Original Paper

The Relationship Between Pregnancy Intention, Pregnancy Outcomes, Postpartum Depression, and Maternal Role Adaptation

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ABSTRACT

Introduction: Unplanned pregnancy and its complications are a global problem that affects women, families, and the community.

Objective: This study aimed to assess the relationship between pregnancy intention, pregnancy outcomes, postpartum depression, and maternal role adaptation in pregnant women referred to healthcare centers of Robat Karim City, Iran.

Materials and Methods: This cohort study was conducted on 240 pregnant women referred to the healthcare centers of Robat Karim in 2019. They were selected by the convenience sampling method. After completing the London questionnaire in the 26th week of gestation, the participants were equally divided into planned and unplanned pregnancy groups. Edinburgh postnatal depression scale and parenting sense of competency scale were completed 10 days and 30 days after delivery. The obtained data were presented by descriptive statistics and analyzed by the Chi-square and t test for comparison between two groups and structural equation model for assessing the relationship between variables.

Results: The Mean±SD values of age, marital duration time, and gravidity number of participants were 30±7.1, 1.5±0.02, and 5, respectively. The results revealed a significant difference between the two groups concerning the Mean score of postpartum depression and maternal competency, 10 and 30 days after delivery (P=0.001). The results of path analysis showed that pregnancy intention had a negative and significant effect on postpartum depression (B=-0.58, t=-2.5), but a positive and significant impact on maternal competency (B=0.39, t=-2). According to the determined amount of variance, the variable of intention to pregnancy predicts 33% of postpartum depression (R^2=0.33). Also, two variables of pregnancy intention and postpartum depression predict 55% of maternal competency (R^2=0.55).

Conclusion: Pregnancy intention had a significant effect on maternal depression and competency. It is recommended that pregnancy intention be screened during pregnancy, and also appropriate training and social support be provided for mothers with unplanned pregnancies.

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Highlights

• Unplanned pregnancy and its complications comprise a global problem that affects women, families, and communities.

• Unplanned pregnancy may jeopardize and delay mother-infant attachment and maternal role adaptation.

• Unplanned pregnancy could cause a paradoxical sense about the infant and its rejection, increasing the probability of maternal depression.

• We designed a conceptual model for predicting the role of intention in pregnancy on postpartum depression and maternal competency.

• According to the results of the structural model, the pregnancy intention had a negative and significant effect on postpartum depression but a positive and significant impact on maternal competency.

Plain Language Summary

Unplanned pregnancy and its complications comprise a global problem that affects women, families, and communities. Unplanned pregnancy could cause a paradoxical sense about the infant and its rejection, increasing the probability of maternal depression. In recent years, the possibility of unplanned pregnancies has increased due to encouraging policies to increase fertility, the aging population, and the lack of public and free access to contraceptives. This study aimed to determine the predictor effect of intention to pregnancy on the pregnancy outcome, postpartum depression, and maternal competency between two pregnancy groups. The study results showed the predictive impact of intention to pregnancy and depression on maternal competency, and also a higher incidence of preterm labor, non-breastfeeding, and preeclampsia was demonstrated in the unplanned pregnancy group. Therefore, pregnancy intention is recommended to be screened during pregnancy to offer proper training and social support in unplanned pregnancies.

Introduction

U nplanned pregnancy and its complications comprise a global problem that affects women, families, and communities [1, 2]. The rate of unplanned pregnancy varies depending on place and time. In a systematic review study in 6 South Asian countries in 2021, it was shown that the mean rate of unplanned pregnancy was 19.1% in the world, and its prevalence varied in different areas [3]. In a met a-analysis in Iran, the prevalence of d unplanned pregnancy was 27.9% (95%CI: 24%-32.1%) [4].

Besides unsafe abortion and maternal death, the evidence showed other outcomes of unplanned pregnancy complications like negative emotions during pregnancy and after delivery [5-7]. Moreover, mothers with unplanned pregnancies pay less attention to maintaining healthy lifestyles during and after pregnancy [8]. Unplanned pregnancy may also jeopardize and delay mother-infant attachment and maternal role adaptation [9]. Maternal competency leads to better mother-infant attachment, increases the women's self-efficacy

to take care of their infants, and has a simple transition to motherhood [10]. Maternal competency depends on the mother's cognition of maternal role adaptation. Unplanned pregnancy could cause a paradoxical sense about the infant and its rejection, increasing the probability of maternal depression [11].

