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ORIGINAL ARTICLE

Predictors of Mental health in Pregnant Women: Application of the theory of planned behavior

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Abstract

Aim. The purpose of this study was to predictors of mental health in pregnant women based on theory of planned behavior referred to Iran health centers during the COVID-19 in 2021.

Materials and methods. This study was cross-sectional study thatwas conducted on 250 pregnant women. Pregnant women completed General Health Questionnaire (GHQ) and theory of planned behavior questionnaire. The data were analyzed with SPSS software version 20 (SPSS Inc., Chicago, IL, USA) through running Pearson Correlation statistical tests, descriptive statistics methods including frequency, percentage, mean, standard deviation scores. The Kruskal-Wallis test was used for normally distributed variable. The significance level of the tests was considered to be 0.05.

Results. There was a significant correlation between mental health disorders and some personal and socioeconomic factors. The findings showed that all structures attitude (r=0.69, p<0.001), subjective norms (r=0.58, p<0.001) and perceived behavioral control (r=0.56, p<0.001) and intention (r=0.51, p<0.001) had significant correlations with mental health. Among the variables entered into the regression model, attitude, subjective norms and perceived behavioral control were able to predict 65 percent of variance of mental health among the participants (F=60.75, R=0.66, R^2=0.65).

Conclusion. It is necessary to plan for appropriate care in order to prevent the occurrence of mental disorders among this vulnerable group.

Keywords: mental health, pregnant women, general health questionnaire

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ОРИГИНАЛЬНАЯ СТАТЬЯ

Предикторы психического здоровья у беременных женщин: пример использования теории запланированного поведения

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Аннотация

Цель. Выявление предикторов психического здоровья беременных женщин, поступивших в медицинские центры Ирана во время COVID-19 в 2021 г., с использованием теории запланированного поведения.

Материалы и методы. Данное исследование было поперечное исследование и включало 250 беременных женщин. Беременные женщины заполняли опросник общего состояния здоровья (GHQ) и опросник теории запланированного поведения. Статистический анализ проведен с помощью программного обеспечения SPSS версии 20 (SPSS Inc., Чикаго, Иллинойс, США) с применением коэффициента корреляции Пирсона, методов описательной статистики, включая частоту, процент, среднее значение, стандартное отклонение. Критерий Краскела–Уоллиса использовался для нормально распределенных величин. Уровень значимости был принят равным 0,05.

Результаты. Выявлена статистически значимая корреляция между нарушениями психического здоровья и некоторыми личностными и социально-экономическими факторами. Согласно полученным данным, все компоненты отношения (r=0,69, p<0,001), субъективные нормы (r=0,58, p<0,001), осознанный поведенческий контроль (r=0,56, p<0,001), намерения (r=0,51, p<0,001) имели достоверную корреляцию с психическим здоровьем. Среди переменных, введенных в регрессионную модель, отношение, субъективные нормы и осознанный поведенческий контроль смогли предсказать 65% дисперсии психического здоровья среди участниц (F=60,75, R=0,66, R^2=0,65).

Заключение. Необходимо планировать соответствующий уход, чтобы предотвратить возникновение психических расстройств среди этой уязвимой группы.

Ключевые слова: психическое здоровье, беременные женщины, опросник общего состояния здоровья

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Introduction

Mental health challenges during pregnancy can also lead to an increased risk for the children of emotional or cognitive problems over the long term [1]. Little research has been done to examine the impact of natural disasters on pregnant women's mental health and or birth outcomes. There is currently no evidence suggesting an increased risk of miscarriage or early pregnancy loss during Covid-19. There is also no increased risk

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of birth defects. Widespread prevalence of infectious disease, such as COVID-19, are associated with psychological distress and symptoms of mental illness [2]. Psychiatrists across the world should be aware of these manifestations, their correlates, and strategies to manage them that encompass both the needs of specific populations [3] and the precautionary measures necessary to contain the spread of COVID-19 [4]. They should also be aware of lacunae in the existing literature, which may need to be filled in over time through more widespread clinical experience and research. One study has provided rough estimates of the frequencies of individual mental health symptoms, with anxiety being the commonest. Anxiety was associated with impaired sleep in both studies examining this link [4]. In the population-based study, female gender, being a student, having symptoms suggestive of COVID-19, and poor perceived health were associated with higher rates of anxiety and depression. It is needed for health education programs, in order to be effective, to recognize the behavior and the factors involved in this process in order to change or modify or replace them by new behaviors and habit. To have an intervention, having a suitable and capable model to change people's behaviors is a special priority. According to existing studies, suitable and capable model involved a function of factors: knowledge, attitude, motivation, performance and skills, individual beliefs and culture and society. One of the theories used to predict a person's behavior is the theory of planned behavior, which predicts a person's intention to perform a behavior [5].

