value*
	Case (200)		Control (400)		Total (600)		
	No.	%	No.	%	No.	%	
Age/Mean ± (SD)	25.60 ± 7.94		24.90 ± 7.71				0.306
Occupation							
Have a job	48	24.00	119	29.75	167	27.83	0.072
Don't have it	152	76.00%	281	70.25	433	72.17%	
Degree							
With university degree	56	28.00	207	51.75	263	43.83	< 0.001
Without university degree	144	72.00	193	48.25	337	56.17	
Marital status							
Never married	75	37.50	214	53.50	289	48.17	< 0.001
Married or divorced**	125	62.50	186	46.50	311	51.83	
SES							
Good	67	33.50	157	39.25	224	37.33	< 0.001
Not good	133	66.50	243	60.75	376	62.67	
Family history of SIB							
No	139	69.50	344	86.00	483	80.50	
Yes	61	30.50	56	14.00	117	19.50	< 0.001
Type of home							
Rent	180	90.0	111	27.75	291	48.50	
Own	20	10.0	289	72.25	309	51.50	< 0.001

*Simple conditional logistic regression. **Only 4 cases were divorcing. So, we had to integrate.

women committed SIB was 24.7 year [14]. Moreover, previous studies reported from Iran shown that the mean age of women committed SIB was less than 30 years which was comparable with our finding [23-28].

High proportion (76%) of cases was jobless in the present study. This finding was consistent with the previous studies reported from Iran and Pakistan in which most of victims were housewives [29, 30].

In this study (62.7%) of SIB victims were living under low SES standard and significantly associated with SIB. This finding was in agreement with the study reported from India which reported 68.8% of SIB victims were living in low SES [33]. Similarly, study reported from Basra, Iraq shown that 46.8% of SIB victims were living under poor SES [13]. Moreover, a study reported from Iran found that 70% of women that attempted SIB had low SES [34]. Having family history of SIB was significantly associated with SIB in this study. Our finding was comparable with previous studies reported from different parts of Iran in which SIB victims had a family

history of SIB [35, 36]. In this study the chance of SIB was 5 times among those who live in temporary accommodation compare to others who not live in the same situation. This finding was similar with the previous study reported from French in which 39.5% of women that living in temporary place with another family or friends commit SIB [37]. In addition, in this study the odds of SIB was 1.5 times high in women those who subjected to psychological violence compared to other groups that not subjected. A study reported from India indicated similar result in which SIB victims were subjected to domestic violence most of time by partners and other

family members [7]. In our study the odds of SIB were 2.3 times in women those who subjected to physical violence compared to those who not subjected. A study reported from Pakistan shown that more than half of women who that suffered from marital conflict commit SIB [29]. Moreover, a study reported from Iran notified that the marital conflict was a major motivating factor to conduct SIB [38].

In this study the odds of SIB was 2.5 times of women had family history of mental and physical problem. Previous study conducted in Iran shown that 6.2% of women committed SIB had a family history of psychiatric problem [28]. Similarly, in Pakistan 1.1% of women who had a depression illness committed SIB [30]. In this study found the chance of women who committed the SIB was 5.1% in those who had a substance abuse history. This finding was comparable with the previous study reported French and US in which women had a history of substance abuse committed SIB [39, 40]. In addition, in this study 5.4% of women who had a husband who substance abuse. This finding was alongside with the study reported from

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Table 2. Comparison of characteristics in cases of SIB and controls through conditional logistic regression