In recent years, the possibility of unplanned pregnaniesy has increased due to policies to increase fertility, the aging of the population, and the lack of public and free access to contraceptives [12, 13]. unplanned pregnancies are accompanied by severe outcomes, causing considerable problems for the mother, her husband, and the child [14].

Based on the conceptual model, Figure 1 shows the relationship between pregnancy intention, depression, and pregnancy competence. This study aimed to assess the relationship between pregnancy intention, pregnancy outcomes, postpartum depression, and maternal role adaptation.

Shirzad et al. Pregnancy Intention and Pregnancy Outcome. J Holist Nurs Midwifery. 2022; 32(2):152-160

153

Materials and Methods

This cohort study was conducted on the pregnant women referred to 10 healthcare centers and 12 sub-centers in Robat Karim City in the southwest of Tehran Province in Iran. The follow-up was conducted between January and November 2019. A total of 4500 pregnant women are referred to these centers monthly.

Based on the Zanganeh et al. study [15], the prevalence rates of depression were 38.2% and 56% among the mothers with planned and unplanned pregnancies, respectively. Considering the confidence level of 95%, power of 80%, and 20% dropped out, 120 mothers were estimated for each study group (planned and unplanned pregnancy).

The inclusion criteria were women in the 26th week of gestation, living with husband, being over 18 years old, lacking a history of infertility, being in their first pregnancy, lacking the history of physical and psychosocial diseases, not having pregnancy resulting from sexual assault, not having experienced acute and severe stress during the recent eight weeks, lacking drug abuse (based on their medical records) and obtaining a score between 0 to 3 and 10 to 12 in the London questionnaire. The exclusion criterion was losing access to the mother in the follow-up of the study.

Sampling was done via a multi-stage sampling method. First, three healthcare centers and three sub-centers were selected based on geographical locations. Afterward, the samples were selected via convenience sampling method using the medical records of the mothers in their 26 weeks of gestation. The eligible mothers were contacted and questioned about their willingness to participate in the study; they were requested to complete the pregnancy intention questionnaire. Then, they were divided into planned and unplanned pregnancy groups based on the questionnaire score.

Exposure to pregnancy was the intention measured by the London questionnaire. The outcomes were complications during pregnancy (preeclampsia, hypertension, diabetes, preterm labor and postpartum hemorrhage), type of delivery, 1- and 5-minute Apgar scores, breastfeeding, and neonatal weight. Also, postpartum depression is measured 10 and 30 days after delivery.

The data were collected by questionnaires. Edinburg postpartum questionnaire and Parenting Sense of Competency (PSOC) measured postpartum depression and maternal competency in 10 and 30 days after delivery in the two groups.

London Measure of Unplanned Pregnancy (LMUP) total score, which was used to determine unplanned pregnancy, could range from 0 to 12. LMUP scores are classified into three categories: a score of 0–3 as "unplanned pregnancy", 4–9 as "ambivalent", and ≥10 as "planned pregnancy" [16]. Roshanaei investigated the psychometric properties of this questionnaire in Iran [17]. In the present study, the Cronbach α coefficient for the total score was 0.74 among 30 participants collected from sampling.

PSOC consisted of two subscales: efficacy and satisfaction. The instrument contains 17 items, which are scored on a 6-point rating scale (1=strongly disagree to 6=strongly agree). Thus, the total score could range from 17-102. A higher score shows the most competencies in mothers. Johnston and Mash [18] determined the reliability and validity of the scale. In Iran, the psychometric properties of the scale were determined by Saeieh et al. [19]. In the present study, the Cronbach α coefficient for total score was 0.78 among 30 participants collected from sampling.

Edinburgh Postnatal Depression Scale (EPDS) questionnaire was used to measure postpartum depression 10 days after delivery. The total score could range from 0 to 30. Scores higher than 12 reflect depression. In this study, the Persian version of this questionnaire was used, which was conducted in Persian by Montazeri et al. in Iran [20].

