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Investigation of the effectiveness of psychiatric interventions on the mental health of pregnant women in Kashan City – Iran: A clinical trial study

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ABSTRACT

Aim: Pregnancy is one of the most sensitive periods in a person's life; therefore maternal mental illness during pregnancy increases the risk for adverse developmental outcomes in children (Jha et al., 2018). The aim of this study was to determine the effectiveness of psychiatric interventions in the mental health of pregnant women in Kashan, Iran.

Methods: The purpose of this clinical trial was to evaluate an integrated model of mental health during pregnancy over the period of 2015–2018 in Kashan. Subjects consisted in 202 pregnant women (101 in the intervention group and 101 in the control group) who were referred to Kashan Health Centers in the 6th to 10th weeks of pregnancy. The General Health Questionnaire-28, Golombok Rust Inventory of Marital State, an interview on psychiatric symptoms, and a review of the history of the mental health of the mother and first-degree relatives were utilized for data collection. In the intervention group, psychiatric measures and predictive drug treatments were presented.

Results: Overall, from among 102 pregnant mothers, 39 women (37.14%) were identified as at-risk and high-risk. The highest number of mothers identified as at-risk and high-risk were in the first trimester of pregnancy and in the 6th to 10th weeks of care (64%). With the start of psychiatric interventions in the intervention group, the subscale of physical complaints and anxiety showed a significant decrease compared to the control group ($P < 0.01$). Mental health improvement was achieved in 95% of expectant mothers through Level I predictive measures, and only 5% of participants required the specialist level of intervention.

Conclusion: By identifying psychiatric disorders in pregnant mothers during the first level of pregnancy care services and taking suitable measures, an integrated model for mental health services in primary health care for pregnant women can help managers, policymakers, and decision-makers to improve health and reduce the costs in the health system in order to achieve the Sustainable Development Goals.

1. Introduction

According to the Global Burden of Disease Study by the World Health Organization, depressive disorders are projected to have the greatest share among numerous diseases in years lost due to disability in developing countries in 2020 (Murray and Lopez, 1997; Jha et al.,2018). In the near future, there will be even more aspects to dealing with psychological issues, and thus it is necessary to identify at-risk groups and plan for the prevention (at all levels) of these diseases and associated complications. Numerous studies in Iran as well as in other countries show that psychiatric disorders are more prevalent in women (Piccinelli and Homen, 1997). According to the Iranian National Health and Disease Plan, the prevalence of somatization disorders, anxiety, and depression in women was found to be significantly higher than that in men (Noorbala et al., 2011; Shirzadi et al., 2019). These differences are including biological differences, socioeconomic status, financial dependence of women, social status and pregnancy (WHO, 2002; Okojie, 1994; Patel et al., 1999). For many women; pregnancy is a stressful time and requires some form of psychological adjustment (Younghkin and Davis, 1998). About 15–20% of pregnant

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women suffer from mental health problems and about 10% of severe depression and this can cause many complications for both the mother and the fetus (Mangoli et al., 2003). Mental disorders during pregnancy can have major consequences, such as preterm birth, pregnancy and delivery complications, intrauterine growth restriction, and postpartum depression (Weissman and Olfson, 1995). Reports emphasize psychological treatment to reduce mental disorders during pregnancy including depression and anxiety (van Ravesteyn et al., 2017; Wilkinson et al., 2016).

Today in Iranian healthcare centers, pregnancy and postpartum care is limited to physical care only, and women's mental health during and after pregnancy has been disregarded even though physical health depends on mental health to an extent. The purpose of this study was to investigate the effects of psychiatric and psychological interventions on the mental health of expectant and new mothers. Through timely interventions to prevent mental disorders and improve the quality of life for mothers, the results of this study can play a role in the improvement of the mental health of mothers, children, and the society in general in order to have a healthier future generation.

2. Materials and methods

This clinical trial, conducted over the course of three years (2015–2018), was aimed at designing an interventional model for the promotion of mental health in pregnant women in the primary care system for general health coverage. The study was carried out in three phases (Fig. 1) in collaboration with the Family Health Research Department of the Maternal, Fetal and Neonatal Research Center of Tehran University of Medical Sciences, the Kashan University of Medical Sciences, the Office of Mental and Social Health and Addiction, and the Office of Health, Population, and Family.

