Original Article

A meta-analysis on studies about obstetric risk factors of postpartum depression in Iran within 1995-2005

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Abstract

BACKGROUND: Mood disorders including postpartum depression are among the most important mental health disorders in postpartum period. There are numerous independent studies conducted in scientific and research centers in Iran on the subject, and a meta-analytic evaluation of these studies can yield practical and precise results.

METHODS: This was a meta-analytic study using Hunter and Schmidt approach, carried out in 2007. Eleven research projects and dissertations conducted in Iran within 1995-2005 were studied and data were obtained based on a standard checklist. The researches approved to enter the study based on methodological parameters. The checklist validity and reliability were confirmed by content validity and consistency index respectively. After summarizing the results, the effect's size was calculated and then interpreted based on combined meta-analysis approach and Cohen chart.

RESULTS: According to the calculated effect's size of studied researches, childbirth rank and type of delivery variables have weak relation with postpartum depression ($z = 20.08$ and $z = 3.7$ respectively) and unwanted pregnancy variable is moderately related ($z = 15.72$).

CONCLUSION: The results indicate the importance of preventing unwanted pregnancies by educating people, families and health care employees in order to improve women's health.

KEY WORDS: Postpartum depression, related factors, meta-analysis.

The term health means ultimate physical, psychological and social comfort and to achieve it all these three parameters should be considered. Achieving psychological health demands paying attention to critical periods of life and intervene on time to prevent psychological disorders. One of the critical periods in a woman's life is pregnancy and delivery.[1] Mood disorder is the most significant postpartum psychological disorder. Postpartum blues can be a natural response to postpartum psychological changes, which is reported to have 50-80% prevalence in the world.[2] However, sometimes this leads to depression. The rate of postpartum depression is 10-15% and mothers may suffer from its complications for months.[2] Mothers are basis of the family.[3] A depressed mother pay less attention to her surroundings and her passionate responses toward family decrease or her depression disrupts her communication with others. Other studies also found that depressed mothers' newborn babies turn to troubled, nervous and unhappy individuals.[4] In some unfortunate cases, depressed mothers may kill their newborns or other members of their family, or commit suicide.[2]

Also this disorder put a great load of financial expenses on the society. Depression in the

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USA cost 83.1 billion dollars in 2000 including 26.1 billion dollars for health care expenses, 5.4 billion dollars for suicidal expenses, and 51.5 billion dollars for service centers' expenses.[5]

Considering the fact that multiple factors are associated with this disorder, reducing each of the known effective factors can reduce the probability of postpartum depression. There are several studies conducted on the risk factors associated with this disorder, but they have controversial results. There are uncontrollable factors and limitations in each study, which affects results, but evaluating a collection of studies in a meta-analysis study can help to some extent.

The term meta-analysis was used for the first time by Glass, the head of American Educational Research Society in 1976 and then developed by Hedge and Olkin in 1985, Hunter and Schmidt in 1990, and Rosenthal and Robin in 1994.[6] The purpose of a meta-analysis method is to show the way of thinking by combining studies using statistical methodologies. In other words, meta-analysis is a method to conclude differences in conducted researches and find general applicable results.[7]

The most important purpose of a meta-analytic study is to provide more precise conclusions and solve the problem of controversial results. Also, by putting together the small size researches, it makes a bigger sample size and develops the statistical validity. Therefore, several similar studies with negative results can lead to one meta-analytic study with positive results.[8]

Since postpartum depression is a common disorder causing social disabilities and its prevalence depends on various cultural and social factors, the existing studies are often conducted independently and since they are not followed up, their results are not valid for application. This meta-analytic study on postpartum depression in Iran seems necessary to elucidate the relation between obstetric risk factors and this public health problem. Therefore, this study aimed to conduct a meta-analysis on studies about obstetric risk factors, associated with postpartum depression, and combine and ana-

lyze the findings of studies carried out on the subject in Iran to find a set of main and common factors associated with this disorder. We hope that the results of this study can pave the way for reducing the incidence of this disorder.

Methods

This was a meta-analytic study using Hunter and Schmidt approach and based on Stenner's meta-analysis model, carried out in 2007.[9] The study population included midwifery's, psychology's and psychiatry's research projects, thesis and dissertations on postpartum depression conducted in Iran within 1995-2005 which the researchers had access to.

Eleven research project and dissertations were collected by searching the internet, or contacting universities and research centers throughout the country via personal contacts, phone calls or e-mails based on a standard checklist. These 11 researches were the study sample. The checklist was made based on the Stenner's forms for analyzing the content of documents' backgrounds model.[9] Then, researches approved to enter the study based on methodological parameters which means those with useful statistics, significance meaningfulness, sampling method, useful instruments, validity and reliability, and the same purpose as this study were selected. Data were gathered from the final reports of research projects and dissertations to calculate the effect's size and combine the results of researches for meta-analysis.

In meta-analysis, the main principle is to calculate the effect's size of separated studies and combine them into a matrix to obtain the mean.

The study purposes were defined based on the subject and after calculating the effect's size for meta-analysis.

After calculating the effect's sizes, it was agreed to interpret the results based on Cohen chart and advices from meta analysis professionals as follow: the effect's sizes less than 0.1 considered low effect, between 0.1 and 0.2 were low average, 0.2 to 0.3 were almost average, 0.3 was average, more than 0.3 were high average, and 0.5 was considered high effect.[7]

The checklist validity and reliability were confirmed by content validity and consistency index (equal to 92%) respectively. The r-metric method was used for effect's size and therefore, Hunter and Schmidt approach used for data analysis and combination of research results.

Results

From the whole samples, 86.42% of them were from Tehran province and 14.57% were from Ardebil, Chahar-Mahal-Bakhtiari, Guilan, Hormozgan, Isfahan, Kerman, Khorasan and Mazandaran provinces.

