The effect of educational intervention on prevention of postpartum depression: an application of health locus of control

Mahdi Moshki, Tahereh Baloochi Beydokhti and Khadijeh Cheravi

Aims and objectives. To assess the effectiveness of application of health locus of control in pregnant women for prevention of postpartum depression in Iran.

Background. Nearly 10–15% of women suffer postnatal depression by the end of the second week after delivery, which creates problems in caring for the child that may affect child’s future learning and concentration.

Design. Pre–post experimental design.

Methods. Two hundred and thirty volunteer women were randomly divided into experimental and control groups. The data collection tools included a demographic questionnaire, the Multidimensional Health Locus of Control Scale and the Edinburg Depression Scale. Based on the associations found in the pretest, intervention programme was planned and carried out in the focused group discussion method. Data were collected after the end of scheduled sessions, immediately and one month later. The data were analysed with SPSS-16 using statistical methods including ANOVA, chi-square test, Student’s t-test and paired t-test.

Results. Chance health locus of control significantly reduced and internal health locus of control significantly increased, immediately after intervention. Also, a month after intervention, a significant difference was observed between the two groups in reducing postpartum depression.

Conclusions. The planned participatory intervention led to empowerment and increased awareness and internalisation of health control beliefs and less tendency towards external health control beliefs, especially chance, improvement in general health leading to improved psychological health for prevention of postpartum depression in mothers.

Relevance to clinical practice. Clinicians might assess chance and internal HLC scores to identify those women at risk of developing depression during their pregnancy or postpartum and to develop prevention and treatment plans.

Key words: depression, health locus of control, postpartum, pregnancy

Accepted for publication: 3 September 2013
Introduction

Postpartum depression (PPD) is a global phenomenon (Ikeda & Kamibeppu 2013). Of the most sensitive periods in women’s lives are pregnancy and postpartum periods. As much as the physical aspects, this period is also important in social and psychological terms (Tabrizi & Lorestani 2011). Because of fatigue and loss of energy, medication effects, duration of labour, complications in the process of delivery and suchlike in the postpartum period, more than any other time, the mother is prone to emotional and mood crisis including depression (Wang et al. 2003).

Approximately 8.5–11% of women experience either minor or major depression during pregnancy (Ikeda & Kamibeppu 2013). In developed countries, the prevalence of PPD has been reported 10–15% (Tomlinson et al. 2006) and in Iran 17–23.7% (Narimani et al. 2005).

The American Psychiatric Association describes PPD as an episode of depression that begins at least four weeks after giving birth (Abraham 2008). However, some experts consider occurrence of any depression episode up to 18 months after delivery, postpartum, and some studies have shown that women are still prone to PPD even two years after delivery (Goodman 2004).

This condition occurs with symptoms such as lack of attention to appearance, lower emotional responses and communication with relatives, anorexia, lower libido, irritability, negative thoughts, suicide attempts and also problems with child care. Meanwhile, due to lack of understanding PPD and grief, women become involved in disorders in social activities, personal functions and household duties (Halbreich & Karkun 2006).

Among all types of depression, PPD is mostly important as, in addition to the mother’s health, it has negative and undesirable effects on the development and growth of the child (Bloch et al. 2006). As every birth is a primer of upbringing of a person and the first foundations of this upbringing are laid by mothers, those mothers who are mentally and physically healthy themselves can more effectively raise a healthy child (Khodadadi et al. 2009).

An important problem in people with depression is low rate of diagnosis and treatment of these patients. Only less than half of the women suffering from major depression disorder are identified and treated, making diagnosis of depression a major clinical and health issue (Chen et al. 2006).

Psychological interventions for primary prevention are programmes that can have a great impact on reducing incidence of depression. Also, there is a need to conduct theory-based studies to identify the important variables predicting PPD among women.