To conduct this study, four urban healthcare centers in Kashan, namely Kargar Nejad Hospital, Shahid Beheshti Hospital, Matini Hospital, and Naghavi Hospital, were selected as the locations for the study. The criteria for choosing these centers included sufficient number of births and presence of active interested volunteers who were experienced healthcare professionals. Similarity of cultural context and socioeconomic status was considered in order to collate the demographic situation of the observing and executing centers. Human resources and equipment required in the four study centers were anticipated and supplied. Convenience sampling was used to select pregnant women who referred to these health centers for examination during the 6th to 10th weeks of pregnancy. Of these, 202 pregnant women were entered into the study after explaining the study and obtaining informed consent. This project was conducted pursuant to latest version of the Declaration of Helsinki and approved by the Ethics Committees of Tehran University of Medical Science (TUMS) and Kashan University of Medical Science (KUMS), Iran, approved this study with code 92106. All participants suggested to participate in the study and we gave to them about the objectives of the research, and in case of willingness, they completed informed consent forms for taking part in the study.The inclusion criteria for this study were pregnant women who were willing to participate in the study, age range of 20–35 years, and absence of serious physical illnesses (diabetes, hypertension, and addiction). In order to determine the influence of psychiatric and psychological interventions on the mental health of mothers, the pregnant women were divided into intervention and control groups. A total of 101 pregnant women referring to Kargar Nejad and Matini hospitals were selected for the intervention group, and 101 pregnant women referring to Shahid Beheshti and Naghavi health centers were selected for the control group. To diagnose psychiatric disorders and relevant therapeutic interventions, a diagnostic protocol and therapeutic package was prepared by a team of psychiatrists and psychologists and provided to trained health personnel. In addition to the diagnostic protocol and therapeutic package, the General Health Questionnaire-28 (GHQ-28), questions about stress in the previous six months, and Golombok Rust Inventory of Marital State (GRIMS) were used to assess the marital satisfaction of the pregnant women. Workshops for training and empowerment of health staff including midwives and physicians were conducted by psychiatrists and psychologists. A care service protocol and training packages were developed for the target group. Forms for registration of services and checklists for monitoring and evaluation were developed. In order to formulate the protocol with increased efficiency, service packages and maternity guidelines available in the primary care system, mental health assessment tools, and associated interventions were collated and analyzed. Different levels of primary health care were considered, and a protocol was drafted.

Using the GHQ-28, interviews (concerning psychological symptoms and history of mental disorders in the subject and first-degree relatives) were conducted at four different times for each subject, i.e. 6–10 weeks of pregnancy, 35–37 weeks of pregnancy, 6 weeks after delivery, and 6 months after delivery. Psychological symptoms were examined during routine pregnancy care. Furthermore, marital satisfaction was examined in both groups on two occasions, i.e. in 6–10 weeks of pregnancy and 6 months after delivery. According to the protocol, expectant mothers were assessed using the GHQ-28, psychiatric symptoms, and history of psychological disorders in the subject and first-degree relatives. On the basis of these assessments, subjects were categorized into three groups: low-risk, medium-risk (at-risk), and high-risk. In order to provide mental health services to expectant and new mothers in accordance with the integrated model of pregnancy care in primary health care, five services were provided depending on needs in six sessions prior to delivery and two sessions after delivery (at 6 weeks and 6 months).

In the intervention group, interventions included life skills training, stress management training, supportive psychotherapy, an educational package (including guidelines for mental health, breastfeeding, and parenting), and drug therapies. The control group did not receive special interventions, and only received the routine pregnancy treatment.

In the intervention group, mental health interventions were carried out by a midwife, physician, or psychiatrist in accordance with risk categorization. If GHQ-28 score was below 23 (indicating mental health), psychiatric disorders were absent in the histories of the patient and first-degree relatives, or the patient had fewer than six mild psychiatric symptoms, the pregnant mother was classified as low-risk and was provided with the first level of services. These pregnant women received face to face instruction in mental health and stress management by specifically trained midwives (Fig. 2) and also participated in training classes. If possible, the spouses of the pregnant women would also attend these sessions. An educational package was provided to the subjects as well. If GHQ-28 score was over 23 and less than 45, the subject or a first-degree relative had a history of psychological disorder, or the subject possessed 6–8 mild psychiatric symptoms, the expectant mother was placed in the medium-risk group. In addition to the measures taken in the low-risk group, two weeks after the first examination, these patients were followed up and re-evaluated by a midwifery expert. At-risk expecting mothers who were reassessed as low-risk continued to receive low-risk pregnancy care. Subjects who remained in the at-risk group after two weeks were referred to the general practitioner of the center. The services provided by general practitioners to this group included supplementary stress management training, supportive psychotherapy, and conflict resolution in the family. Feedback was provided by the general practitioners to the center's midwife for routine pregnancy care. If the pregnant woman's GHQ-28 score was 45 or above, the number of mild psychiatric symptoms was 9 or greater, or there was a history of mental illness in the subject or first-degree relatives and GHQ-28 score was over 23 and less than 45, the pregnant mother was classified as high-risk (Table 1). These participants were referred to the center's general practitioner by the midwife. Measures taken by the general practitioner for this group included (1) supplementary stress management training, (2) investigation of stress management usage, (3) supportive psychotherapy, and (4) resolving conflicts in the family. In addition to these measures, these participants were referred to the project psychiatrist to receive necessary treatment according to the training package. After visiting