Demographic characteristics, pregnancy outcomes (type of delivery, neonatal weight, breastfeeding, 1 and 5 minute Apgar score), and complications (preeclampsia, hypertension, diabetes, preterm labor, postpartum hemorrhage, NICU hospitalized, mothers ICU hospitalized) were assessed using researcher-made questionnaires that completed based on the statements of the samples and the contents of the patients' medical records.

Mothers completed the LMUP questionnaire in their 26 weeks of pregnancy. Pregnancy outcomes and complications were obtained from patient hospital records. EPDS and PSOC were completed 10 days after delivery because of postpartum blues. Then again, PSOC and EPDS questionnaires were completed 30 days after delivery because of the motherhood transition. Mothers were followed from 26 weeks of pregnancy until 30 days after delivery by phone and social media. Also, mothers visited during prenatal care and postnatal care to complete questionnaires.

The obtained data were analyzed using the SPSS software, v. 13 (SPSS Inc., Chicago, IL, USA) and Amos 24 (30-day trial version). The t test and Chi-square test were used to compare the two study groups for demographic variables, maternal competency, and postpartum depression to compare the two groups (group mothers with planned pregnancy and mothers with unplanned). Model fit and the relationships between the independent and dependent variables were determined by structural equations modeling in AMOS v. 24.

Results

The Mean±SD age of women recruited in the study was 30±7.1 years; their mean marriage duration was 5 years. Their Mean±SD number of children was 1.5±0.2. In the unplanned group, 50% and in the planned group, 41.6% had under diploma education. In the unplanned group, 79.2% and in the planned group, 86.7% were household. Also, 10% of the two groups had a history of the disease. In the unplanned group, 58.3% and in the planned group, 60% had sufficient income. The results of t test and Chi-square test showed no significant difference between the two groups regarding the demographic characteristics.

The results revealed that maternal competency 10 and 30 days after delivery was significantly higher in the planned group (P=0.001), but postpartum depression 10 and 30 days after delivery was significantly higher in the unplanned pregnancy group (P=0.001) (Table 1).

Breastfeeding immediately after delivery and neonates' mean weight were significantly lower in the unplanned pregnancy group compared to the planned pregnancy group (P=0.001). However, the frequency of preeclampsia and preterm labor was significantly higher in the unplanned pregnancy group than in the planned pregnancy group (P=0.002, P=0.03, respectively) (Tables 2 and 3).

The standardized path coefficients of the structural model are presented in Figure 2. After performing confirmatory factor analysis, the conceptual model fit was determined. Modified model fit indices based on the Hair model [21] are presented in Table 4. The modified measurement model showed an acceptable fit. According to the results of the structural model, the pregnancy intention had a negative and significant effect on postpartum depression (B=-0.58, t=-2.51). This result means that if the pregnancy intention changes 1 unit, the postpartum depression variable will decrease by 0.58 units. Also, pregnancy intention had a positive and significant effect on maternal competency (B=0.39, t=-2.31). This

result means that if the pregnancy intention changes 1 unit, the maternal competency variable will increase by 0.39 units. Postpartum depression had a negative and significant effect on maternal competency (B=-0.45, t= -3.16). This finding means that if postpartum depression changes 1 unit, the maternal competency variable will decrease by 0.44 units. The analysis of the postpartum depression mediator showed that the model was without a postpartum depression mediator. Also, the existence of postpartum depression was significant. The path coefficients of the direct and indirect effect of the pregnancy intention on parenting competency were significant. This analysis based on Baron and Kenny's method [22] showed that in this model, postpartum depression was a complete mediator (Table 5).

According to the determined amount of variance, the variable of intention to pregnancy predicts 33% of postpartum depression (R^2=0.33). Also, the two variables of intention to pregnancy and postpartum depression together predict 55% of maternal competency (R^2=0.55).

Discussion

The current study findings indicated that the pregnancy intention had a direct effect on maternal competency score. Morin stated that unplanned pregnancy is associated with poor maternal mental health outcomes and behaviors. Indeed, the mothers with unplanned pregnancies had poor relationships with their babies [23]. Mothers with early adaptation to their maternal role were almost securely attached to their infants, so their infants had lower psychological and behavioral problems [24]. The research findings by Ekrami et al. indicated weaker maternal-fetal attachment levels in unplanned pregnancies compared to planned ones. The fetus was at greater behavioral risk in case of low attachment levels [25]. Our findings showed that mothers, based on their pregnancy intention feeling are prepared for motherhood transition and capability of being a parent. Also, the mothers' intention about pregnancy can affect their feelings about their babies, that impacts mother and baby bonding and motherhood competency. It seems that pregnancy intention evaluation in pregnant women may be helpful for better maternal competency.