The theory of planned behavior (TPB) is taken in many studies, including: teaching healthy behaviors, family planning, multivitamin consumption, breast cancer for the purposes mentioned.

The theory of planned behavior was proposed by Icek Ajzen in 1985 in his article entitled "From intention to actions: A theory of planned behavior" [6]. This theory was developed from the Theory of Reasoned Action (TRA), which was proposed by Martin Fischbein and Icek Ajzen in 1980. The TPB is comprised of five constructs that collectively represent a person's actual control over the behavior. First of which is Attitude; this refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior of interest. It entails a consideration of the outcomes of performing the behavior. The next is intention; this refers to the motivational factors that influence a given behavior. The stronger the intention to perform a behavior, the more likely that behavior will be performed. The third factor is subjective norm which refers to the belief about whether most people approve or disapprove a given behavior. It related to a person's beliefs about whether peers and people of importance to the person think he or she should engage in the behavior. The next aspect is known as perceived behavioral control and this refers to a person's perception of the easiness or difficulty of performing the behavior of interest. Perceived behavioral control varies across situations and actions. It results in a person situation-based perceptions of behavioral control. This construct of the theory was added later, and created the shift from the Theory of Reasoned Action (TRA) to the Theory of Planned Behavior (TPB) [6].

The review of prior studies indicates that there has never been study yet on Mental health in pregnant women based on the TPB of pregnant women in Iran. Therefore, in this study, we hypothesized that TPB could be a fundamental framework to predict and explain the Mental health among Iranian pregnant women. With a view to providing a basis for future studies.

The purpose of this study was to predictors of mental health in pregnant women based on theory of planned behavior referred to Iran health centers during the COVID-19 in 2021.

Materials and methods

This study was cross-sectional in design. The sample of this study was included 250 pregnant women in Iran 2021. The samples were enrolled in the study, according to the inclusion criteria: age of adult females between 18 years and older, pregnant, literate with Iranian nationality,at any stage of pregnancy. Exclusion criteria:disease, drug use.

The formula was utilized for the calculation of the sample size, in which the power of study considered was 80%, P=0.63, Q=0.37,d=0.1×P and α=0.05% [7]. According to the formula, the sample size was 250.

$$n=((Z1-\alpha/2)^2(P\times q))/(d)^2=(0.750/0.003)\sim 250$$

The structured questionnaire included women's sociodemographic information, such as age, marital status, level of education and form of employment. Mental health status the 28-item General Health Questionnaire (GHQ) [8] is a well validated questionnaire aimed at detecting those with an increased risk of suffering a diagnosable psychiatric disorder. The GHQ-28 has been divided into four subscales. These are: somatic symptoms (items 1–7); anxiety.insomnia (items 8–14); social dysfunction (items 15–21), and severe depression (items 22–28) [9]. The minimum score for the 28 version is 0, and the maximum is 84. Higher GHQ-28 scores indicate higher levels of distress. Goldberg suggests that participants with total scores of 23 or below should be classified as non-psychiatric, while participants with scores >24 may be classified as psychiatric, but this score is not an absolute cut-off. It is recommended that each researcher derive a cut-off score based on the mean of their respective sample [10].

The second part included questions related to theory of planned behavior structures. Behavioral scale (2 questions), intention (2 questions), attitude (4 questions), subjective norms (4 questions), and perceived behavioral control (2 questions). The TPB questionnaire was checked in terms of measured through content validity ratio (0.80) and content validity index (0.85).Cronbach's alpha was also used to measure the reliability of the questionnaire. The value of Cronbach's alpha coefficients was found at acceptable levels as following: for the behavioral variable (0.90) intention (0.92), attitude (0.85), mental norms (0.90) and perceived behavioral control (0.87).

The TPB questionnaire was designed based on a study by Francis Jillian [11].

The questionnaire was checked in terms of measured through content validity ratio (0.80) and content validity index (0.85).Cronbach's alpha was used for evaluating constructs reliability [12], and Average Value Extract score (AVE) was selected for evaluating convergent validity [13]. The results of Exploratory Factor Analysis show that the five factors (attitude, subjective norms, perceived behavioral control intention, behavioral) were extracted through Varimax with Kaiser Normalization rotation that explained 72% of the variance in the data. The Kaiser-Meyer-Olkin measure of sampling adequacy value equals 0.782, whereas Bartlett's test of sphericity yielded a *p*-value of <0.001. Structural analysis using the goodness of fit indices was performed to test the model fit of the proposed theoretical framework.