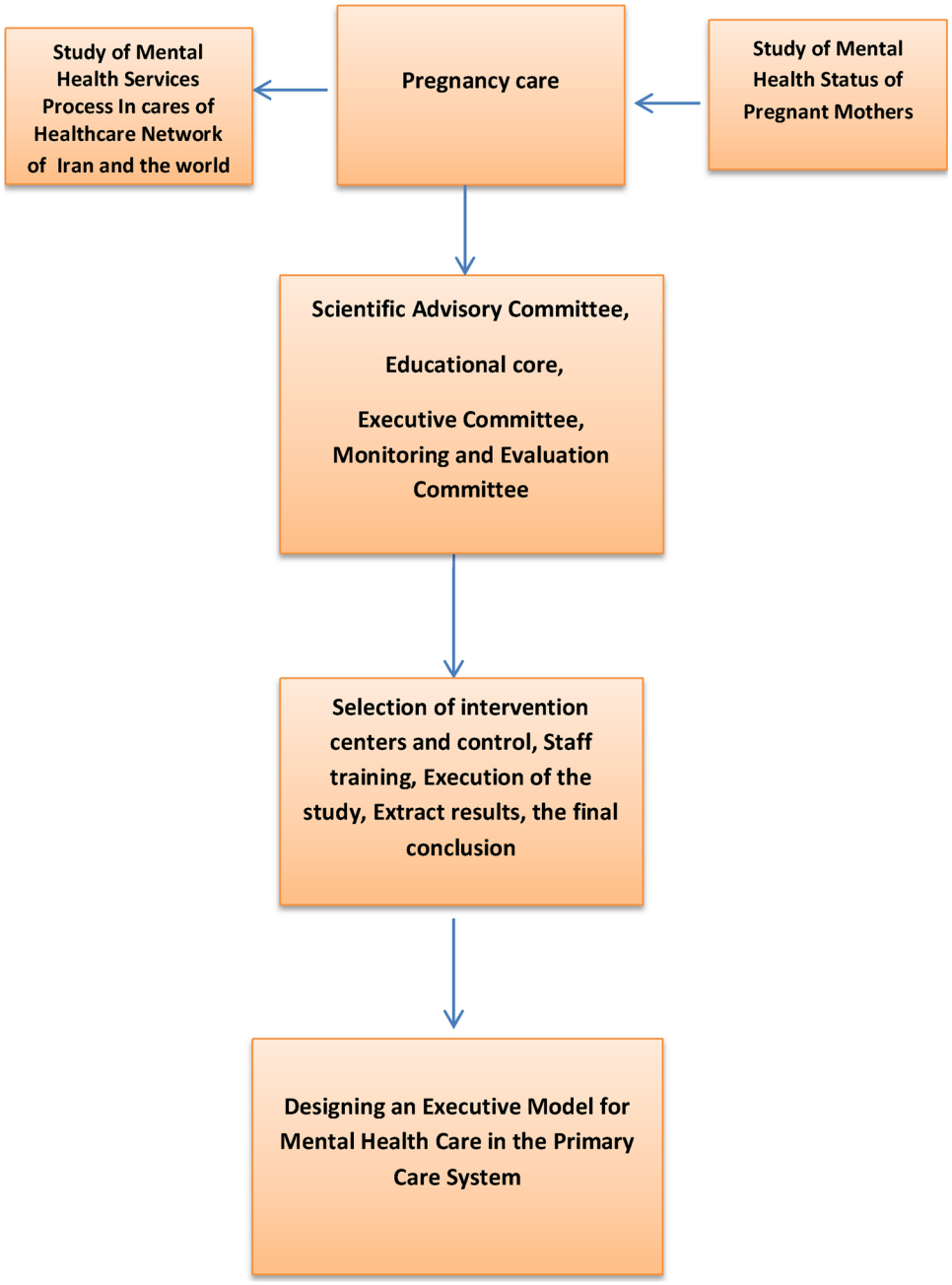

Fig. 1. Phases of research.

each high-risk participant and provision of psychological services and drug prescription, the psychiatrist would send feedback to the center's general practitioner.

