

Maternal Knowledge on Postpartum Care in Healthcare Centers of Mashhad, Iran in 2013

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p>Background & aim: During the postpartum period, women experience physiological changes, which can have negative impacts on their quality of life. Women's knowledge regarding postpartum complications and care can help them successfully pass this critical period. The aim of this study was to evaluate maternal knowledge on postpartum care in healthcare centers of Mashhad, Iran in 2013.</p> <p>Methods: In this descriptive, cross-sectional study, 500 eligible mothers were randomly selected via multistage sampling from 19 healthcare centers of Mashhad. Data collection tools included a demographic questionnaire and a researcher-made questionnaire for assessing maternal knowledge. Descriptive and analytical statistics, independent t-test, analysis of variance, Pearson's correlation coefficient and multivariable regression analysis were applied, using SPSS version 16. P-value less than 0.05 was considered statistically significant.</p> <p>Results: Among 500 mothers referring to healthcare centers, 64 (12.8%), 396 (79.2%) and 40 (8.0%) cases had poor, moderate and high levels of knowledge, respectively. The majority of mothers had moderate knowledge about four dimensions of public health, breastfeeding and nutrition, contraceptive methods and infant care. The subjects had the highest and lowest levels of knowledge about public health and contraceptive methods, respectively. The results showed a significant relationship between the mean score of knowledge and demographic characteristics such as educational status, employment status and income level ($P < 0.05$).</p> <p>Conclusion: Considering the moderate level of maternal knowledge about postpartum care, implementation of interventions such as educational workshops and attention to the quality of these courses are essential. Also, particular attention should be paid to the availability and use of educational media for mothers in healthcare centers.</p>
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Introduction

Health improvement of mothers and infants as two vulnerable groups of society is one of the Millennium Development Goals, which leads to reduced maternal mortality and postpartum complications (1). Approximately 600,000 women die, worldwide due to pregnancy-related complications, and 99% of these deaths occur in developing countries. Also, more than 50% of these cases have been reported during

the postpartum period (2).

Postpartum care as one of the most important components of health care contributes to the prevention of maternal complications and improvement of maternal/neonatal health (3). In fact, the purpose of postpartum care is the prevention and early diagnosis of complications in this period, mothers' quick return to a normal status, encouraging breastfeeding and providing

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family planning services to improve the physical health of mothers and infants.

In addition, meeting mothers' mental and emotional needs comprises of providing basic health education to mothers or families, preparing women to accept their maternal roles and facilitating a successful transition to parenthood (4, 5). In this period, women enter a new stage of life and experience different physical, mental and sexual complications (6-8, 41). Problems in this period include bleeding, genital infections, uterine prolapse, depression, hemorrhoids, urinary incontinence, secondary infertility, pelvic inflammatory disease, perineal injury, breast problems, back pain and pain during intercourse (1, 9).

About 40% of mothers experience postpartum complications, among whom 15% face serious long-term consequences (10). These complications not only affect maternal health, but also influence the infant's health status (7). In this regard, a study by Rouhi and colleagues (2010) showed that 91.6%, 90.3% and 83.5% of mothers reported at least one problem at one week, six weeks and twelve months following delivery, respectively. Many of these problems could be resolved through education and raising awareness (11).

Owing to the short length of hospital stay and early discharge of infants after birth, insufficient care-related information is provided for mothers. Women receive inadequate healthcare support, leading to their dependence on information sources such as family and friends to meet their educational needs (12, 13). Significant concerns about physiological problems such as abdominal pain, infections of incision site, breast problems, fatigue, infant physical care and infant vaccination have been expressed by mothers during the postpartum period (14, 15).

During the postpartum period, due to lack of knowledge about postpartum complications and care, mothers, especially nulliparous women, are not skilled enough to adapt to new conditions and lack the confidence to look after themselves and their infants (4). In a previous study, mothers were dissatisfied with information provision, training, counseling and use of communication skills (12) and requested training on infant care, use of educational aids,

increased postpartum care (especially in the third month after birth) and training classes and workshops (16).

In this regard, Asgharnia et al. (2005) showed insufficient knowledge of mothers about postpartum care and problems such as risk of depression, iron deficiency anemia and breast and reproductive system problems (1%, 7.5%, 8.1% and 4.16%, respectively) (17). Similarly, in a study by Mohammadi Rizi and colleagues (2013), women's knowledge about postpartum care of infants was insufficient (35).

