

Depression Following Hysterectomy and the Influencing Factors

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Abstract

Background: Hysterectomy is one of the most common gynecological surgeries performed worldwide. However, women undergoing this surgery often experience negative emotional reactions.

Objectives: This study was done with the aim of investigating the relationship between hysterectomy and postoperative depression, three months after the procedure.

Materials and Methods: This longitudinal study was conducted in the province of Khorasan-Razavi in Iran, using multistage sampling. At first, three cities were selected from the province by cluster sampling; then, five hospitals were randomly selected from these cities. The participants included 53 women who were hysterectomy candidates in one of the five selected hospitals. The participants' demographics and hysterectomy procedure information were entered into two separate questionnaires, and the Beck depression inventory (BDI) was employed to measure their severity of depression before and three months after the surgery. The statistical package for the social sciences (SPSS) version 16 was used for the statistical analysis, and a P value of < 0.05 was considered to be statistically significant.

Results: The means and standard deviations of the participants' depression scores before and three months after their hysterectomies were 13.01 ± 10.1 and 11.02 ± 10.3 , respectively. Although the mean score of depression decreased three months after the hysterectomy, the difference was not statistically significant. However, a significant relationship was found between the satisfaction with the outcome of the hysterectomy and the postoperative depression score ($P = 0.04$).

Conclusions: In this study, undergoing a hysterectomy did not show a relationship with postoperative depression three months after the surgery. Moreover, the only factor related to depression following a hysterectomy was satisfaction with the surgery.

Keywords: Hysterectomy, Depression, Iran

1. Background

Nowadays, hysterectomy is one of the most common gynecological surgeries in many countries around the world (1). According to several reports in 2012, more than one-third of the 60 year-old women in the United States had undergone hysterectomies (2). Although a hysterectomy is used to treat cancers of the uterus and the ovaries, fibroids, genital prolapse, and resistant uterine bleeding, at least 80% of the hysterectomies performed are for the treatment of benign diseases of the female genital tract (3). A hysterectomy is a heavy and invasive surgical procedure, with a mortality rate of 1 in 1000 (4), and various side-effects, such as bleeding, infection, hospital readmission, dyspareunia, and reduced physical functioning, have been observed (5-7).

On the other hand, undergoing a hysterectomy has a strong effect on a woman's sexuality, causing poor body image and other factors which could lead to depression (8, 9). Women often consider the uterus to be a sexual

organ, and the controller and regulator of important physiological functions in the body, as well as the source of youth, energy, activity, and a symbol of child-bearing capacity (10). Therefore, it is not unexpected that many studies have indicated that because a hysterectomy constitutes the loss of an important organ, it may be a potent stimulus for stress and psychological problems in women (3, 9-11). The relationship between hysterectomies and psychological disorders has been raised since the beginning of the 1990s. For example, in 1997, Thompson reported that there was a probability of psychoses in women after hysterectomies; and within the three years following the surgery, 33% of the women experienced symptoms of depression (12).

While depression, in some studies, has been suggested as the most frequent psychiatric complication of hysterectomy (13), the results of the previous studies of depression following hysterectomy vary. For in-

stance, Kjerulff (2000), Rannestad (2005), and Flory (2005) have reported an enhancement in the quality of life after a hysterectomy, and no adverse psychological effects (14-16). In addition, Darwish (2014) reported, in a systematic review study, that a hysterectomy was significantly associated with a decrease in postoperative depression (17). On the other hand, in Badakhsh's (2008) study, the women who had received hysterectomies showed a significant increase in depression when compared to the control group (18). Jelovsek (2006) stated that whether done before or after menopause, a hysterectomy could lead to stress disorders and psychological consequences in women (11). Furthermore, Cabness (2010) reported, in a qualitative study, that depression in a woman may increase following a hysterectomy, especially at younger ages (19).