Health locus of control (HLC) is the degree to which the individual believes health outcomes are the result of his own actions (internal HLC), luck or chance (chance HLC) or the influence of significant other people (powerful others HLC). Derived from Rotter’s social learning, the HLC was introduced by Wallston et al. in 1970s (Wallston et al. 1978). People with a strong internal HLC believe that their behaviours determine their health status. They are more likely to seek information about health-threatening conditions and engage in healthier behaviours, such as disease prevention, to maintain their health (Wang et al. 2010). In contrast, an external locus of control is marked by belief in the influence of fate, powerful others or supernatural occurrences upon one’s health (Brincks et al. 2010). It has long been established that people’s perceived ability to control their health influences their efforts to accumulate and use health knowledge (Wang et al. 2010). This study aimed to assess the effectiveness of application of HLC on pregnant women for prevention of PPD in Iran.

Background/literature

The maternal role is vitally important to ensure the infant’s safety, survival and well-being, but it does not come without costs (Logsdon et al. 2006). Maternal illness such as depression also may influence functioning in the maternal role, by altering the woman’s self-esteem and self-efficacy, interfering with the cognitive process of attaining the role of mother or depleting energy stores (Logsdon et al. 2006). Through both research and anecdotal observation, it has become general knowledge that many women show symptoms of depression following the birth of a child (Abraham 2008). Researchers estimate that approximately 50–70% of women experience mood disturbances in the first two weeks after giving birth (Abraham 2008). Despite the well-documented consequences of PPD, it remains difficult to identify and diverse practices related to its prevention and treatment (McQueen et al. 2008). In particular, a study of 60 primiparous mothers in the UK found that only 25% of the mothers sought professional assistance for depressive symptoms (McQueen et al. 2008). Often healthcare providers do not screen for PPD because they are unsure where to refer patients or do not think that it is their responsibility to screen (Minkovitz et al. 2005). In a meta-analysis study, the 13 predicting factors of PPD include history of prenatal depression, self-esteem, childcare stress, parents’ anxiety, life event stresses, unplanned pregnancy, social support, history of depression, infant’s mood, maternal grief, socio-economic status, marital relationship and marital status (Beck 2001).
The lack of standardised practices and policies allows for new mothers experiencing symptoms of depression to be lost in the healthcare system, and without appropriate intervention, these women may remain in an untreated depression for years, affecting their own health as well as the health of their partners and children (Abraham 2008).

Education regarding PPD should begin before or during pregnancy (Logsdon et al. 2006). Current researches on relationship between HLC and PPD have limited their scope to health education plan and intervention. A relationship between HLC and risk of PPD is not fully illustrated yet (Abraham 2008). A study found that external locus of control (chance) was the only statistically significant predictor of prenatal depression (Richardson et al. 2012).

As a result, there is a need for further research to explore the constructs surrounding locus of control and PPD. The development of a correlation between risk factors and PPD will allow nurses to develop standardised nursing care practices to improve the reported outcomes for patients affected by postpartum depressive symptoms. Intervention such as peer-led support groups that foster the development of infant care skills and teach coping strategies and the setting of specific attainable goals for at-risk women with positive reinforcement from nursing professionals may help women, who identify an external locus of control, to decrease their risk of depression in the postnatal period.

Methods

Ethical consideration

Ethical approval was obtained from Gonabad University of Medical Sciences Research Committee. So, the participants were given written and oral information about the study. They were anonymous. All of them participated willingly and voluntarily in this study. All the participants were informed of the study objectives and how to perform it.

Design and participants

The study was a pre–post experimental design with a control group and was conducted during October 2012–January 2013. The participants were 230 volunteer pregnant women attending health service centres of Gonabad city in east north of Iran. The participants were randomly divided into control and case groups. Study inclusion criteria were gestational age of 28–30 weeks, literacy, no history of depression or psychological disorders, healthy foetus confirmed by ultrasound and residence in Gonabad. Exclusion criteria were incomplete each of the questionnaires that could not be summed up and analysed, declining to participate, preterm birth during inter-vention, severe physical–psychological stress (e.g. hospitali-sation, undergoing surgery, death of relatives, serious physical and psychological problems) during the last year.

Measure

Data were collecting using the following:

1 Demographic questionnaire including participants’ and spouses’ occupation, financial status, type of delivery in current pregnancy, age, education level, child’s gender, planned or unplanned pregnancy of mothers.