All mental health interventions were provided to participants as required until six months after delivery. The effects of interventions on mental health and marital satisfaction indicators were measured in both intervention and control groups. During the study, monitoring was carried out using a checklist designed for the control and intervention groups, and feedback was sent to the host centers.

GHQ-28 has 28 questions in four subscales including the somatoform, the anxiety and insomnia, the social function and the depression. There is a score for each subscale and an overall score. In terms of internal consistency (Cronbach's alpha), GHQ-28 had a value of 0.87. The validity coefficients of the subtests were between 0.50 and 0.81, and the test had a sensitivity of 0.86 and specificity of 0.82. In the scoring method used for GHQ-28, the score of each item ranges from 0 to 3 depending on response. Thus, the score in each of the subscales can range from 0 to 21 and in the overall test from 0 to 84. (Noorbala et al., 2009).

The GRIMS assesses the relationship of a couple and includes 28 four-choice items based on the Likert scale. The items evaluate problems in marital relationships on a scale of 0 to 3 in terms of sensitivity and attention toward the needs of one another, commitment, loyalty, cooperation, love, intimacy, trust, sympathy, etc. The overall score of the inventory ranges from 0 to 84. Higher scores are indicative of worse marital relationships. Rust, Bennun, Crowe, and Golombok (1990) have indicated that the content validity of the tool is high with respect to its specificity. In terms of reliability, Rust et al. (1990) reported Cronbach's alpha coefficients of 0.89 for women and 0.85 for men. The retest reliability coefficient was 0.80 for a 12-month period. Moreover, the internal consistency reliability was 0.95 for women and 0.92 for men, and split-half reliability was 0.65 for women and 0.94 for men (Besharat et al., 2006).