Previous studies have reached contradictory results with regard to the risk of depression after hysterectomy (20); although depression could affect a woman's physical activity level, surgical outcome, and recovery rate (21). As a serious psychiatric complication, it could have a negative influence on a woman's personal and family lives.

2. Objectives

Based on the abovementioned information, the present study was conducted with the aim of investigating the relationship between hysterectomy and postoperative depression.

3. Materials and Methods

The present longitudinal study was conducted in selected hospitals in the Khorasan-Razavi province in north-eastern Iran, and the sample size was determined using a pilot study. Subsequently, a sample size of 42 participants was obtained, using the mean comparison formula, and considering the following: $\alpha = .05$, $\beta = 0.2$, $C = 7.9$, $s = 9$, and $d = 4$. Taking into account the possibility of sample attrition, 55 participants were required.

For this research, multistage sampling was done. In the first stage, three cities, Mashhad, Gonabad, and Torbat-Heydarie, were selected from the Khorasan-Razavi province through cluster sampling. At the next stage, the hospitals were selected from the aforementioned cities. Accordingly, 22 Bahman hospital in Gonabad and 9 Dey hospital in Torbat-Heydarie were chosen, since they were the only centers in the two cities where hysterectomies were performed. In view of the number of hospitals performing hysterectomies in the city of Mashhad, three hospitals, Ghaem, Imam Reza, and Shahid Hashemi Nejad, were randomly selected from the public hospitals in the city.

The sample selection was done by convenience sampling, and the participants were recruited from the women who had gone to the selected hospitals to receive hysterectomies. The inclusion criteria were as follows: not being in menopause, not undergoing hysterectomy

due to malignancy, no chronic physical illnesses (such as diabetes and hypertension), no known mental disorders, and not being on hormone replacement therapy. The exclusion criteria were severe stress (loss of a loved one or postoperative hospitalization) within three months after the surgery, occurrence of a serious complication related to the hysterectomy performed (e.g. infection, opening of surgical incision, or diagnosis of malignancy after the surgery), or an incomplete questionnaire from the second stage of the study. Moreover, those participants who were diagnosed with severe depression, by obtaining a score in the range of 29 - 63 in the Beck depression inventory (BDI), were not included in the study, and were referred to receive psychological counseling. Based on the exclusion criteria, the following exclusions had to be made: one participant due to severe stress after the surgery, three participants due to complications related to the surgery, and three participants for not having completed the second questionnaire. Overall, 53 participants remained and completed the study.

Three instruments were used to conduct the research: a questionnaire on the participants' demographic and pregnancy information, a questionnaire about the hysterectomy performed, and the BDI. The first instrument included questions about each participant's age, occupation, educational level, number of pregnancies, number of children, duration of marriage, and the length of time between their last menstruation cycle and their hysterectomy. The second instrument included questions about the type of hysterectomy, length of the procedure, satisfaction with the surgery, reduction of problems after the hysterectomy, length of time taken to decide to have the hysterectomy, and the reason for receiving it. The BDI was utilized to measure the severity of depression, and is a 21-question multiple-choice self-report inventory, with a score of 0 to 3 assigned to each answer (the total score falls between 0 and 63). The BDI is a standardized instrument that has been used many times since it was first designed, and has been reported to have good reliability and validity in many studies. Its internal consistency Cronbach's coefficient ranges from .73 to .92, with a mean of .86, and its test-retest reliability has been reported from .48 to .86 (22).

To gather the data, the researchers went to the selected hospitals and chose the participants, based on the inclusion criteria of the study, from the women who were candidates to undergo hysterectomies. After explaining the purpose of the study, the researchers obtained informed consent from the women, in written form, to participate in the study. Next, the participants filled out their individual demographic and pregnancy information questionnaires, as well as their BDIs, in the presence of the researchers. After the surgery, some information, such as the length of the procedure, type of hysterectomy, and reason for receiving it, was extracted from the participants' medical records. Before being released from the hospital, the participants were asked to provide their

postal addresses and telephone numbers, and to carefully complete and mail back the questionnaires that they would receive three months later. In the second stage of the study (three months later), the researchers mailed the BDIs and the questionnaires about the postoperative information to the participants, and telephoned each one of them as a reminder to fill out the questionnaires, and return them in the stamped envelopes that were sent with the questionnaires.