Inadequate information, low awareness, lack of trained personnel at healthcare centers, financial problems, lack of access to healthcare services and low quality of services are among factors preventing mothers' use of postpartum care. Mothers' non-use of postpartum care is the leading cause of maternal mortality in developing countries (10). In fact, postpartum period is an ideal time for interventions and support to enhance maternal health. Also, use of support programs and proper implementation of maternal and neonatal care can increase the survival rate among women and infants (13).

Maternal awareness about health care is the most cost-effective intervention for reducing maternal mortality, morbidity and complications before and after childbirth (19). In order to help mothers adjust with this critical period, maternal training during the postpartum period on issues such as physiological and emotional changes, breast care and infant care (bathing and feeding) seems essential. In fact, increased awareness about maternal and neonatal care leads to reduced stress and increased confidence and competence in mothers (12).

Education is considered as one of the most basic strategies for health improvement and promotion of quality of life (20). The first step before implementing any educational intervention is to identify mothers' knowledge, needs and opinions. In fact, evaluation of women's knowledge can indirectly determine their basic training needs (17).

Considering the impact of maternal knowledge about postpartum care on maternal and neonatal health and scarcity of studies on this subject in Mashhad, we aimed to determine the knowledge level of mothers, referring to

healthcare centers of Mashhad about postpartum care in order to establish the basis of training courses.

Materials and Methods

In this cross-sectional study, conducted at healthcare centers of Mashhad, multi-stage sampling was applied. Nineteen healthcare centers were randomly selected:

5 clusters of one number health center, 3 clusters of two number health center, 5 clusters of three number health center, 1 cluster of health center samen and 5 clusters of five number health center was chosen. Then, the population covered by these five centers was determined to specify the number of samples selected from each center. Finally, convenience sampling was applied, according to the inclusion criteria.

The study sample consisted of nulliparous and multiparous women with a prior experience of vaginal delivery or cesarean section and minimum literacy, referring to healthcare centers for postpartum care. The exclusion criteria were as follows: 1) unwillingness to participate in the study; 2) being a health team member; 3) mental disorders leading to hospitalization or long-term treatment; and 4) use of drugs affecting their psychiatric status (e.g., imipramine, diazepam, phenobarbital, fluoxetine, haloperidol and chlordiazepoxide) during the study period.

Data collection tools included a demographic and obstetric questionnaire (13 questions) and a researcher-made questionnaire on maternal knowledge about postpartum care, based on the guidelines by the Ministry of Health, Treatment and Education. The maternal knowledge questionnaire contained 29 questions on four dimensions of lactation and postpartum nutrition (8 questions), infant care (5 questions), contraceptive methods (4 questions) and public health (12 questions), which is itself comprised of personal (3 items), mental (3 items), sexual (2 questions) and oral/dental health (4 items).

The questions were answered by selecting one of the following options: "correct" (score 1), "wrong" (score 0) and "don't know" (score 0). The maximum and minimum scores were 29 and 0, respectively. Mothers' knowledge was classified into poor (score: 0-10), moderate

(score: 11-20) and high (score: >21). Ten academic members at the Faculty of Nursing and Midwifery reviewed the questionnaire to determine its content validity. After reviewing the expert opinions, the final version of the questionnaire was developed. Cronbach's alpha was used to determine the reliability of this scale ($\alpha=0.8$).

The researcher visited the healthcare centers after gaining the approval of the Ethics Committee of the university, presenting introductory letters to the heads of healthcare centers and obtaining their permission for implementing the study. The questionnaires were distributed after explaining the study procedure to the heads of healthcare centers and obtaining their consent. The study objectives were explained to mothers, who were willing to participate in the study. The participants were assured about the confidentiality of the data, and informed consent forms were obtained.

After the end of the second and third sessions of postpartum care, the knowledge questionnaire was completed via interviews, conducted by the researcher. After data collection, ANOVA, independent t-test and Pearson's correlation test were performed, using SPSS version 16. P-value less than 0.05 was considered statistically significant (95% confidence level).

Results

This study was performed on 500 women at 19 health centers of Mashhad, Iran in 2013. Based on the findings, the mean age of mothers was 27.30 ± 5.46 years. The majority of subjects were housewives (94%) with high-school diploma or higher (53.2%). Also, the income level was satisfactory in the majority of cases (66.8%). According to the results, 46.5% of mothers were primiparous and 55.6% had cesarean section (Table 1).