2 Multidimensional health locus of control Scale (MHLCS): This scale predicts health behaviours according to participants’ beliefs. In this study, Form B was used comprising 18 items in three components (six items each), namely internal health locus of control (IHLCC), powerful others health locus of control (PHLC) and chance health locus of control (CHLC). All items contained six-point Likert style, scoring 1–6 marks, so that a person’s score could vary from 6–36 for each component, and they will not be summed together, but calculated independently. There is no cut-off point in this tool, and the mean score is used for final evaluation (Wallston et al. 1978, Wallston 1989). After translation of this scale, face, content, concurrent and construct validity, the reliability of test–retest, parallel tests and internal consistency had been confirmed in Iran (Moshki et al. 2010, Moshki & Ghofranipour 2011).

3 Edinburgh Postnatal Depression Scale (EPDS): This tool contains 10 short statements, with four answers for each statement, and is used to identify postnatal depression. Scores <12 are considered depressed, and 12 and over are considered nondepressed. Validity and reliability of the questionnaire have been confirmed in Iran. Cronbach’s alpha coefficient and test–retest reliability were found to be 0·86 and 0·80, respectively (Montazeri et al. 2007).

Procedure and analysis

After obtaining the participants’ written consents, the questionnaires were completed as pretest by control and experimental groups. Based on the results of the pretest, a participatory educational programme was carried out for the experiment group, which included anatomic and physiological changes, nutrition, common complications during pregnancy, mental health and communication skills, familiarisation with pregnancy stages, delivery and pain reduction methods, postpartum health, emotions and attitudes of women with special emphasis on components of HLC
including internal HLC, powerful others HLC, chance HLC. The sessions were held in the form of three educational workshops for three subgroups of participants in experimental group, with one week interval between each workshop. Nine workshops lasting 36 hours in total were held for the experiment group. Also, the subjects discussed in the workshops were presented in brief, with emphasis on HLC components for the spouses in one session. In the last session, training materials derived from available reliable sources about postpartum education and physical and mental health care were issued to the experiment group members. The control group used normal, routine care available at health centres. It should be noted that the training content presented in the workshops was decided after running a pilot study and needs assessment of pregnant mothers. The MHLCS was performed immediately after the intervention sessions, and EPDS was performed after four weeks after childbirth to assess PPD as post-test in both groups. Using SPSS-16 software (IBM SPSS Statistics, Copyright SPSS Inc., Chicago, IL, USA), the data were analysed through descriptive and inferential statistics methods of ANOVA, chi-square test, Student’s t-test and paired t-tests. The results were considered significant at \( p < 0.05 \) level.

**Results**

There were 115 pregnant women in each of the experiment and the control groups with mean age 28±6.39 and 27.8±5.29 years, respectively. Table 1 shows background details of both groups. Majority of the participants in these groups were housewives, and majority of the husbands were civil servants (51-66%). Most participants were educated to diploma and higher levels (64-12%). Nearly 80% in both groups did not have a history of abortion.

It can be seen in Table 2 that before intervention, internal belief, powerful others belief and chance belief had the highest mean scores, respectively. Immediately after intervention, chance belief reduced significantly and internal belief increased significantly in the experiment group. However, in the control group, no significant change was observed in any of the variables compared with before intervention. A significant difference in depression reduction was observed between the two groups one month after intervention, indicating the effectiveness of the intervention programme (Table 2).

According to the one-way ANOVA test, there were significant correlations between Edinburgh Postnatal Depression Scale (EPDS) and occupation of spouse \( (p < 0.001) \), financial status \( (p < 0.001) \) and type of delivery \( (p < 0.001) \) in both groups. However, Pearson correlation coefficient was not significant in either group between EPDS and age, and