The present study results showed that the postpartum depression in the unplanned pregnancy was higher than that in the planned pregnancy group. Kourta et al. demonstrated that unplanned pregnancy and hospitalization during pregnancy were significantly related to postpartum depression [26]. Similarly, Faisal-Cury showed that the risk of depression during pregnancy

Shirzad et al. Pregnancy Intention and Pregnancy Outcome. J Holist Nurs Midwifery. 2022; 32(2):152-160

155

Table 1. Comparing postpartum depression and maternal competency between the two study groups 10 and 30 days after labor

Variables	Time	Mean±SD		Sig.*
		Planned Group (n=120)	Unplanned Group (n=120)	
Depression	10 days after delivery	10.1±3	13.1±2.5	0.001
	30 days after delivery	9.4±3.2	13.4±2.5	0.001
Maternal competency	10 days after delivery	59.6±10.6	50.2±11.3	0.001
	30 days after delivery	63.7±5.1	57±16.1	0.001

* The t-test.

and after labor was 2.5 times higher among women with unplanned pregnancies than those with planned pregnancies [27]. The study showed that postpartum depression had an inverse effect on maternal competency. Furthermore, the results of another study indicated that postpartum depression was inversely related to maternal self-efficacy and maternal role functioning [28]. Screening the women with unintended pregnancy during the prenatal period could support them during and after pregnancy [29]. The results of our study were consistent with these results. Pregnancy intention may help tolerate more stress and anxiety of pregnancy and the postpartum period and create more accessibility of parenting transition and parenting competency.

The present study results revealed no significant difference between the two groups regarding the type of labor and 1 and 5 minute Apgar scores. However, the incidence of preterm delivery was significantly higher in the unplanned pregnancy group than in the planned pregnancy group. Additionally, the neonates' weight and breastfeeding were lower in the unplanned pregnancy group than in the planned pregnancy group. Moreover, the incidence of preeclampsia was significantly higher in the unplanned pregnancy group than in the planned pregnancy group. In the Karaçam study, mothers in the unplanned pregnancy group showed more complications during pregnancy and labor [30]. Studies showed that unplanned pregnancies are asso-

ciated with induced abortion, delayed initiation of antenatal care, fewer antenatal care visits, unhealthy behavior during pregnancy, increased risk of adverse birth outcomes and neonatal health, development delay, and attributed maternal psychosocial health [31, 32].

Our structural model showed an inverse relationship between depression and maternal competency for women who reported unplanned pregnancies. This finding suggests that a woman who experiences unintended pregnancy and depression may find it challenging to engage in bonding behavior and accepting maternal competency. This finding is an essential consideration during the antenatal period as women with unintended pregnancies appear to be at increased risk of depression and decreased maternal competency. McNamara et al. with a structural equation model study, showed the relationship between psychological distress and antenatal bonding for women who reported low intention to their pregnancy and revealed that women that had a negative feeling about her pregnancy had psychological symptoms (anxiety, depression, and stress) and also found it more challenging to engage in behaviors that cause more interaction and bonding with her baby. Our result was consistent with their results [33].

The strengths of this study were its prospective design and investigation of all mothers during pregnancy and after labor. Yet, studies with larger sample sizes and
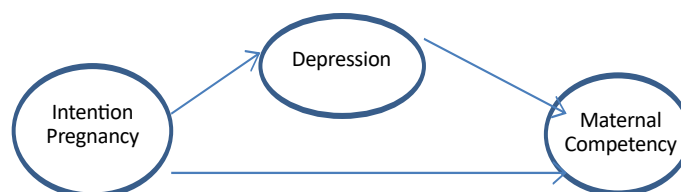

Figure 1. Primary concept model of study

Shirzad et al. Pregnancy Intention and Pregnancy Outcome. J Holist Nurs Midwifery. 2022; 32(2):152-160