In terms of maternal knowledge about postpartum care, 64 (12.8%), 396 (79.2%) and 40 (8.0%) cases had poor, moderate and high levels of knowledge, respectively. The results showed that the mean knowledge score was 15.2 ± 3.84 in all dimensions (range: 6-25). As indicated in Table 2, mothers' knowledge was moderate in all aspects including public health,

Table 1. Distribution of absolute and percentage frequency of subjects' demographic characteristics

Demographic characteristics		N (%)
Age (years)	15-25	198(39.6)
	25-35	256(51.2)
	>35	46(9.2)
Occupational status	Employee	22(4.4)
	Housewife	470(94.0)
	Student	8(1.6)
Educational level	Primary level	96(19.2)
	Secondary level	138(27.6)
	High school diploma	205(41.0)
	Higher than diploma	61(12.2)
Income level	Less than sufficient	159(31.8)
	sufficient	334(66.8)
	More than sufficient	7(1.4)
Parity	First	233(46.6)
	Second	160(32.0)
	Third	77(15.4)
	Fourth and more	30(6.0)
Mode of delivery	Cesarean section	278(55.6)
	Vaginal delivery	221(44.2)
	Assisted vaginal delivery	1(0.2)

breastfeeding and nutrition, contraceptive methods and infant care.

The results of the present study showed a significant relationship between the mean knowledge score and demographic characteristics such as educational level, occupational status, income level and mode of delivery ($P < 0.05$). The highest level of knowledge was reported in housewives and mothers with lower education, low income level and experience of vaginal delivery.

Analysis of variance showed no significant relationship between parity and the mean score of knowledge. Independent t-test also indicated no significant association between the time of meeting receiving care after delivery (second care or Third Care) and the mean score of knowledge (Table 3). Moreover, Pearson's correlation test showed no significant relationship between age and knowledge ($P > 0.05$).

Table 2. Frequency of maternal knowledge in four dimensions of public health, breastfeeding and nutrition, contraceptive methods and infant care

Knowledge	Good N (%)	Moderate N (%)	Poor N (%)	Mean±SD
Public health	92(18.4)	353(70.6)	55(11)	6.22±1.88
Breastfeeding and nutrition	85(17.0)	352(70.4)	63(12.6)	4.22±1.14
Infant care	139(27.8)	276(55.2)	85(17.0)	2.70±1.23
Contraceptive methods	150(30.0)	220(44.0)	130(26.0)	2.05±1.0

To evaluate the factors affecting the level of maternal knowledge, a four-variable linear regression (including educational level, occupational status, income level and mode of delivery) was applied, showing significant results ($P < 0.001$); however, the only factor influencing maternal knowledge was income level.

Discussion

The present study aimed to assess the knowledge of mothers referring to healthcare centers of Mashhad for postpartum care in 2013. The results showed that the majority of women (79.2%) had moderate knowledge about postpartum care. Maternal knowledge about public health, comprising of four dimensions of personal, mental, sexual and oral health, was moderate.

Postpartum care is essential and vital to the improvement of maternal and neonatal health. Mothers' knowledge on proper postpartum care enables them to avoid the associated consequences and helps them behave properly in case of any problems. Considering the frequency of health problems in postpartum mothers, knowledge about personal hygiene in perineal care, breast care and use of medicines can reduce postpartum complications.

In our study, regarding personal hygiene, most women were not aware that washing the nipples with soap and water before breastfeeding is not necessary. In fact, washing the nipples with soap and water leads to irritation and cracks, which is a common cause of early discontinuation of breastfeeding and formula feeding (40). Unlike the present study, Darling et al. reported that the majority of mothers had high levels of knowledge in the area of personal hygiene (21). This discrepancy could be due to differences in the study populations, mothers' level of education, available facilities and maternal training.