<p>| Table 1 Description and comparison of demographic variables at preintervention |
|-----------------------------|-----------------------------|-----------------------------|</p>
<table>
<thead>
<tr>
<th></th>
<th>Experimental (115)</th>
<th>Control (115)</th>
<th>( p )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiteracy</td>
<td>27 (22:66)</td>
<td>23 (19:7)</td>
<td>0:38</td>
</tr>
<tr>
<td>Primary</td>
<td>16 (13:33)</td>
<td>14 (12:7)</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>32 (26:66)</td>
<td>42 (36:6)</td>
<td></td>
</tr>
<tr>
<td>Higher</td>
<td>40 (33:33)</td>
<td>36 (31)</td>
<td></td>
</tr>
<tr>
<td>Delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal</td>
<td>63 (54:5)</td>
<td>59 (50:9)</td>
<td>0:841</td>
</tr>
<tr>
<td>Caesarean</td>
<td>52 (45:5)</td>
<td>56 (49:1)</td>
<td></td>
</tr>
<tr>
<td>Job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>99 (86:7)</td>
<td>95 (82:2)</td>
<td>0:539</td>
</tr>
<tr>
<td>Employed</td>
<td>8 (6:7)</td>
<td>14 (12:3)</td>
<td></td>
</tr>
<tr>
<td>Scholarship</td>
<td>8 (6:7)</td>
<td>6 (5:5)</td>
<td></td>
</tr>
<tr>
<td>Husband’s job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worker</td>
<td>31 (26:66)</td>
<td>33 (28:76)</td>
<td>0:001</td>
</tr>
<tr>
<td>Employee</td>
<td>59 (51:66)</td>
<td>33 (28:76)</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>25 (21:66)</td>
<td>49 (42:46)</td>
<td></td>
</tr>
<tr>
<td>Child’s gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>54 (46:7)</td>
<td>49 (42:5)</td>
<td>0:084</td>
</tr>
<tr>
<td>Male</td>
<td>46 (40)</td>
<td>33 (28:8)</td>
<td></td>
</tr>
<tr>
<td>No difference</td>
<td>9 (13:3)</td>
<td>33 (28:8)</td>
<td></td>
</tr>
<tr>
<td>Type of pregnancy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wanted</td>
<td>77 (66:95)</td>
<td>83 (71:83)</td>
<td>0:638</td>
</tr>
<tr>
<td>Unwanted</td>
<td>38 (33:33)</td>
<td>32 (28:16)</td>
<td></td>
</tr>
</tbody>
</table>

| Table 2 Mean and standard deviation for major variables among two groups by pre- and postintervention |
|-----------------------------|-----------------------------|-----------------------------|
|                           | Experimental Group (\( n = 115 \)) | Control Group (\( n = 115 \)) | \( p \)-value |
|                           | Mean | SD  | Mean | SD  | t-test |
| Internal health locus of control |      |      |      |      |       |
| Pretest                    | 27.2 | 3.39 | 24.58 | 3.42 | 0.25 |
| Post-test                  | 28.33| 3.67 | 26.20| 5.98 | 0.03 |
| Powerful others health locus of control |      |      |      |      |       |
| Pretest                    | 24.73| 4.79 | 22.83| 4.42 | 0.001|
| Post-test                  | 25.16| 4.91 | 23.87| 5.96 | 0.23 |
| Chance health locus of control |      |      |      |      |       |
| Pretest                    | 19.2 | 5.90 | 19.03| 5.71 | 0.13 |
| Post-test                  | 16.50| 2.55 | 18.77| 4.95 | 0.003|
| Edinburgh Postnatal Depression Scale |      |      |      |      |       |
| Pre-test                   | 7.40 | 3.73 | 10.75| 4.89 | 0.001|

one-way ANOVA between EPDS score and education level, child’s gender, wanted or unwanted pregnancy, participants’ job \( (p > 0.05) \).