The value of Cronbach's alpha coefficients was found at acceptable levels as following: for the behavioral variable (0.90) intention (0.92), attitude (0.85), mental norms (0.90) and perceived behavioral control (0.87).

Written consent was obtained from the selected participants prior to entering the study and they were assured of the confidentiality of the information. After obtaining the willingness

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Table 1. Frequency distribution of mental health of women studied based on different demographic variables

Таблица 1. Частотное распределение психического здоровья у исследованных женщин в зависимости от различных демографических показателей

Variable	P-value	Total	Suspected of mental disorder	Healthy
Age, n (%)				
18–20		53 (21.2)	27 (33.8)	80 (32)
21–23		72 (28.8)	19 (26.4)	53 (73.6)
24–26		79 (31.6)	19 (26.8)	52 (73.2)
>27		46 (18.1)	24 (52.2)	22 (47.8)
Education, n (%)				
Illiteracy	0.01	30 (12)	20 (66.7)	10 (33.3)
Elementary		59 (23.6)	19 (32.2)	40 (67.8)
Middle school		72 (28.8)	16 (22.2)	56 (77.8)
Diploma		73 (29.2)	20 (27.4)	53 (72.6)
Higher than diploma		16 (6.4)	4 (25)	12 (75)
Job, n (%)				
Housewife	0.50	239 (95.6)	75 (31.4)	164 (68.6)
Employed		11 (4.4)	4 (36.4)	7 (63.6)
Spouse education, n (%)				
Illiteracy	0.06	12 (4.8)	6 (50)	6 (50)
Elementary		54 (21.6)	19 (35.2)	35 (64.8)
Middle school		75 (30)	33 (30.7)	52 (69.3)
Diploma		75 (30)	24 (32)	51 (68)
Higher than diploma		34 (13.6)	7 (20.6)	27 (79.4)
Wife's job, n (%)				
Farmer	0.23	25 (10)	10 (40)	15 (60)
Manual worker		66 (26.4)	20 (30.3)	46 (69.7)
Freelance job		92 (36.8)	27 (29.3)	65 (70.7)
		31 (12.4)	7 (22.6)	24 (77.4)
Administrative job, n (%)				
Unemployed		9 (3.6)	3 (33.3)	6 (66.7)
Others		27 (10.8)	12 (44.4)	15 (55.6)
Number of children, n (%)				
No children	0.02	130 (52)	34 (26.2)	96 (73.8)
Single child		69 (27.6)	21 (30.4)	48 (69.6)
Two children and more		51 (20.4)	24 (47.1)	27 (52.9)
Marriage age, n (%)				
14–20	0.40	122 (48.8)	35 (28.7)	87 (71.3)
21–25		91 (36.4)	27 (29.7)	64 (70.3)
<26		37 (14.8)	20 (54.1)	17 (45.9)
Housing, n (%)				
Personal	0.30	138 (55.2)	41 (29.7)	97 (70.3)
Rental		36 (14.4)	12 (33.3)	24 (66.7)
Living with relatives		76 (30.4)	26 (34.2)	50 (65.8)
The economic situation, n (%)				
Bad	0.03	86 (34.4)	38 (44.2)	48 (55.8)
Medium		122 (48.8)	27 (22.1)	95 (77.9)
Good		42 (16.8)	14 (33.3)	28 (66.7)

of the samples to participants in the study, the questionnaire was distributed among them based on the predetermined timespan for filling it. Finally, the data were analyzed with SPSS software version 20 (SPSS Inc., Chicago, IL, USA) through running

Table 2. Mental disorders by physical disorder, anxiety, social dysfunction, depression

Таблица 2. Психические расстройства в зависимости от наличия соматического заболевания, тревоги, социальной дисфункции, депрессии

Type of disorder	Healthy	Suspected of mental disorder
Physical Disorder	187 (75.6)	63 (24.4)
Anxiety	186 (74.4)	64 (25.6)
Social dysfunction	190 (76)	60 (24)
Depression	144 (57.6)	106 (42.4)
Total	171 (68.4)	79 (31.6)

Pearson Correlation statistical tests, descriptive statistics methods including frequency, percentage, mean, standard deviation scores. The Kruskal-Wallis test was used for normally distributed variable. The significance level of the tests was considered to be 0.05.