Table 3. Comparison of the mean score of knowledge about postpartum care and detailed characteristics of subjects referring to health centers of Mashhad

		Mean	SD	P-value
Educational level	Primary level	15.66	3.539	0.04
	Secondary level	15.76	3.693	
	High school diploma	14.66	3.842	
	Higher than diploma	15.07	4.472	
Occupational status	Employee	14.50	4.45	0.03
	Housewife	15.29	3.78	
	Student	12	4.27	
Income level	Less than sufficient	15.95	3.869	0.001
	Sufficient	14.94	3.764	
	More than sufficient	11.29	3.094	
Parity	First	15.12	3.826	0.63
	Second	15.04	3.604	
	Third	15.68	4.089	
	Fourth and more	15.50	4.577	
Time of meeting receiving care after delivery	Second	15.35	15.35	0.36
	Third	15.03	15.03	
Mode of delivery	Vaginal delivery	203.57	23.137	0.002
	Cesarean section	194.62	29.920	

In this study, mothers' knowledge of mental health and psychiatric symptoms was at a moderate level. Symptoms such as aggression and impatience were considered as normal postpartum symptoms; however, mothers were unaware of the time of depression. Inconsistently, in a study by Kingston et al., maternal knowledge about depression and mental disorders in the postpartum period was high (87.4%) (22). In this study, 75% of patients had an educational level higher than diploma and the majority of women were advanced in age.

Postpartum depression is a debilitating condition, leading to rejection of the infant by the mother, reduced ability of mother in infant care and incompatibility with the infant, spouse, and family (38). Early diagnosis of this disorder can lead to earlier treatment, better prognosis and a reduction in its devastating effects on women, families and communities (38). Also, maternal knowledge of the symptoms of postpartum depression results in reduced incidence of this disease during this period.

In our study, regarding sexual health, the

findings showed that half of mothers were aware of the fact that yellow malodorous discharge is not a normal postpartum symptom and requires further follow-ups. Also, most of the subjects had accurate information about the appropriate time for starting sexual intercourse. Asgharnia et al. (17) reported that mothers' knowledge about the symptoms of postpartum infection and the onset of sexual intercourse was very low, which was inconsistent with the present findings. In this study, most participants had primary level education. Also, the majority of mothers considered health care providers as a source of information. Therefore, better training of health personnel would be also effective in improving maternal knowledge.

In terms of knowledge about oral and dental health, the majority of mothers were aware of the need to use dental floss. Also, they knew that sweet water or tea should be avoided for maintaining healthy teeth in infants. However, they were unaware of the fact that cleaning the infant's teeth and mouth with a damp cotton cloth after each feeding is essential. Moreover, about half of the mothers did not know that a

toothbrush should not be used more than six months.

Hormonal and nutritional changes contribute to the development of periodontal diseases and tooth decay in mothers during the postpartum period. In a study by Elhaminasab and colleagues, the majority of mothers had moderate knowledge about their infants' oral and dental health (43). The majority of conducted studies have examined the knowledge of oral health during pregnancy, which was not discussed in the present study.

In this study, maternal knowledge about nutrition and breastfeeding was moderate. The results of this study were similar to previous research. In this regard, in a study by Salehian, the knowledge level of 64.5% of mothers about the benefits of breastfeeding and correct breastfeeding techniques was moderate (26). Also, Ghaffari et al. reported that the majority of mothers had moderate knowledge about nutrition and breastfeeding (27).

According to a study by Darling et al., the majority of mothers had a high level of knowledge about nutrition during lactation, which was inconsistent with our study (21). The findings were not in line with our results in terms of educational level, healthcare facilities and culture of the study population. Also, in a study by Liu, mothers had insufficient knowledge before receiving nutritional training, which was inconsistent with our findings (28).

The cause of insufficient knowledge of mothers in the mentioned study may be due to the low educational level of mothers. About two-thirds of the studied population were from the rural areas, and only 11-20% of mothers had higher than primary level education. The results showed that maternal knowledge significantly increased through training in the intervention group (28).

In terms of breastfeeding and its problems, the majority of mothers were aware of the fact that breastfeeding is required at least eight times a day, based on the infant's need and demand. Also, they were informed about the impact of breastfeeding on the reduced risk of ovarian and breast cancers. However, most of the mothers had no knowledge about continuation of breastfeeding or symptoms of breast congestion such as breast warmth and stiffness.

In terms of postpartum nutrition and consumption of supplements, the results showed that the majority of mothers knew that iron tablets should be used for three months after childbirth. On the other hand, most of these women were unaware of the adverse impact of spicy foods on the taste of milk and infant's rejection of milk. In fact, lack of awareness could lead to the cessation of breastfeeding, while it could be prevented by increased awareness and effective care.