The values of correlation coefficient between EPDS score and HLC components for each group are presented in Table 3. The results are indicative of a significant correlation between internal belief and chance belief with EPDS.
Table 3 Correlation matrix between postpartum depression and health locus of control (HLC) after intervention using Pearson correlation coefficient

<table>
<thead>
<tr>
<th></th>
<th>Edinburgh Postnatal Depression Scale</th>
<th>Internal health locus of control (IHLC)</th>
<th>Powerful others health locus of control (PHLC)</th>
<th>Chance health locus of control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>IHLC</td>
<td>-0.35*</td>
<td>0.28</td>
<td>0.19</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td>-0.12</td>
<td>1</td>
<td>0.52**</td>
</tr>
<tr>
<td>Experimental</td>
<td>PHLC</td>
<td>0.27</td>
<td>0.28</td>
<td>1</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td>0.00</td>
<td>0.71**</td>
<td>0.42**</td>
</tr>
<tr>
<td>Experimental</td>
<td>Chance health</td>
<td>0.42**</td>
<td>0.19</td>
<td>0.55**</td>
</tr>
<tr>
<td>Control</td>
<td>locus of control</td>
<td>0.11</td>
<td>0.52**</td>
<td>1</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01.

Discussion

In this study, the prevalence of depression was 21.5%, but the results of various studies on PPD varied from 5% in Denmark to 13.4% in Brazil (Khoramirad et al. 2010), 13.8% in Japan (Miyake et al. 2011) and 15.81 in Scotland (Nagy et al. 2011). Also, prevalence in Iran has been reported 32% (Shobeiri et al. 2007), 20% (Najafi et al. 2004) and 31.1% (GhaffariNejad et al. 1978), respectively.

Given the dimensions of PPD and its numerous multifaceted effects on the mother and baby, family, marital life, occupational status, effectiveness in society and having a role in the society and family finances, more thoughts should be given to this problem (Wallston 2005a).

The findings of the current study revealed that the prevalence of depression among women with Caesarean section delivery is higher than in women with normal vaginal delivery. In a study, the PPD rate was significantly higher in women with Caesarean section than in women with natural deliveries (Dolatian et al. 2006). Ukpong and Owolabi (2006) in Nigeria also reported a higher prevalence of PPD among women with Caesarean section. However, Chaaya et al. (2002) revealed a lower prevalence of depression in Lebanon women with Caesarean section deliveries compared with women with natural deliveries. In another study in Australia on three groups of women with natural deliveries, with natural deliveries using forceps and Caesarean section, it was revealed that odds of PPD in the Caesarean group was 6–82 times more than in other groups (Boyce & Todd 1992). No specific mechanism has been presented for PPD in Caesarean section cases, but perhaps longer hospitalisation period, anaesthesia and surgery complications, and later resumption of routine activities could be blamed for depression after Caesarean deliveries (Kamranpour & Shakiba 2012).

In a study by Sharifi et al. (2007), the symptom of severe depression in women with civil servant husbands was less than those with husbands in other occupations, which is in line with the findings of this study. It is possible that people with this type of job compared with manual workers and the self-employed are more highly educated and are more sensitive to the needs of their spouse and provide more support (especially emotional supports) for them, which lead to women having higher self-esteem, making them more resistant to PPD (Sharifi et al. 2007).

The findings demonstrated that there was a statistically significant correlation between financial status and PPD. Beck (2001) and Dennis et al. (2004) stated that financial status of the family is an important factor in mother’s PPD.

The present study pointed the highest mean score among pregnant women before intervention related to internal belief, powerful others belief and chance belief, respectively, which concurs with the results obtained by Richardson et al. (2012). Abraham (2008) reported that internal, chance and powerful others had the highest mean scores, respectively.

In the study, there was a significant correlation between internal HLC and PPD. Lamanna (2000) and Abraham (2008) revealed a significant negative correlation between internal belief and PPD. People with internal belief, particularly about health (IHLC), have more incentive in helping themselves and see them as the decisive factor in implementing changes (Wallston 2005a,b). Based on previous studies, it could be assumed that high internal belief can function as a protective factor against depression (Richardson et al. 2012). Internal belief is associated with positive awareness and attitudes, psychological status and health behaviours, and sources of HLC are more associated with negative health behaviours and weak psychological status (Wallston 2005b).

The current study pointed to no significant correlation between the PHLC and PPD. Despite, no similar study was found in this issue for comparison. Similar to this study, Richardson et al. (2012) reported that CHLC has a statistically significant correlation with PPD in pregnant women. Benassi et al. (1988) also revealed that control belief was
related to depression. Despite this study, Moshki et al. (2010) in assessing relationship between health control and lifestyle of pregnant women demonstrated no significant correlation between powerful others and chance beliefs.