Dissertations were 14.57% of the whole samples and the other 86.42% were research projects. Most of them were conducted in 1999 and the rest were conducted between 1997 and 2005. Edinburgh questionnaire was used in 64.29% of studies and the other 35.71% were used Beck questionnaire.

The sampling method of 58.28% of studies was simple sampling, 28.85% used purposive and convenient method, 35.7% used simple random sampling, and 7.14% used random stratified sampling. Also, 7.14% of samples had a size of less than 100 persons, 57.28% had 100 to 200, 29.14% had 200 to 300, 28% had 300 to 400, 14% had 400 to 500 and 7% had more than 500.

In 50% of studies only χ^2 test was used, 7% used χ^2 and t-tests, 7% used correlation coefficient and t-test, 14% used ANOVA and t-test, 4% used U-Mann-Whitney and 14% used correlation coefficient, t-test, ANOVA and χ^2 tests. Table 1 shows the results' summary of the research's variables' relation with postpartum depression.

Discussion

One of the 10 researches' analyzes showed a relation between the type of delivery and postpartum depression ($p < 0.05$) with an average effect's size. Also, two other studies showed it with $p < 0.05$ and low average effect's size. But the other 7 studies found no relation between these two variables.

Meta analysis approach showed that based on the mean of effect size and Cohen chart for interpreting effect's size, the relation between

type of delivery and postpartum depression had a low effect's size and we can conclude that this variable has no clinical significance meaning. This result agrees with the results of independent studies of Nielsen et al,[10] Josefsson et al,[11] and McCoy et al.[12] But, Adewuya et al[13] and Fisher et al[14] said that cesarean section (CS) can be related with incidence and severity of postpartum depression symptoms.

In spite of these controversial findings, Robertson et al[15] showed in his meta-analysis that there is a small but significant relationship between type of delivery and postpartum depression and CS with low effect's size can cause more postpartum depression among mothers.

In most countries of the world natural delivery and particularly painless delivery is highly promoted and CSs are mostly operated when there is a problem or obstacle for natural delivery. Therefore, CS can be more stressful than natural delivery for women and can cause postpartum depression. Since Iranian women do not have enough information about advantages of natural delivery and disadvantages of CS, unfortunately CV has become an almost usual process of delivery and Iranian women prefer it to escape the pain of natural delivery. Besides, most Iranian women have never heard of painless delivery and therefore, CV is not more stressful to them in comparison to natural delivery.

Two out of 7 researches mentioned a relation between first delivery and postpartum depression with $p < 0.05$ and low average effect's size. But the rest of studies found no significant relation between these two variables. And again the importance of running a meta-analysis on the factors related to postpartum depression shows itself.

According to meta-analysis results, the mean effect's size of this variable is 0.0761 and based on Cohen chart it is a low effect's size and we can conclude that this variable has no clinical significance meaning. Josefsson et al[11] and Moraes et al[16] also found no relation between these two variables and Robertson et al[15] also found no relation between the two in their meta-analysis. However, Nielsen et al[10] and Berle et

Table 1. Research variables associated with postpartum depression.

Statistical index Independent studies	Number of studies	Mean of effect size	SDr of effect size	Z	Interpretation of effect size
Type of delivery	10	0.0723	0.0036	08/20	weak
Childbirth rank	6	0.0761	0.0206	7/3	weak
Unwanted pregnancy	7	0.2138	0.0136	72/15	Almost avarage

al[17] reported having had deliveries before, and Abbott et al[18] and Eberhard et al[19] reported first delivery as the risk factors of depression.

The reason for the controversial results of independent studies can be different sample's size or different methodology or the cultural differences of the societies studies took place in.

All the researches mentioned a significant relationship between unwanted pregnancy and postpartum depression, but the effect's sizes were different and in a range of low average to higher than average.

After statistical analysis based on meta-analysis method, the results showed the mean effect's size of 0.2138, which is interpreted as almost average based on Cohen chart and means that there is a significant relation between unwanted pregnancy and postpartum depression (it should be mentioned that this relation does not mean a risk factor), which agrees with the results of studies by Patel et al,[20] Csatordai et al[21] and Abbott et al,[18] but disagrees with studies by Dennis et al[22] and Chaaya et al.[23]

Beck[24] in a meta-analysis mentioned a low average effect's size of unwanted pregnancies on postpartum depression. The present study is almost disagreeing with Beck's study and the difference can be due to cultural and social differences of the two societies. In Iran, religious beliefs and Islamic law make abortion illegal except in special cases that mother's life is at risk. Hence, if not having an illegal abortion, unwanted pregnancies usually are tolerated with anxiety and depression and lead to giving birth to an unwanted child and postpartum depression. But it is different in some other societies and an unwanted pregnancy does not lead to delivery. This point can explain the difference between the results of the present study and that of Beck's.

Findings show that among obstetric risk factors, unwanted pregnancies have an almost average association with postpartum depression. Therefore, midwives who are responsible for counseling women about contraceptives are recommended to improve their knowledge of contraceptives and advantages and disadvantage of various methods and help mothers to select an effective suitable method for themselves to prevent unwanted pregnancies.

In addition, midwives should ask pregnant women in their first visit whether or not it is an unwanted pregnancy and if it is, they should offer appropriate support and encouragement to improve her self confidence and acceptance of the situation.

It is also recommended that midwives develop their knowledge on physical and psychological changes of pregnancies and postpartum period, postpartum depression and its risk factors and screen to find at risk mothers and provide preventive interventions. They should use Edinburgh test for postpartum care to diagnose, treat and prevent further side effects on mothers and families.

The researchers declare that they had no conflict of interest in this study and it was done under the research ethics.

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