Results

In this study, 250 pregnant women with a mean age of 25.2±5.5 years were studied. The mean age of women suspected of having mental disorders was 26.4±6.1 years. Considering Line 6, 36.6% were suspected of having mental health disorders, and considering Line 2 was different for different dimensions of mental health, the symptoms suspected of depression were 42.4%, respectively, and the symptoms of anxiety were suspected to be 25.6%. 6%, suspected symptoms of physical disorder. There were 24.4% and symptoms suspected of social dysfunction in 24% of women. Therefore, pregnant women in this study suffered more from depressive symptoms (Table 1). More than half of the women had 52.4 percent primary and secondary education, 95.6percent had a housewife, and more than two-thirds had a maximum of 79.6 percent had one child, and only 16.8 percent had a good economic situation. The highest prevalence of suspected mental disorder in the age group of 31 years and more was 52.2% and the lowest rate was related to the age group of 21–21 years and 26.4%. The highest prevalence of disorders was 66.7% in the group of illiterate mothers compared to mothers with higher education.

Mothers with two or more children reported the highest prevalence of 47.1 percent, and the group without children reported the lowest prevalence of mental disorders at 26.2 percent. Mothers in good economic condition showed the lowest rate of 33.3 percent and in bad and unfavorable conditions, the highest rate of 44.2 percent. Only 22 percent of those surveyed had an unwanted pregnancy, and the prevalence of the disorder in this group was about twice that of those who planned and planned their pregnancies. About 90% of the women studied had the consent of their husbands or those around them during the pregnancy, and the prevalence of disorders in this group was at least half that of those who did not have such support. In terms of gestational age, most disorders were seen in the third trimester and in terms of rank, in higher pregnancies (Table 2).

Relationships between constructs

The Pearson correlation coefficient was used to determine the correlation between constructs from theory of planned behavior. Attitude (r=0.69, p<0.001), perceived behavioral control (r=0.56, p<0.001), subjective norms (r=0.58, p<0.001) and intention (r=0.51, p<0.001)were significantly and strongly correlated with the mental health of pregnant women.

Among the variables entered into the regression model, attitude, subjective norms and perceived behavioral control were able to predict 65 percent of variance of mental health among the participants (F=60.75, R=0.66, R^2=0.65).

Discussion

This study was carried out as a cross-sectional study. This study aimed to predictors of mental health in pregnant women based on theory of planned behavior referred to Iran health centers during the COVID-19 in 2021.

The results show that all attitude variables, subjective norms, PBC and intention can explain the mental health and in this regards the subjective norms had the greatest power of predictor among all variables. Our finding suggests that pregnant women who have higher perception and cognition levels, show a better mental healthon a regular basis despite various conflicting situations. This is consistent with assumptions and findings of other similar studies that have indicated perceived difficulty or easiness of behavior significantly influence the individual's intention to perform it. Although several studies have been conducted in the field of mental health in the country, but studying the mental health of pregnant women due to their social and cultural differences in different parts of the country is of great importance and priority.

According to the results of this study, the prevalence of mental disorder is high. The adult mental health of the country is higher (with a prevalence of 21%) [14] and from the figure mentioned in the study of Mashhad on mothers 6 to 8 weeks after birth, which reports a prevalence of 6.57% [15], It is also much less so than the results of young women suspected of having a mental disorder in Kashan with a prevalence of 40% [16], which may be due to differences in tools or temporal and geographical differences and age.

The results of this study showed that the most common prevalence of mental disorders in the third trimester of pregnancy and the most common disorders during pregnancy were depression and anxiety, which is consistent with the results of Forouzandeh's research and colleagues [17]. However, in the study of Moradali Zareipour in Iran, the prevalence of mental disorders was 34.4%, 23.1% and 40.2% in the first, second, and third trimesters of pregnancy have been reported [18].

According to the results of the present study, the lowest prevalence of disorders in the second trimester of pregnancy has been observed, which may be due to the lack of mental preparation necessary to start pregnancy in the first trimester,and after stabilizing the pregnancy and supporting the spouse and people around, these worries are minimized, and again in the third trimester, due to the approaching time of faith and subsequent issues, these disorders reach their maximum.

Regarding the factors affecting the mental health status during pregnancy, the findings of this study indicate that there is a significant positive relationship between mental disorder and increasing age, so that the prevalence of disorders in mothers over 31 years up to about two it is 31 years older than the population below. This finding is the result of research by Noor Bala and colleagues in the senior age group Psychological disorders had been shown to be more consistent [19] and inconsistent with the results of Sepehrmanesh, which was observed in the upper and lower age groups with less mental disorder [16].