3.1. Statistical Methods

The statistical package for the social sciences (SPSS) version 16 was used for the statistical analysis. The mean and standard deviation (SD) were reported for each of the continuous variables, and the number and percent were reported for the categorical variables. The Kolmogorov-Smirnov one sample test was used to check the normality of the continuous variables. Moreover, the paired t-test was used for the comparison of the pre and postoperative depression scores, and the correlations between depression and the other variables were evaluated using the Pearson's and Spearman's correlation coefficients. A P value of < 0.05 was considered to be statistically significant.

4. Results

The mean age of the women was 45.2 ± 6.1 , and the descriptive statistics of the participants are shown in Table 1. The level of education in 79% of the women was primary school or less, 25.5% of them had more than 6 children, and 50 women (94%) were satisfied with their operations.

The mean depression score before hysterectomy was 13.01 ± 10.1 , and mean depression score 3 months after

hysterectomy was 11.02 ± 10.3 . Although the mean depression score decreased, there was no significant difference in the depression scores between the two time points. Figure 1 shows the mean depression scores before the hysterectomy and 3 months after it.

Table 2 shows the correlation between the preoperative depression score, postoperative depression score, and absolute value of the change in depression, as well as some other factors. A significant correlation was found between the satisfaction with hysterectomy and the depression scores after hysterectomy ($P = 0.04$). However, there were no statistically significant correlations between the depression scores and the other factors.

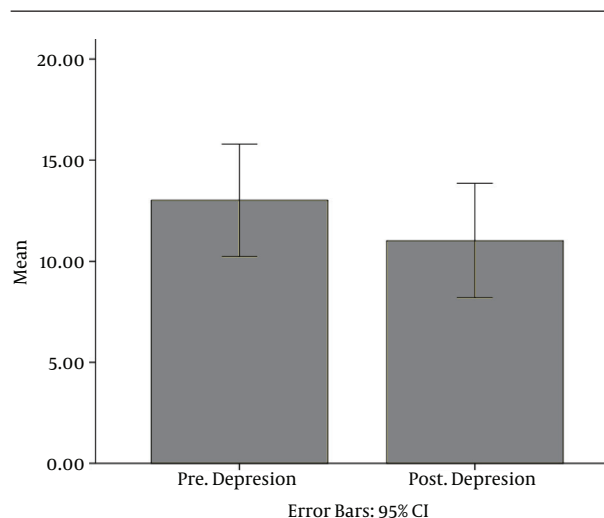


Figure 1. Mean Depression Scores Before and 3 Months After Hysterectomy

Table 1. Descriptive Statistics of Women Undergoing Hysterectomies

Characteristics	(Min - Max)	Mean \pm SD
Age, y	(33 - 64)	45.50 \pm 6.1
Education, y	(0 - 12)	4.30 \pm 2.8
Marriage duration, y	(8 - 40)	27.13 \pm 7.7
Difference in couple's ages, y	(0 - 40)	7.75 \pm 6.9
Husband's education, y	(0 - 16)	6.24 \pm 4.2
No. of pregnancies	(0 - 9)	5.00 \pm 2.2
No. of children	(0 - 9)	4.22 \pm 1.8
Time from LMP, mo	(1 - 20)	6.35 \pm 21.8
Time for making decision to undergo surgery, mo	(1 - 24)	3.56 \pm 4.3
Duration of operation, min	(75 - 240)	143.40 \pm 28.3

Table 2. Correlations Between Depression Scores and Other Factors in Women Undergoing Hysterectomies