Table 2. Comparing pregnancy outcomes between the two study groups (Planned and Unplanned pregnancy group)

Outcomes		No.(%)/Mean±SD		P
		Unplanned (n=120)	Planned (n=120)	
Type of delivery	Natural delivery	54(45)	47(39.2)	0.361*
	Section	66(55)	(73(60.8)	
Neonatal gender	Girl	(60(50)	59(49.2)	0.892*
	Boy	60(50)	61(50.8)	
Neonatal feeding	Breastfeeding	58(48.3)	86(71.7)	0.001*
	Formula	40(33.3)	18(15)	
	Both of them	22(18.3)	16(13.3)	
Apgar score	8	20(16.7)	7(5.8)	0.008**
	9	100(83.3)	113(94.2)	
Neonatal weight (g)		3001±209.7	3135.3±220	0.001**

*Chi-square tes; * t-test.

Table 3. Comparing pregnancy complications between the two study groups

Maternal Morbidity		No.(%)		Sig.*
		Unplanned (n=120)	Planned (n=120)	
Preeclampsia	Yes	9(7.5)	2(1.7)	0.031
	No	11(92.5)	118(98.3)	
Hypertension	Yes	1(0.8)	1(0.8)	0.99
	No	119(99.2)	119(99.2)	
Preterm labor	Yes	21(17.5)	6(5)	0.002
	No	99(82.5)	114(95)	
Diabetes	Yes	1(0.8)	1(0.8)	0.99
	No	119(99.2)	119(99.2)	
Postpartum bleeding	Yes	3(2.5)	1(0.8)	0.312
	No	117(97.5)	119(99.2)	
NICU Hospitalized	Yes	1(0.8)	1(0.8)	0.99
	NO	119(99.2)	119(99.2)	
Mothers ICU Hospitalized	Yes	1(0.8)	0	0.99
	No	119(99.2)	120(100)	

* Chi-square test.

Shirzad et al. Pregnancy Intention and Pregnancy Outcome. J Holist Nurs Midwifery. 2022; 32(2):152-160

157

Table 4. Modified model fit indices of mediating role of depression on the relationship between intentions to pregnancy and parenting competency

Fit Indices	Allowable Amounts	Obtained Values
Chi-square/Degrees of Freedom (df)	<3	2.45
RMSEA	<0.8	0.07
GFI	>0.8	0.84
AGFI	>0.8	0.82
NFI	>0.9	0.91
NNFI	>0.9	0.93
CFI	>0.9	0.94
IFI	>0.9	0.91

RMSEA: Root Mean Square Error of Approximation; GFI: the Goodness of Fit Index; AGFI: Adjusted Goodness of Fit Index; NFI: Normed Fit Index; NNFI: Non-Normed Fit Index; CFI: Comparative Fit Index; IFI: Incremental Fit Index

Table 5. Path coefficients of mediating role of depression on the relationship between intentions to pregnancy and parenting competency

Latent Variables	SE	t	β	P
Pregnancy intention ----> depression(a)	0.02	-2.5	-0.58	0.001
Depression ----> Parenting competency(b)	0.155	3.16	-0.45	0.005
Pregnancy intention ----> Parenting competency(c/)	0.19	2.31	0.39	0.01
Parenting competence ----> depression(c)(without mediator)	0.02	3.2	0.38	0.001
Total effect=a×b+c/	-		0.5	-

