

# The Relationship between Menstrual Cycle Phases and Suicide Attempts in Suicidal Women Admitted to the Poisoning Ward of Farshchian Hospital, Hamedan, Iran

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## ABSTRACT

**Introduction:** Suicide or para suicide is one of the known complications all around the world that unfortunately has had an increasing trend in recent decades. The aim of this study was to investigate the relationship between different phases of menstrual cycle and suicide attempts among suicidal women who referred to the Poisoning Ward of Farschian Hospital, Hamedan, Iran.

**Materials and Methods:** In this cross-sectional study, all fertile women who had committed suicide with drugs or toxic chemical agents and had regular 4-week menstrual cycles were investigated in a 6-month period between September 2010 and March 2011. Data on menstrual cycles were collected and analyzed.

**Results:** A total of 81 cases aged between 15 and 55 years were investigated. Of these, 53.1% were married, 44.4% were housekeepers, 51.9% were under diploma, and 72.8% had committed suicide by drugs. The mean age of puberty (37%) was 13 and the patients had 7 days of bleeding. In terms of menstrual cycle phase, 48.1% were in luteal phase and 51.9% were in follicular phase.

**Conclusion:** The findings of this study revealed that there is not a significant relationship between suicidal attempts and different phases of menstrual cycle.

**Keywords:** Follicular phase, Luteal phase, Menstrual cycle, Suicide, Women

## INTRODUCTION

Successful suicide is more common in men; however, women have suicide attempts at least twice as much as men. Women often use drugs and at times potentially toxic substances and solutions that are available at home (1, 2).

The high rate of suicide in women has drawn many researchers' attention to different phases of menstrual cycle as a biological factor and some of the mental disorders associated with menstrual phases, including depression and psychotic symptoms after delivery and before menstruation. Cremniter and Nahoul's study found a significant relationship between low estrogen stage of the menstrual cycle and suicide (3).

Some researchers, such as Durga *et al.*, have reported a higher prevalence for suicide

attempts during the last week of menstrual cycle (4), whereas others have not found a significant relationship between suicide and the specific period of menstrual cycle in women (7, 6, 5).

To date, few studies have been done on this issue in Iran which have produced mixed results. Mousavi *et al.*'s study on 298 female patients who referred to the Poisoning Emergency Wards of Noor Hospital and Ali-Asghar Hospital, Isfahan, Iran, in 2005, for instance, showed that most suicide attempts occurred in the luteal phase (8).

Noticing the diversity of the results obtained in different studies, further investigation of this issue and evaluation of the possible role of reducing or increasing factors, including age, marital status, educational level, and history of medical or mental illnesses in

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the past, and several other issues seem to be necessary.

The purpose of the present study was to evaluate the relationship between different phases of menstrual cycle and suicide with drugs and chemical toxins in female patients admitted to Farshchian Hospital, Hamedan, Iran.

## MATERIALS AND METHODS

This descriptive cross-sectional study was done on all female suicidal patients using drugs or chemical toxins admitted to the Poisoning Emergency Ward of Farshchian Hospital in Hamedan, Iran, in a six-month period between October 2010 and March 2011. All of the patients were in the childbearing age, had regular four-week menstrual cycles, and did not use contraceptive pills.

The required information was gathered by a questionnaire designed for this purpose. Demographic data and information regarding the approximate age of puberty, LMP (last menstrual period), menstrual period length and regularity, and duration of bleeding were gathered by the project partners and were analyzed using SPSS software version 13.

## RESULTS

Of the 219 suicidal female patients who referred to the Poisoning Emergency Ward, 138 patients were excluded due to not meeting the inclusion criteria and the remaining 81 patients were studied. The mean age of the cases studied was  $23.63 \pm 8.419$  years and the minimum and maximum ages of the patients were respectively 15 and 55 years. Most of the suicides occurred in the age range of 15 to 22 years, 49 patients (60.49%). Overall, 38 patients (46.9%) were single and the remaining 43 patients (53.1%) were married.

In terms of job, most of the cases were housewives (36 patients, 44%) and the rest were students (16, 19.8%), women without a specific job (11, 13.6%), university students (11, 13.6%), and employed women (7, 8.6%). Regarding educational level, 42 patients (51.9%) were under diploma, 36 patients (44.4%) were high school graduates or higher (academic), and 3 persons (3.7%) were illiterate.

In terms of the history of diseases, 70 patients (86.4%) had no history of diseases and the remaining 11 patients (13.6%) had a history of diseases. Overall, 25 patients (30.9%) had experienced mental disorders and the rest 56 patients (69.1%) had no such record. Moreover, of the study population, 9 patients (11.1%) had a history of hospitalization, 6 patients (7.4%) for medical reasons and the other three (3.7%) for mental illnesses, whereas the remaining 72 patients had no history of hospitalization.

In addition, 12 patients (14.8%) had a history of substance abuse and the 69 others noted (85.2%) no such record. Also, 22 patients (27.2%) had a history of suicide in the past, and the remaining 59 patients (72.8%) had no such history.