Variable	Depression Score Before Hysterectomy	Depression Score After Hysterectomy	Absolute Value of Change in Depression Score
Age			
Pearson correlation coefficient	0.171	0.193	.112
P value (2-tailed)	0.221	0.166	.424
Education			
Spearman's rho coefficient	0.196	-0.030	.163
P value (2-tailed)	0.159	0.831	.244
Marital duration			
Pearson correlation coefficient	0.070	0.122	.169
P value (2-tailed)	0.624	0.387	.230
Number of pregnancies			
Pearson correlation coefficient	-0.120	0.021	.088
P value (2-tailed)	0.393	0.881	.531
Number of children			
Spearman's rho correlation coefficient	-0.156	0.008	.063
P value (2-tailed)	0.265	0.956	.653
Duration of hysterectomy operation			
Pearson correlation coefficient	0.171	0.146	.194
P value (2-tailed)	0.236	0.311	.177
Duration of decision making to have hysterectomy			
Spearman's rho coefficient	-0.102	-0.149	.182
Sig. (2-tailed)	0.469	0.288	.193

5. Discussion

Our study indicated that although the mean score of depression decreased three months after hysterectomy (compared to before the operation), there was no statistically significant difference between the mean score of depression before hysterectomy and three months after the procedure. This finding is similar to the results of a prospective cohort study, which was conducted in 2011, that reported a decrease in the depression score of women who had undergone hysterectomies, when compared to the control group in a one-month period; however, the difference was not statistically significant (23). In another study which was done in Nigeria in 2009, the findings revealed that, according to the general health questionnaire (GHQ), 6.7% of the women were depressed before having a hysterectomy, but the rate decreased to 2.3% after the operation, which was not statistically significant (24).

In another study carried out in 2014, depression in endometrial cancer patients was investigated 3, 6, 12, and 24 months after their hysterectomies. However, the results did not reveal any significant changes in the depression scores of the women over time (25). The findings of a study done in Nepal in 2013, on the other hand, indicated a statistically significant reduction in the level of depres-

sion 6 and 12 weeks following hysterectomy. It should be mentioned, in that study, women with advanced prolapses (stages 3 and 4) were included, and the researchers attributed the significant decrease in the prevalence of depression after hysterectomy to this factor (26). Women with advanced prolapse have excessive vaginal discharge, are commonly discriminated against by their partners, and are in fear of being abandoned by them. Therefore, after the prolapse is corrected, these problems are solved, and their depression decreases (11, 26).

Other studies have reported contradictory results; for example, in Helmy's (2008) study, which was conducted in Egypt, women who were candidates for hysterectomies were divided into two groups according to the 28-item general health questionnaire (GHQ-28): those with psychiatric disorders and those without psychiatric disorders. The findings revealed that 78.8% of the women who were in the group without psychiatric disorders experienced psychological symptoms within two years after their hysterectomies. This researcher concluded that a low level of education and cultural factors contributed to the prevalence of psychiatric disorders, and believed that due to the high value placed on the fertility of women in traditional

Egyptian society, women who undergo hysterectomies show stronger emotional reactions (27). The roles of socio-cultural factors in the perceptions of women with regard to the importance of fertility have also been pointed out by Sabbour (2001). In traditional societies, such as in Egypt, in which masculine roles are more dominant, the fertility of women is considered to be highly important in the dominant culture of the society (28).

A study carried out in Iran by Badakhsh et al. demonstrated that women who had undergone hysterectomies experienced significantly more depression than the control group (18). The difference in the outcome of that study, compared to our study, could be due to the time-frame for measuring depression after the operation. In our study, depression was measured three months after the hysterectomy, whereas Badakhsh et al. (2008) measured depression during a 15 - 36 month period after the operation. This long time period increases the chance of intervening variables affecting depression.