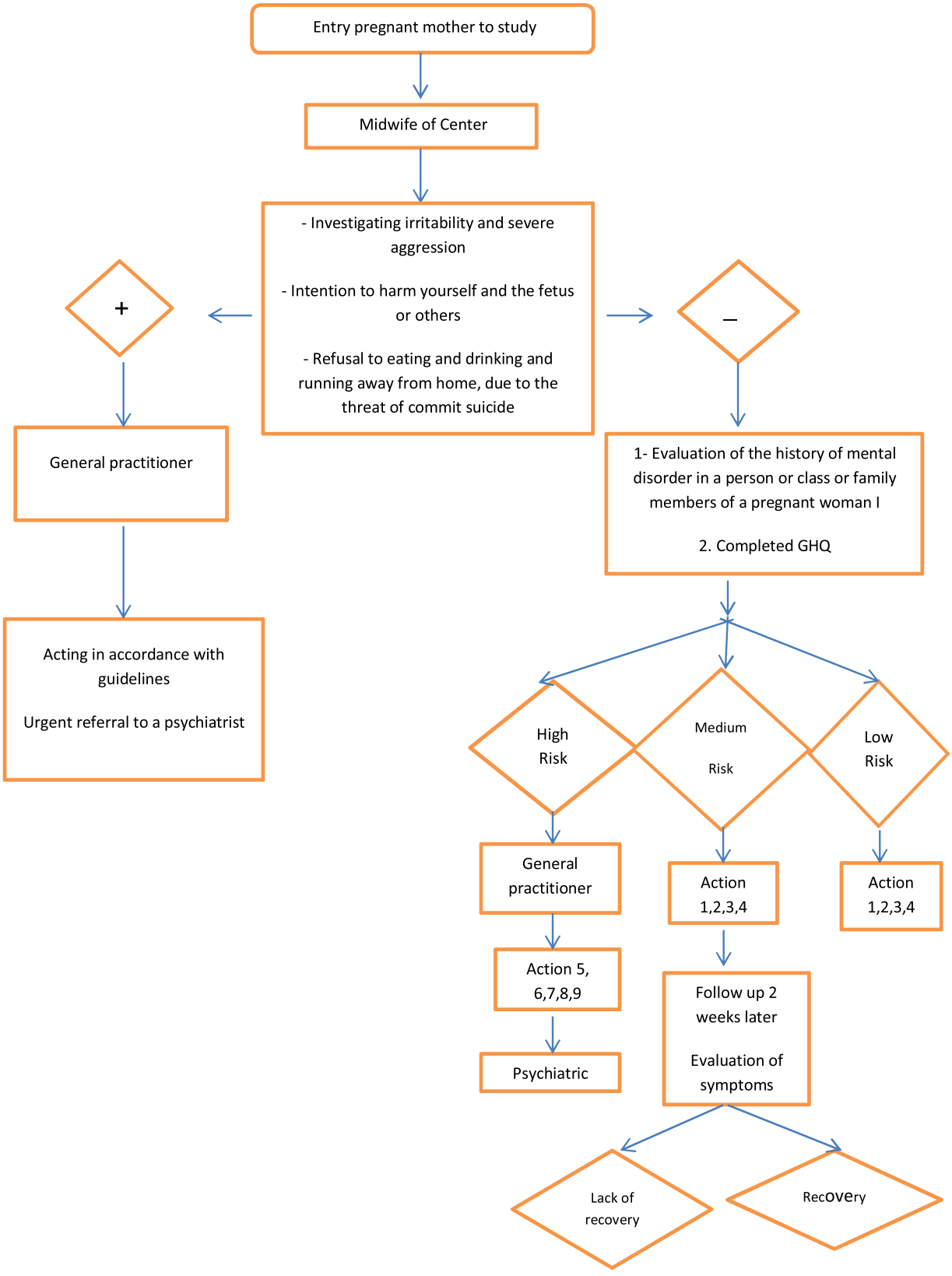

Fig. 2. Flowchart of the referral process of the pregnant mother.
* [1] 6–10 weeks of pregnancy.
*[2] 35–37 weeks of pregnancy.
*[3] 6 weeks after childbirth.
*[4] 6 months after childbirth.

Table 1
Mental Health Care during Pregnancy and Postpartum.

Title	subjects
History of the disease	History of mental illness,Treatment or hospitalization especially in previous pregnancies (1(History of mental illness in the first-degree family (2)
Mild disorders	Low activity (1), Fatigue (2), feeling of weakness (3), feeling of fear and anxiety (4), worthlessness (5), emotional fluctuations (6), unusual crying (7), boredom (8), depressed mood (9), Indifference (10), sleep disorders (11), anorexia (12), irritability and anger (13),Disturbing thoughts (14), Compulsive behavior (15),Reducing Focus (16)
score	GHQ GOL
Severe disorders	Severe irritability and aggression (1), severe insomnia (2), severe anorexia (3), Excessive appetite (4), Severe disruption in marital relations (5), talkativeness (6), Calling too much (7), The obvious neglect of personal hygiene and appearance and orderliness(8), Extreme makeup (9), Inactivity (10), Intense activity (11), Frequent departure from home (12), Escape from home (13), Spending too much (14), Refusing to eat food and medicine (15), Not speaking (16), Ding high-risk behaviors such as drug or alcohol use …. (17), Dangerous Driving (18), Unusual and unconventional communication and non- Sharia with Others (19), Feelings of extreme despair (20), Feeling of sever guilty (21), Thoughts of death and suicide (22), Commit suicide (23), Intense desire to destroy the fetus (24), Severe injury to the fetus for abortion (25), Thoughts or actions harming or destroying others (26), Illusion (perceived without stimuli) (27), Delusions (unreasonable incorrect belief with argument) (28)
Grouping	(a) Low risk (b) at high risk (c) high risk
proceedings	Mental Health Pregnancy Education During care (1), Stress management training during Care (2), Mental Health Pregnancy Education, Attendance in Class (3), Stress management training, attendance at the classroom (4), Further training for stress management (5), Ensuring the application of stress management methods (6), Supportive Psychotherapy (7), Resolving conflicts in the family (8), Referral to general practitioner (9), referral to psychiatrist (10)

3. Statistical analysis

This project was registered in the Iranian Registry of Clinical Trials, numbered IRCT20120905010746N6. Data were analyzed using SPSS (Version 20.0. Armonk, NY: IBM Corp). Data were analyzed using descriptive statistics, chi-squared test, and independent-samples t-test.