Generally, postpartum period is a critical time in terms of nutrition for mothers. In this critical period, women are faced with severe physiological changes, which affect their health. In case of improper and inadequate nutrition during lactation, mothers face complications such as osteoporosis, dental problems, anemia, headache, dizziness, back pain and constipation. Postpartum complications are related to unbalanced diet and inappropriate nutritional behaviors. Proper maternal nutrition during this period is essential to maintain mothers' vigor, health and self-esteem and meet infants' nutritional needs. Consequently, more attention to education in this area seems necessary (28, 29).

In the present study, maternal knowledge about infant care was moderate in 55.2% of cases. This finding was in accordance with the results reported by Gholizadeh on maternal knowledge about infant care (23). Similarly, in a study by Sharafi et al., mothers' knowledge was at a moderate level, which was consistent with the present findings (24). However, in a study by Castalino et al., 76.7% of mothers had sufficient knowledge about infant care, which was inconsistent with the findings of this study (25). This discrepancy may be related to more training of mothers (by educating the staff) and geographic circumstances.

Neonatal period is one of the most sensitive stages of life, necessitating proper identification of infants' needs and healthcare provision. Mothers' knowledge on how to properly deal with infants' problems and provide the necessary care can have major impacts on enhancing the confidence of mothers regarding infant care and eradicating misbeliefs and wrong traditions in this area.

In terms of contraceptive methods, 44% of mothers had moderate knowledge. In a study by

Simbar et al., the mean rate of maternal knowledge about contraceptive methods was about 54%, which was indicative of moderate or weak knowledge in this area (30). Similarly, Salehian showed that 59% of mothers were aware of the effect of breastfeeding on contraception and had sufficient knowledge in this area (27). Inconsistent with the present study, Darling et al. reported that the majority of mothers had a high level of knowledge about contraceptive methods. In this study, given the high educational level of mothers, they had sufficient knowledge in all studied areas (21).

Bolam also concluded that women, who received family planning education during delivery, had more knowledge about contraceptive methods and their application after delivery and three months after childbirth (31). The cause of this discrepancy might be related to mothers' postpartum training. The results of the present study showed that the majority of mothers did not know that they could use an intrauterine device as a contraceptive method at six weeks following delivery; however, the majority knew that breast pills could be only used up to six months after delivery.

Since the menstrual period restarts at 3-9 weeks after childbirth due to breastfeeding, mothers should choose a reliable contraceptive method as soon as possible. In fact, unreliable contraceptive method is the most important cause of unwanted pregnancy, which is a major cause of death in 14 million children less than 5 years of age, worldwide. Among 100,000 pregnancies each year, 650 women die trying to abort the infant (32). Therefore, it seems that maternal training and consultation about contraceptive methods should be further considered.

The results of the present study showed a significant relationship between the mean score of maternal knowledge and demographic characteristics such as occupational status, educational level and income level. The results showed that housewives, as well as those with a lower economic status and education, had more knowledge about postpartum care. Similarly, Asgharnia et al. showed a significant relationship between educational level and maternal knowledge, which was consistent with our study. In the mentioned study, unlike the

present research, housewives were less knowledgeable, which was correlated with their lower educational level (17).

On the other hand, Rezai et al. (2010) found no significant relationship between knowledge, occupational status and folic acid intake in pregnant women, referring to health centers of Iranshahr, Iran (42). Also, statistical analysis showed that the mean score of knowledge was not significantly associated with age or parity. Moreover, Asgharnia et al. (2005) found no significant relationship between maternal knowledge and mean age or parity (17).

The present study had certain limitations with regard to data collection methods. In fact, factors such as personality, cultural patterns, values and class affiliation affect one's behavior, expectations and response to questions. We tried to control class affiliation via cluster sampling as much as possible; however, control of other factors was not possible for the researcher. Moreover, subjects' statements on their mental problems were considered reliable, which is another limitation of this study. The present findings were obtained from mothers referring to health centers of Mashhad. For further generalizability, a survey on mothers referring to private centers is recommended to reach a more realistic view about mothers' level of knowledge.

Conclusion

It can be stated that maternal knowledge about postpartum care was moderate. Therefore, understanding the causes and influencing factors is of great importance. Since the postpartum period is critical for mothers and infants, enhancing training programs, holding training workshops and more extensive use of the media for increasing maternal knowledge should be considered.

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Conflict of Interest

The authors declare no conflicts of interest.

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