In this study, a positive relationship was found between postoperative depression and the ages of the women, where the postoperative depression score increased with an increase in age; however, the relationship was not statistically significant. Previous research has also reported that age is an important predictor of women's psychological disorders in gynecological malignancies (29). In justifying this outcome, we could point out that at an older age, or near menopause, women experience a gradual weakening of their body systems, which could lead to less independence and, in turn, greater reliance on others; this could be an effective factor in causing depression (30). In spite of this, Cooper (2008) has reported contradictory findings, showing that women who had undergone hysterectomies before the age of 40 were at a higher risk of poor psychological health. Cooper presented explanations for the striking results: the women in the study had poor psychological health prior to their hysterectomies, and the majority of them were nulliparous or had only one child. Their hysterectomy led to a loss of fertility and, therefore, detrimentally affected their subsequent psychological health (31).

Overall, this study found a negative relationship between the level of education and the postoperative depression score; however, the relationship was not statistically significant. Similar findings have been reported by Borimnejad (2011), who found no significant relationship between the educational level and the psychological aspects of life quality after hysterectomy (32). In addition, Stellman (2008) noted that depression after hysterectomy was higher in women who had fewer than 12 years of education (33). Studies done by Moorman (2008) and Onyike (2003) also showed the positive effects of a higher level of education on a decrease in psychological symptoms (23, 34). With regard to the role of education in postoperative depression, it appears that women with low levels of education are more susceptible to psychological tension. A high level of education is

a valuable asset, which increases the active adaptability of people, and is associated with higher social and occupational positions, a higher level of income, and more self-confidence. In our study, the participants generally had low levels of education, with few of them holding high school diplomas and higher degrees. It seems that the reason we obtained results which were not statistically significant may be due to this, and if the study is done with a larger sample population, statistically significant results may be attained.

In the present study, no significant relationship was found between the number of children and postoperative depression; but Helmy (2008) discovered a significant association between postoperative psychiatric symptoms and the number of children, with the most severe depressive symptoms found among nulliparous women (27). The reason for obtaining these results in our study may be that there were only two nulliparous women, and most participants had more than three children.

Our results also revealed a negative relationship between the duration of time needed for making the decision to have a hysterectomy and postoperative depression; however, the relationship was not statistically significant. Stellman (2008) stated that those patients who undergo surgery less than one month after making their decision are at a higher risk of depression and, accordingly, in need of more attention and psychiatric consultation (33).

In our study, a significant relationship was found between satisfaction with the outcome of hysterectomy and the postoperative depression scores. Several other studies have demonstrated the same relationship; for example, Husson (2010) reported, in a systematic review, that optimized patient satisfaction with surgery is associated with lower levels of depression (35). In one study about the outcomes of mastectomy, Roth (2007) pointed out the relationship between increased patient satisfaction with surgery and a decreased level of depression (36).

There are some limitations to this study. First, certain factors, such as the attitudes of women towards hysterectomy and the level of support they received from their partners, were not taken into account. These factors could affect the psychological condition of the women after their operations, and contribute to depression. Second, we recommend that future studies be done with larger sample populations. Moreover, factors such as the severity of depression in longer and more recurring episodes, the level of support from the partner, and the attitudes of the women towards hysterectomy could be included as intervening variables, and case-control study designs could be used.

5.1. Conclusions

The findings of the present study have demonstrated that hysterectomy does not affect the level of depression three months after the operation. Given that the only variable influencing postoperative depression in this study was

patient satisfaction with the operation, a careful selection of patients according to real indications for hysterectomy, an increase in the quality of postoperative care, and other attempts that lead to higher patient satisfaction, could reduce the risk of depression after hysterectomy.

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Footnotes

Authors' Contribution: Narjes Bahri was the main investigator and wrote the article. Hamid Reza Tohidinik contributed to the study design, interpretation of the data, and critical revision of the manuscript for important intellectual content. Tahereh Fathi Najafi, Zahra Askari Sartavosi, and Thoraya Amini contributed to the study design, data gathering and critical revision of the manuscript, and Mona Larki was the corresponding author.

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