4. Results

A total of 256 pregnant women were initially enrolled in the study, of which 202 pregnant women remained until the end of the study. Reasons for leaving the study included abortion (55.1%), migration (32.6%), and lack of cooperation (12.2%). Of the 101 pregnant women in the intervention group, 16 pregnant women were identified as high-risk (23.15%) and 23 pregnant women as at-risk (9.21%) by the midwives. Out of 101 pregnant women, 39 (14.37%) were evaluated as at-risk and high-risk. The most common period for the detection and diagnosis of at-risk and high-risk pregnant women was in the first trimester (6–10 weeks) (64%). Of the 39 cases identified as at-risk and high-risk, 36 cases were diagnosed by our general practitioners and psychiatrists as having psychiatric disorders (3.92%). Of the 36 cases who were diagnosed with psychiatric disorders, there were ten cases of anxiety disorders (8.27%), 25 cases of mood disorders (4.69%), and one case of adaptive impairment (8.2%). Among those referred for the specialized level (high-risk), 5% visited the psychiatrist. The average duration of psychiatric intervention (drug treatment) for those referring to our psychiatrist was 6.9 months. After initial intervention, 91% of the cases identified as at-risk entered the low-risk group. After intervention, 75% of cases identified as high-risk entered the low-risk group while 19% entered the at-risk group. The demographic details of the intervention and control groups are reported in Table 2. According to data provided in Table 2, there was no significant difference in the demographic characteristics of the intervention and control groups. However, there was a significant difference between the groups in terms of infant sex ($P < 0.05$). The number of male newborns was greater in the intervention group while the number of female newborns was greater in the control group (Table 2).

In investigation of psychological health (GHQ-28) and marital satisfaction (GRIMS), there was no significant difference between groups at baseline in terms of GHQ-28 between the two groups. However, there were significant differences between the groups in all three post-intervention follow-ups (35–37 weeks, 6 weeks postpartum and 6 months postpartum).

GHQ-28 scores were lower in the intervention group than the control group (lower GHQ-28 scores imply greater mental health). Furthermore, no significant difference was observed between the two groups at any follow-up in terms of GRIMS (Table 3).

In the investigation of mental health subscales in the intervention and control groups, results demonstrated a significant intergroup difference in the 35–37 week follow-up in terms of somatic complaints ($P = 0.007$) and anxiety ($P = 0.003$). Six weeks after delivery, a significant difference was observed among groups in terms of mental health subscales including somatic complaints ($P = 0.0001$), anxiety ($P = 0.0001$), and depression ($P = 0.016$). Six months after delivery, a significant difference was found among groups in all mental health subscales including somatic complaints ($P = 0.0001$), anxiety ($P = 0.0001$), depression ($P = 0.029$), and social function ($P = 0.029$) (Table 4). These differences suggest the effectiveness of the therapy in the intervention group.

As shown in Fig. 3, it seems that psychiatric interventions have resulted in a reduction in intervention group GHQ-28 scores, which indicates that mental health has increased over time throughout the treatment period in the intervention group whereas no significant change has been observed in the control group.

5. Discussion

Considering the significant improvement of mental health indicators in the intervention group after delivery in comparison with the control group in the present study, it seems that psychiatric interventions are effective in improving the mental health of pregnant women and mothers after delivery. In the psychiatric intervention group, the mental health of women in 35–37 weeks of pregnancy (third trimester), 6 weeks after delivery, and 6 months after delivery was significantly higher than that in the control group. A quasi-experimental study carried out with regarding cognitive-behavioral stress management (CBSM) and its effects on anxiety and depression in pregnant women. The results showed a significant reduction in mean post-test scores for anxiety and depression in the experimental group compared to control group pre-test scores (Karamoozian and Askarizadeh, 2015; Tareen and Tandon, 2018). Urizar et al. investigated whether giving stress reduction instructions can help regulate stress, mood, and cortisol levels during pregnancy. Results showed lower levels of stress ($P < 0.001$), decreased symptoms of depression and negative mood ($P < 0.001$), and low cortisol levels in the morning ($P = 0.01$) compared to the control group. The paper discusses health behaviors during the stress reduction condition and implications for prenatal health interventions (Urizar et al., 2004). Various studies have shown that CBSM training during pregnancy is an effective approach to increase mental health and reduce anxiety associated with pregnancy. Training and psychological support of women during labor reduces anxiety and labor pain as well as the frequency of interventions such as episiotomy and cesarean section. Specialized training programs and psychological support also

Table 2
Demographic characteristics of both interventional and control groups in women participating in the study.