Figure 2. Structural model of study

Shirzad et al. Pregnancy Intention and Pregnancy Outcome. J Holist Nurs Midwifery. 2022; 32(2):152-160
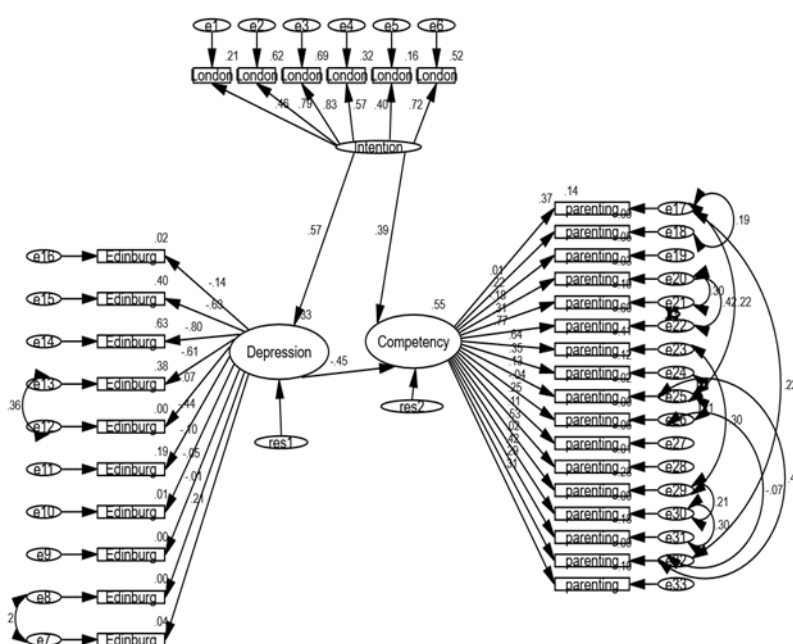
longer durations are recommended to investigate unplanned pregnancy complications regarding children's growth and development. Also, pregnancy intention and postpartum depression predict 55% of maternal competency; we suggested more studies to find a structural model to recognize other variables that predict maternal competency in mothers.

One of the limitations of the present study was gathering the data about pregnancy intention using a questionnaire at 26 weeks of gestation, while unplanned pregnancies are more likely to be terminated earlier through abortion. The complications of abortion were not determined, as well. Therefore, future studies are recommended to assess the complications of unintended pregnancy from the beginning of the process.

Conclusion

Our findings showed the relevance of the pregnancy intention with pregnancy outcome, postnatal depression, and maternal in the southwest region of Tehran settings and can be used in the same context of reproductive, prenatal, childbearing, and maternal and child health policy. The study shows support the predictive effect of intention to pregnancy and depression on maternal competency. Also, there is a higher incidence of preterm labor, non-breastfeeding, and preeclampsia in the unplanned pregnancy group. Therefore, pregnancy intention is recommended to be screened during pregnancy to offer proper training and social support in unplanned pregnancies.

Ethical Considerations

Compliance with ethical guidelines

The present study was conducted with the approval of the Research Deputy of the Alborz University of Medical Sciences and the Ethics Committee of the university (Code: IR.ABZUMS.REC.2018.202). Before the study, its objectives and the confidentiality of all information were explained to the participants. Informed consent was also obtained from all participants, and the researcher tried to observe all the material and spiritual rights of the study samples.

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References

[1] Panova O, Kulikov A, Berchtold A, Suris J. Factors associated with unwanted pregnancy among adolescents in Russia. Journal of Pediatric and Adolescent Gynecology. 2016; 29(5):501-5. [DOI:10.1016/j.jpag.2016.04.004] [PMID]

[2] Jarahi L, Zavar A, Neamat Shahi M. [Evaluation of the frequency of unwanted pregnancy and its related factors in the pregnant women of Sarakhs city (Persian)]. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2014; 17(124):8-14. [DOI:10.22038/IJOGI.2014.3615]

[3] Sarder A, Islam SMS, Talukder A, Ahammed B. Prevalence of unintended pregnancy and its associated factors: Evidence from six south Asian countries. PLoS One. 2021; 16(2):e0245923. [DOI:10.1371/journal.pone.0245923] [PMID] [PMCID]

[4] Jalali R, Mohammadi M, Vaisi-Raygani A, Ghobadi A, Salari N. Prevalence of unwanted pregnancy in Iranian women: A systematic review and meta-analysis. Reproductive Health. 2019; 16(1):1-8. [DOI:10.1186/s12978-019-0804-8] [PMID] [PMCID]

[5] Peyman N, Ezzati Rastegar K, Tehrani H, Zarei F. [Explanation of unwanted pregnancy from the perspective of family planning service providers: An exploratory study (Persian)]. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2016; 19(12):18-26. http://eprints.mums.ac.ir/id/eprint/1754

[6] Kheiriat M, Zamanialavijeh F, Araban M, Kheiriat F. [Reasons deemed for an unwanted pregnancy: A qualitative study (unwanted pregnancy) (Persian)]. Journal of Health Education and Health Promotion. 2014; 2(2):153-64. http://journal.ihepsa.ir/article-1-110-fa.html