Among chemical toxins and drugs used for committing suicide, the highest frequency belonged to drugs (59 patients, 72.8%), and the other 22 (27.2%) had used chemical toxins. In addition, 48 patients (59.3%) noted family conflicts as the main reason for committing suicide and the rest named mental disorders (16 cases, 19.8%), failures of emotional relationship (7 patients, 8.6%), social problems and unknown causes with similar frequency (4 patients, 4.9%), and academic problems (2 patients, 2.5%). The approximate minimum and maximum ages of puberty were 11 and 18 years with an average of  $13.5 \pm 1.305$  years. The longest duration of menstrual bleeding was 10 days and the shortest duration was 3 days with an average  $6.22 \pm 1.823$  days. Regarding the time interval from the first day of the last menstrual cycle, 39 patients (48.1%) were in the luteal phase and the remaining 42 patients (51.9%) were in the follicular phase of menstrual cycle.

## DISCUSSION AND CONCLUSION

The main aim of this study was to evaluate the relationship between a particular phase of menstrual cycle and suicide attempts in women. In the present study, 39 patients (48.1%) were in luteal phase and the rest 42 patients (51.9%) were in follicular phase and there was not a significant difference regarding this issue. Some researchers have not found a significant relationship between certain periods of the menstrual cycle and suicide attempts in

women (5.7). Ekeberg *et al* reported no significant relationship in their study (9). Mann and his colleagues who studied suicide in women neurobiologically did not find a significant relationship between being in a certain phase of menstrual cycle and risk of suicide (10). On the other hand, such researchers as Durga *et al.* reported the higher prevalence of suicide attempts in the last week of menstrual cycle (4).

Jermain *et al.* in their study suggested that disturbances in the serotonergic activity of the brain are caused by hormonal fluctuations in women (11). Cremniter *et al.* reported the higher prevalence of suicide in follicular phase, especially in the first week of menstrual cycle in which blood level of estradiol is lower (3).

The higher prevalence of suicide in the follicular phase, especially in the first week, was confirmed by Garcia *et al*'s study (12). In a study at the University of Erzurum, Turkey, on 52 women of childbearing age who had regular menstruation, they reported that the majority of suicide attempts occurred in the follicular phase (13).

In Leenaars and colleagues' study in New Delhi, autopsy was done on 56 women who died following suicide and 44 women who died due to other reasons. Histopathologic studies on the uterus showed that 25% of the women in the first group and only 4.5% of the women in the second group were in the follicular phase (14).

Few studies have been performed in Iran in this field. For instance, Mousavi *et al*'s study on 298 female patients who referred to the Poisoning Emergency Ward of Noor Hospital and Ali-Asghar Hospital in Isfahan, Iran, in 2005 showed that most of the suicide attempts occurred during the luteal phase which was significantly different from the other phases of menstrual cycle (8). The mean age of the cases studied was  $23.63 \pm 8.419$  years and the minimum and maximum ages of the patients were 15 years and 55 years, respectively. The majority of the suicidal women were in the age range of 15-22 years. This is consistent with most of the studies performed in the world. Similar results were reported in the WHO study in Iran in

1991 which indicated the highest suicide rate to be in this age group (15).

Although being single is considered a risk factor for suicide (1, 2), noticing the age range of our study population group, most cases were married.

With regard to job, the highest frequency was related to housewives and then students, and the lowest frequency was related to working women. The results indicated that married housekeeper women had the highest degree of risk for committing suicide, whereas working women had the lowest degree of risk.

The results of several other studies are similar, so that most of the suicidal men and women are unemployed men and housewives, respectively (16).

In terms of educational level, the highest frequency of suicide was in the under diploma group, whereas the lowest frequency was for illiterate women with traditional beliefs and thoughts who were totally committed to fixed principles in marriage and cohabitation. This finding was not consistent with studies done in Western countries where suicide cases, especially cases of successful suicide, are more common in individuals with academic degree (17).

Most patients had no history of medical or psychiatric diseases and only one third of them had a history of psychological problems. Although it is said that the risk of suicide is higher in patients with chronic physical diseases (18), a small number of the patients had a history of hospitalization due to medical reasons and only three of them had been hospitalized due to psychological problems in the psychiatric ward. Noticing these findings, there was not a significant relationship between suicide and medical or mental illnesses in our study, although these diseases are mentioned as risk factors for suicide (18).

A small number of the patients had a history of substance and drug abuse, and most of them had no such record. In the present study, 22 patients (27.2%) had a history of suicide attempts in the past; therefore, the majority of the cases did not mention the history of suicide attempts or substance abuse, although both of them were considered as suicide risk factors (17, 18). Family conflicts, especially marital discord, were mentioned as

the main motivation of suicide attempts in most cases in our study. Other reasons cited included psychological problems, failures in romantic relationships, social problems, academic problems, and unknown problems.

Approximate minimum and maximum ages of puberty were 11 and 18 years, with mean of  $13.5 \pm 1.305$  years which somewhat differ in different regions of the world because of geographical and local parameters (19)

Based on the findings of present study, it appears that hormonal changes in different phases of menstrual cycle and particular phases of menstrual cycle cannot be alone taken as a direct cause which can be highly effective in increasing suicide rate in women. In fact, most of the patients in this study committed suicide on impulse and based on decisions without a clear relationship with their menstrual cycle phases.

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