Variables	Intervention group n (%)	Control group n (%)	Total n (%)	P-value
Education				
unfinished Elementary	6 (5.8)	2 (2)	8 (4)	0.449
Elementary and unfinished Secondary	18 (17.5)	15 (15.2)	33 (16.3)	
Secondary and unfinished high school	19 (18.4)	14 (14.1)	33 (16.3)	
Diploma	39 (37.9)	47 (47.5)	86 (42.6)	
Student University and Bachelor	21 (20.4)	21 (21.2)	42 (20.8)	
Job				
housewife	100 (97.1)	94 (94.9)	194 (96)	0.726
Employed less than 20 hours a week	2 (1.9)	3 (3)	5 (2.5)	
Employed more than 20 hours a week	1 (1)	2 (2)	3 (1.5)	
Abortion history				
No	80 (79.2)	82 (83.7)	162 (81.4)	0.689
one time	17 (16.8)	14 (14.3)	31 (15.6)	
2 times or more than 2 times	4 (4)	2 (2)	6 (3)	
Labor history				
No	4 (3.9)	2 (2)	6 (3)	0.376
Yes	98 (96.1)	96 (98)	194 (97)	
Type of delivery				0.377
Natural	54 (52.5)	44 (44.9)	98 (48.8)	
Cesarean	49 (47.6)	54 (55.1)	103 (51.2)	
Sex				
Girl	46 (45.1)	58 (59.2)	104 (52)	**0.0406**
Boy	56 (54.9)	40 (40.8)	96 (48)	
Breastfeeding	100 (98)	95 (96.9)	195 (97.5)	0.618

Variables	Intervention group M ± SD	Control group M ± SD	Total M ± SD	P-value
Age	26.73 ± 5.64	27.72 ± 5.15	27.92 ± 5.41	0.218
Age of Marriage	19.92 ± 4.95	20.11 ± 3.46	20.16 ± 3.86	0.329
Duration of marriage	6.83 ± 5.48	7.38 ± 4.89	7.10 ± 5.19	0.886
Gestational age	37.55 ± 4.55	38.22 ± 2.62	37.89 ± 3.71	0.180
Weight of newborn	3090.78 ± 532.14	3123.23 ± 555.77	3106.57 ± 542.58	0.645
Height of newborn	49.61 ± 2.62	49.18 ± 2.63	49.40 ± 2.62	0.301
Infant head circumference	34.24 ± 1.81	33.69 ± 4.25	33.97 ± 3.25	0.189

increase self-esteem and reduce anxiety and fear in pregnant women, leading to fewer cases of elective cesarean section and greater satisfaction toward the childbirth experience (Dareshouri Mohammadi et al., 2013; Firouzbakht et al., 2014a,b; Rouhe et al., 2013; Hossein Khanzadeh et al., 2017). Corno et al. (2018) investigated the effect of web-based positive psychology intervention on the well-being of pregnant women. The women participated in a 5-week online positive psychology intervention program specifically designed for pregnant women. Mental well-being, depression, pregnancy-related anxiety, life satisfaction, and social support were measured before and after interventions. The study showed the potential effects of such intervention in promotion of mental well-being and reduction of symptoms of depression in pregnant women (Corno et al., 2018; Phoosuwan et al., 2018).

The results of our study suggest that psychological and psychiatric interventions are effective in alleviation of symptoms of psychiatric disorders in new mothers and pregnant women. It seems that the results of other studies presented in the area of psychological interventions are completely in line with the findings of this study. Therefore, it can be concluded that any type of psychological intervention may result in increased mental health in pregnant women and new mothers. Moreover, considering the importance of the prenatal and postpartum periods in the development of the fetus as well as maternal and infant

Table 3
Mean and standard deviation of general health and marital satisfaction Scores during pregnancy and postpartum in two groups of intervention and control in women participating in the study.

Variables	Intervention group M ± SD	Control group M ± SD	Total M ± SD	P-value
GHQ score (6-10 weeks of pregnancy)	17.99 ± 9.23	19.76 ± 9.37	18.88 ± 9.32	0.191
GHQ score (35-37 weeks of pregnancy)	16.30 ± 10.82	19.54 ± 9.45	18.11 ± 10.18	0.005
GHQ score (6 weeks after childbirth)	12.15 ± 7.60	18.94 ± 12.06	15.60 ± 10.65	0.0001
GHQ score (6 months after childbirth)	12.52 ± 7.69	19.45 ± 12.06	16 ± 10.68	0.0001
GRIMS score (6-10 weeks of pregnancy)	20.93 ± 10.31	20.16 ± 10.25	20.54 ± 10.26	0.656
GRIMS score (6 months after childbirth)	21.60 ± 11.92	22.36 ± 11.74	22 ± 11.80	0.625

Table 4
Comparative results of GHQ questionnaire subscales in both intervention and control groups in women participating in the study.