[7] Hall JA, Benton L, Copas A, Stephenson J. Pregnancy intention and pregnancy outcome: Systematic review and meta-analysis. Maternal and Child Health Journal. 2017; 21(3):670-704. [DOI:10.1007/s10995-016-2237-0] [PMID] [PMCID]

[8] Cheng TS, Loy SL, Cheung YB, Godfrey KM, Gluckman PD, Kwek K, et al. Demographic characteristics, health behaviors before and during pregnancy, and pregnancy and birth outcomes in mothers with different pregnancy planning status. Prevention Science. 2016; 17(8):960-9. [DOI:10.1007/s11121-016-0694-8] [PMID] [PMCID]

Shirzad et al. Pregnancy Intention and Pregnancy Outcome. J Holist Nurs Midwifery. 2022; 32(2):152-160

159

[9] Kordi M, Fasanghari M, Asgharipour N, Esmaily H. The effect of maternal role training program on role attainment and maternal role satisfaction in nulliparous women with unplanned pregnancy. Journal of Education and Health Promotion. 2017; 6:61. [DOI:10.4103/jehp.jehp_113_15] [PMID] [PMCID]

[10] Shrader LM. Women's attachment history and its perceived impact on their maternal role attainment: An object relations perspective [PhD dissertation]. San Diego: Alliant International University; 2014. https://www.proquest.com/openview/e8c1caaf2abec306e29cafef81b85e47/1?pq-origsite=gscholar&cbl=18750

[11] Kavanaugh ML, Kost K, Frohwirth L, Maddow-Zimet I, Gor V. Parents' experience of unintended childbearing: A qualitative study of factors that mitigate or exacerbate effects. Social Science & Medicine. 2017; 174:133-41. [DOI:10.1016/j.socscimed.2016.12.024] [PMID] [PMCID]

[12] Karamouzian M, Sharifi H, Haghdoost AA. Iran's shift in family planning policies: Concerns and challenges. International Journal of Health Policy and Management. 2014; 3(5):231-3. [DOI:10.15171/ijhpm.2014.81] [PMID] [PMCID]

[13] Erfani A, McQuillan K. The changing timing of births in Iran: An explanation of the rise and fall in fertility after the 1979 Islamic Revolution. Biodemography and Social Biology. 2014; 60(1):67-86. [DOI:10.1080/19485565.2014.899428] [PMID]

[14] Wellings K, Jones KG, Mercer CH, Tanton C, Clifton S, Datta J, et al. The prevalence of unplanned pregnancy and associated factors in Britain: Findings from the third national survey of sexual attitudes and lifestyles (Natsal-3). The Lancet. 2013; 382(9907):1807-16. [DOI:10.1016/S0140-6736(13)62071-1]

[15] Zangeneh M, Shamsalizadeh N, Kaamravamanesh M, Rezai M, Pormehr SJ. [Postpartum depression and its relation to baby gender and unplanned pregnancy (Persian)]. Scientific Journal of Kurdistan University of Medical Sciences. 2009; 14(2):65-71. http://sjku.muk.ac.ir/article-1-175-en.html

[16] Barrett G, Smith SC, Wellings KJJ. Conceptualisation, development, and evaluation of a measure of unplanned pregnancy. Journal of Epidemiogy and Community Health. 2004; 58(5):426-33. [DOI:10.1136/jech.2003.014787] [PMID] [PMCID]

[17] Roshanaei S, Shaghaghi A, Jafarabadi MA, Kousha A. Measuring unintended pregnancies in postpartum Iranian women: Validation of the London measure of unplanned pregnancy. EMHJ-Eastern Mediterranean Health Journal. 2015; 22(8):572-8. [DOI:10.26719/2015.21.8.572] [PMID]

[18] Johnston C, Mash EJ. A measure of parenting satisfaction and efficacy. Journal of Clinical Child Psychology. 1989; 18(2):167-75. [DOI:10.1207/s15374424jccp1802_8]

[19] Esmaelzadeh Saeieh S, Rahimzadeh M, Yazdkhasti M, Torkashvand S. Perceived social support and maternal competence in primipara women during pregnancy and after childbirth. International Journal of Community Based Nursing and Midwifery. 2017; 5(4):408-16. [PMID] [PMCID]