The interesting point in the present study was that before intervention, PHLC scores was higher in experiment group than in control group, making this variable significant in the two groups, but after intervention, no significant difference yielded between the two groups, which is indicative of efficacy of the intervention programme in reducing PHLC.

Limitations and suggestions

Limitations in this study included limited number of training sessions for participants’ spouses. As in the Iranian culture, men play an important role in the lives of their wives in terms of emotions and socio-economic supports, thus, their roles in preventing PPD must be emphasised and considered more than before. Therefore, it is recommended that health educators take this point into consideration and especially endeavour to involve men for greater impact of health programme. Also, another limitation, the participants were from among urban pregnant women. It is possible that urban and suburban women have a different feeling in relation to controlling their pregnancy compared with women from villages. Women living in large cities may feel more in control of their pregnancy due to more availability of and access to services. Hence, there is a discrepancy in results between different studies. Lack of studies on this issue was another limitation in this study.

Conclusions

The results of the study showed that variable of spouse’s job, financial status and type of delivery influenced PPD. In line with other studies (Benassi et al. 1988, Lamanna 2000, Abraham 2008, Richardson et al. 2012), findings of this study showed that the person’s belief about health control (internal HLC, powerful others HLC and chance HLC) was directly related to PPD. Also, chance HLC can be a strong predictor of PPD. Therefore, by using health education planning based on HLC, especially increased internal HLC and reduced chance HLC in pregnant women that are the high risk group in the society, PPD can be prevented or reduced, so that, an appropriate strategy in mothers’ health may become practical using this programme.

Relevance to clinical practice

Health locus of control was used in this study as a potential predictor of postnatal depression and foetal development. Perhaps, the greatest benefit from this research is that it suggests further assessments for identifying those at greater risk of developing depressive symptoms. Clinicians might assess chance and internal HLC to identify the women at risk of developing depression during their pregnancy and to develop prevention and treatment plans.

Acknowledgements

The authors are indebted to personnels of health services centres of Gonabad city (Iran) that advanced this study. We would like to thank the Gonabad University of Medical Sciences for funding the study.

Disclosure

The authors have confirmed that all authors meet the ICMJE criteria for authorship credit (www.icmje.org/ethical_1author.html), as follows: (1) substantial contributions to conception and design of, or acquisition of data or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content and (3) final approval of the version to be published.

Conflict of interest

The authors have no conflict of interest to disclose.

References


Tabrizi M & Lorestani KH (2011) Effectiveness of the eclectic counseling in decreasing depression during pregnancy and preventing postnatal depression. Thought and Behavior in Clinical Psychology 17, 19 [in Persian].


Wallston KA (2005a) Overview of the special issue on research with the multidimensional health locus of control (MHLC) scales. Journal of Health Psychology 10, 619–621.


Wallston KA, Wallston BS & DeVellis R (1978) Development of the multidimensional health locus of control

The *Journal of Clinical Nursing* (JCN) is an international, peer reviewed journal that aims to promote a high standard of clinically related scholarship which supports the practice and discipline of nursing.

For further information and full author guidelines, please visit JCN on the Wiley Online Library website: http://wileyonlinelibrary.com/journal/jocn

Reasons to submit your paper to JCN:
High-impact forum: one of the world’s most cited nursing journals, with an impact factor of 1·316 – ranked 21/101 (Nursing (Social Science)) and 25/103 Nursing (Science) in the 2012 Journal Citation Reports® (Thomson Reuters, 2012).

One of the most read nursing journals in the world: over 1·9 million full text accesses in 2011 and accessible in over 8000 libraries worldwide (including over 3500 in developing countries with free or low cost access).

Early View: fully citable online publication ahead of inclusion in an issue.

Fast and easy online submission: online submission at http://mc.manuscriptcentral.com/jcnur.

Positive publishing experience: rapid double-blind peer review with constructive feedback.

Online Open: the option to make your article freely and openly accessible to non-subscribers upon publication in Wiley Online Library, as well as the option to deposit the article in your preferred archive.