	GHQ	Intervention group M ± SD	Control group M ± SD	P-value
6 to 10 weeks of pregnancy	Somatization	5.45 ± 3.43	6.34 ± 3.53	0.073
	Anxiety	4.31 ± 3.08	5.16 ± 3.72	0.078
	Social dysfunction	6.93 ± 2.93	7.10 ± 2.83	0.678
	Depression	1.40 ± 2.53	1.22 ± 1.93	0.554
35 to 37 weeks of pregnancy	Somatization	4.25 ± 3.66	5.64 ± 3.12	0.007
	Anxiety	4.02 ± 3.07	5.65 ± 4.02	0.003
	Social dysfunction	6.77 ± 3.07	7.04 ± 2.57	0.530
	Depression	0.87 ± 1.53	0.93 ± 1.54	0.811
6 weeks after childbirth	Somatization	3.83 ± 3.13	5.93 ± 3.68	0.0001
	Anxiety	2.31 ± 2.66	5.01 ± 4.51	0.0001
	Social dysfunction	5.78 ± 2.87	6.58 ± 3.26	0.065
	Depression	0.58 ± 1.56	1.41 ± 3.01	0.016
6 months after childbirth	Somatization	3.48 ± 2.81	5.80 ± 3.85	0.0001
	Anxiety	2.61 ± 2.66	5.60 ± 4.41	0.0001
	Social dysfunction	5.52 ± 2.26	6.35 ± 3.01	0.029
	Depression	0.97 ± 2.03	1.79 ± 3.17	0.029

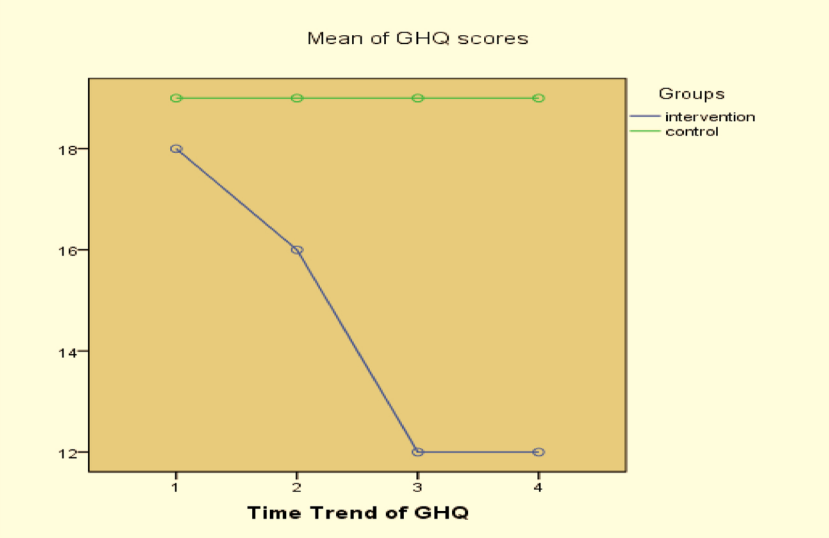

Fig. 3. The trend of Mean of GHQ scores at different times.

health (both physical and mental), it seems that psychological counseling may be beneficial before, during, and after pregnancy. It is suggested that mental health during pregnancy and after childbirth has a significant role in the health of the family and the community as a whole. It is hoped that the findings of this study will provide the basis for widespread codified mental health programs for pregnant women.

6. Conclusion

Psychological interventions are effective in reducing depression and anxiety as well as improving mental health in pregnant women and mothers after childbirth. Considering the importance of promoting the physical and mental health of pregnant mothers, it is recommended that pre-pregnancy psychological counseling be provided to women so they may receive appropriate treatment as necessary. This could potentially improve the mental health and quality of life of pregnant women. It is also hoped that such research studies in Iran can pave the path for the entry of psychologists and psychological services into maternity care.

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Declaration of Competing Interest

None declared.

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