[20] Montazeri A, Torkan B, Omidvari S. The Edinburgh Postnatal Depression Scale (EPDS): Translation and validation study of the Iranian version. BMC Psychiatry. 2007; 7:11. [DOI:10.1186/1471-244X-7-11] [PMID] [PMCID]

[21] Hair JF, Gabriel M, Patel V. AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. Brazilian Journal of Marketing. 2014; 13(2):44-55. [DOI:10.5585/remark.v13i2.2718]

[22] Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology. 1986; 51(6):1173-82. [DOI:10.1037/0022-3514.51.6.1173] [PMID]

[23] Morin MR. The longitudinal effects of unintended pregnancy on maternal mental health and parenting behaviors [MSc. thesis]. New York: Columbia University; 2018. https://www.proquest.com/openview/26b71d9972b1cc/1?pq-origsite=gscholar&cbl=18750

[24] Ozturk Y, Barone V, Barone L. Examining the impact of maternal individual features on children's behavioral problems in adoptive families: The role of maternal temperament and neurobiological markers. International Journal of Environmental Research and Public Health. 2018; 15(2):196. [DOI:10.3390/ijerph15020196] [PMID] [PMCID]

[25] Ekrami F, Mohammad-Alizadeh Charandabi S, Babapour Kheiroddin J, Mirghafourvand M. Effect of counseling on maternal-fetal attachment in women with unplanned pregnancy: A randomized controlled trial. Journal of Reproductive and Infant Psychology. 2020; 38(2):151-65. [DOI:10.1080/02646838.2019.1636943] [PMID]

[26] Koutra K, Vassilaki M, Georgiou V, Koutis A, Bitsios P, Kogevinas M, et al. Pregnancy, perinatal and postpartum complications as determinants of postpartum depression: The Rhea mother-child cohort in Crete, Greece. Epidemiology and Psychiatric Sciences. 2018; 27(3):244-55. [DOI:10.1017/S2045796016001062] [PMID] [PMCID]

[27] Faisal-Cury A, Menezes PR, Quayle J, Matijasevich A. Unplanned pregnancy and risk of maternal depression: Secondary data analysis from a prospective pregnancy cohort. Psychology, Health & Medicine. 2017; 22(1):65-74. [DOI:10.1080/13548506.2016.1153678] [PMID]

[28] Fathi F, Mohammad-Alizadeh-Charandabi S, Mirghafourvand M. Maternal self-efficacy, postpartum depression, and their relationship with functional status in Iranian mothers. Women & Health. 2018; 58(2):188-203. [DOI:10.1080/03630242.2017.1292340] [PMID]

[29] de Oliveira Brito CN, Alves SV, Ludermir AB, de Araújo TVB. Postpartum depression among women with unintended pregnancy. Revista de saude publica. 2015; 49:33. [DOI:10.1590/S0034-8910.2015049005257] [PMID] [PMCID]

[30] Karaçam Z, Önel K, Gerçek EJM. Effects of unplanned pregnancy on maternal health in Turkey. Midwifery. 2011; 27(2):288-93. [DOI:10.1016/j.midw.2009.07.006] [PMID]

[31] Abajobir AA, Maravilla JC, Alati R, Najman JM. A systematic review and meta-analysis of the association between unintended pregnancy and perinatal depression. Journal of Affective Disorders. 2016; 192:56-63. [DOI:10.1016/j.jad.2015.12.008] [PMID]

[32] Goossens J, Van Den Branden Y, der Sluys LV, Delbaere I, Van Hecke A, Verhaeghe S, et al. The prevalence of unplanned pregnancy ending in birth, associated factors, and health outcomes. Human Reproduction. 2016; 31(12):2821-33. [DOI:10.1093/humrep/dew266] [PMID]

[33] McNamara J, Risi A, Bird AL, Townsend ML, Herbert JS. The role of pregnancy acceptability in maternal mental health and bonding during pregnancy. BMC Pregnancy and Childbirth. 2021; Preprint. [DOI:10.21203/rs.3.rs-498664/v1]

160

Shirzad et al. Pregnancy Intention and Pregnancy Outcome. J Holist Nurs Midwifery. 2022; 32(2):152-160