Variables	Crude OR (95% CI)*	Adjusted OR (95% CI)**
Occupation		
Have a job	1	
Don't have it	1.50 (0.96-2.48)	-
Degree		
With university degree	1	1
Without university degree	10.20 (5.26-21.69)	3.65 (0.77-8.78)
Marital status		
Never married	1	1
Married or divorced	4.20 (2.18-7.63)	2.13 (0.44-11.8)
SES		
Good	1	1
Not good	5.04 (2.11-7.16)	3.61 (2.04-6.11)
Family history of SIB		
No	1	1
Yes	2.50 (1.65-3.66)	1.62 (1.14-4.18)
Having any medical problem which is diagnosed by the physician		
No	1	
Yes	0.70 (0.44-1.06)	-
Types of opioid		
Never used	1	
Anticough	2.10 (0.98-4.45)	-
Analgesic	1.70 (0.92-3.23)	-
Smoking history		
No	1	1
Yes	2.40 (1.36-4.31)	0.90 (0.41-2.32)
Homelessness		
No	1	1
Yes	5.00 (3.57-7.04)	3.90 (2.07-5.48)
Subjected to psychological violence		
No	1	1
Yes	1.50 (1.21-1.84)	1.00 (0.72-2.28)
Subjected to physical violence		
No	1	1
Yes	2.30 (1.87-2.91)	2.00 (1.35-2.95)
Subjected to sexual violence		
No	1	1
Yes	2.60 (1.94- 3.60)	1.10 (1.17-4.51)
Did you feel of any health problem or failure in your major responsibility at home, work, when you are recurrent use of drug or alcohol		
No	1	1
Yes	13.20 (11.20-15.64)	2.63 (1.55-6.14)
Having a history of substance abuse		
No	1	
Yes	5.10 (2.07-9.56)	2.00 (0.74-11.2)
Substance abuse of husband		
No	1	1
Yes	5.40 (2.64-11.21)	1.02 (0.13-7.44)
Father, brother history of substance abuse		
No	1	
Yes	1.20 (0.73-2.25)	-
Husband alcohol		
No	1	
Yes	8.10 (3.76-17.63)	2.60 (0.35-12.61)

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Father alcohol		
No	1	
Yes	1.60 (0.97-2.57)	-
Brother alcohol		
No	1	1
Yes	1.60 (1.13-2.50)	1.43 (0.58-4.22)
Family history of mental, psychological and physical problems		
No	1	1
Yes	2.50 (1.52-4.11)	1.00 (0.53-2.73)
Lost one of your family		
No	1	
Yes	1.20 (0.80-1.70)	-
Feeling of any discrimination in dealing with your family		
No	1	1
Yes	8.50 (5.46-13.26)	3.11 (1.10-5.03)
Having a dissatisfaction from unstable condition in your life		
No	1	1
Yes	5.40 (1.37-8.37)	3.12 (1.90-6.41)
History of compulsory marriage		
No	1	1
Yes	5.20 (2.32-11.85)	2.99 (0.92-5.16)

*Simple conditional logistic regression. **Independent variables with $P < 0.2$ in the simple conditional logistic regression entered in the multiple conditional logistic regression.

French [37]. Moreover, a study reported from Iran revealed that 10% of women had a husband who alcohol abuse [28]. The odds of SIB among women who lost family member were 1.2 high compared to never loss family member in this study. Previous study conducted in Iran indicated that majority of women lost the family member committed SIB which was comparable with our finding [35]. In this study the odds of SIB was 9 times high among women who had a history of discrimination in dealing with her family compared to never discriminated. This finding was comparable with previous study [41]. Moreover, the odds of SIB was 5 times high among those that had a history of compulsory marriage compared to those who had no compulsory marriage. Previous study conducted in Iran revealed similar finding in which women had history of compulsory marriage [42].

Limitation

This study has several limitations. These include:

- Consideration of SIB as taboo in the study population might be led to fear to report SIB that happened during the occurrence of an event. This might be led to information bias.
- Lack of tracing cases due to address and phone number change was the main limitation of

this study. This might be led to selection bias. Some cases were not survived from SIB, which might be led to selection bias.

Conclusion

Several social, economical, psychological, behavioural and domestic violence factors were associated with SIB among women in reproductive age. Preventive program that target these factors is vital to prevent SIB. Moreover, interventional study that targeted these factors associated with SIB is important to use in preventive program.

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Disclosure of conflict of interest

None.

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