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This disorder may be related to the limited age range (20 to 40 years) of Sepehrmanesh's study, which was more extensive in our study. The findings of this study also showed that there is a significant relationship between literacy rate and prevalence of mental disorders, so that the prevalence of disorders in illiterate mothers 2.5 times the value of the same in mothers with higher education than the diploma. Significant relationship between education and mental disorders previously in the studies of Sepehrmanesh, Behdani and colleagues have also been proven [15, 16]. Perhaps the reason for this is the inability of these people to use effective strategies to deal with life's problems. Also, higher education leads to higher awareness and finding more appropriate mechanisms to adapt to the environment. According to this study, psychological factors such as the consent of the spouse and others in relation to the current pregnancy have been shown to be a protective factor against vulnerability to mental disorders, which is consistent with the findings of health workers and colleagues [15, 16]. Sheng et al. Also showed that social support from the spouse and those around him or her promotes mental health in pregnant women and greatly reduces depression [20]. Previous studies have shown that a spouse's disagreement with pregnancy causes fear, anxiety, and depression in the mother [21]. On the other hand, the results of Z. Alipour et al. showed that having a supportive spouse increases psychological disorders in pregnant women [22].

The findings of this study showed that there is a significant positive difference between the number of children and mental disorder, so that in mothers who have two or more children, there were more than those who either did not have children or had one child. The relationship between children with higher and higher levels of mental disorders is consistent with the studies of Sheriff et al, and Sepehrmanesh [23]. Considered children's educational issues. In the present study, there was a significant relationship between the state of the family economy and mental disorders.

The highest prevalence was among mothers who were in a bad and unfavorable economic situation, and this is consistent with the results of research by Sepehrmanesh and Forouzandeh and colleagues [16, 17]. The relationship between unwanted pregnancies and the prevalence of disorders The study also found that the prevalence of these disorders in mothers who were planning to become pregnant was up to half of the reported cases of unwanted pregnancies. This finding is also with Behdani's findings Collaborators agree [15]. It should be noted that one of the limitations of this study was that it was cross-sectional. In cross-sectional studies, only the association between variables can be discovered, without it being possible to cite that this relationship is a causal relationship. Another limitation of this study was that the history of mental disorders in the target group was not investigated and the current situation with the General Health Questionnaire 28 (GHQ) of the cut-off point, one third of the suspected mental disorders were reported. It is suggested that in subsequent studies, all individuals who score abnormal scores on the screening test be examined with more accurate questionnaires to determine the prevalence of this type of disorder.

The results of the study are consistent with the following studies [24]. For instance, Walingo showed that all three structures of planned behavior theory were able to predict 68% of the changes in the intention to breastfeed optimally in first-born and multiple mothers who referred for postpartum care [25]. In this study subjective norms, were the most important factors in predicting intention. Our finding indicates that friends and spouse and other peoplehad great influences, by acting as role models and giving support. There are similar studies that support the predictive ability of subjective norms [26, 27]. In a study by Zhang and colleagues [28] it was found

that the section of subjective norms could be an important factor for breastfeeding mothers. Mothers' decisions to take better mental health is strongly influenced by something that is socially acceptable and dependent on social and cultural factors. In this study, attitude predicted the level of intention to take better mental health. In fact, women who have a positive attitude toward mental health and believe that better mental health can improve their health and that of their fetus. Petraszko showed that a high positive sense and attitude toward healthy behaviors is more likely to promote an individual's intention regarding personal goals, such as supplement consumption [29, 30]. Our findings recommend that pregnant women who need high familiarity and levels of understanding about the conditions of mental health. This contemplate may not be without limitations: however, these shortcomings demonstrated it might be the subject of investigations for future. Our subjects were pregnant women who were living in Iran. Our discoveries might not be a chance to be generalizable on all populace. Therefore, future testing of the TPB for longitudinal information around different populaces might be a chance to be helpful.

Conclusion

The results of this study indicate that a high percentage of pregnant women were suspected of having mental disorders, and awareness of the need to address mental health issues by periodic care programs requires pregnancy and family health. Since social support during pregnancy can improve the psychological well-being of mothers, the need to hold educational classes for spouses and families and their justification for the role of supportive and effective will be emphasized. According to the results of research, repeated deliveries and children too much can lead to mental disorders in mothers. Therefore, the observance of family planning and health in educational programs should be considered.

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