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Original Article

Incidence of complications among infants born from addicted mothers in Fatemieh hospital in Shahroud City, Iran

Zahra Masoumi[1], Arezoo Shayan[2], Salimeh Azizi[3], Afsaneh Sadeghian[4*]

[1] Mother and Child Care Research Center, School of Nursing and Midwifery, Hamadan University of Medical Sciences, Hamadan, Iran

[2] Mother and Child Care Research Center, Hamadan University of Medical Sciences, Hamadan, Iran

[3] Department of Nursing, School of Nursing, North Khorasan University of Medical Sciences, Bojnurd, Iran

[4] Department of Pediatrics, School of Medicine, Shahroud University of Medical Sciences, Shahroud, Iran

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ABSTRACT

Background & Aim: Mothers addicted to drugs may transfer their addiction to the embryo and there would be numerous complications for mothers and infants because of the addiction. The current study was performed aimed at investigating complications of drug abuse among infants born from addicted mothers in Fatemieh hospital in Shahroud City, Iran.

Methods & Materials: This study was a descriptive-analytical study conducted in cross-sectional manner. The study was carried out on 995 infants born in Fatemieh hospital of Shahroud City in 2011. Data were collected using two questionnaires including demographic characteristics and maternal and neonatal addiction complications.

Results: Results showed that 1.5% of mothers delivered in Fatemieh hospital were addicted to opioid drug. The opium was the most consumed drug by the addicted mothers in this study. Substance abuse during pregnancy put the infants in the risk of preterm delivery, low birth weight (LBW), admission to the neonatal intensive care unit (NICU), restlessness, and lack of feeding well. In addition, abnormal crying, tremors and muscle rigidity, tachypnea, vomiting, convulsions, diarrhea, hyperreflexia, and fever were observed among babies born from the addicted mothers. There was a significant relationship between LBW and cesarean section (C-section) with drug use among mothers ($P < 0.050$).

Conclusion: Given increasing incidence of addiction among pregnant women, attention to informing about these complications during prenatal period is necessary.

Introduction

Opioids are drugs derived from opium poppy and cause depression of the central nervous system (1). Illegal opioids are abundantly found and used in Iran (2). 90% of addicted women in the United States are in reproductive age (3). According to informal statistics, about 2.2% of Iranian women are addicted to opioids (4). Although there is no accurate statistic regarding the population of women with addiction in the country, they account for 9.6% of addicts of the country based on some studies. Moreover, according to The Iranian Ministry of Health and Medical Education (MOHME) , the ratio of women to men addicts is 1 to 8 (5).

Research has shown that pregnant mothers addicted to drug usually suffer from malnutrition, sexually transmitted diseases

* Corresponding Author: Afsaneh Sadeghian, Postal Address: Department of Pediatrics, School of Medicine, Shahroud University of Medical Sciences, Shahroud, Iran.
Email: afsanehsadeghian@yahoo.com

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(STDs), hepatitis, and acquired immune deficiency syndrome (AIDS), in addition, they do not routinely carry out prenatal care and have other medical problems in addition to high-risk pregnancy (6). Maternal addiction increases likelihood of intrauterine growth restriction (IUGR), preterm labor, low birth weight (LBW), early infant death, early placental pairing, sudden infant death syndrome (SIDS), congenital anomalies, developmental and behavioral disorders of the child, and neonatal abstinence syndrome (NAS). These complications cause admission of the infants to the hospital after birth and impose huge costs of care for their families and the health care system (7, 8). Furthermore, acute myocardial infarction (MI), arrhythmias, aortic rupture, stroke, seizure, ischemic bowel disease, hyperthermia, preeclampsia, acute pulmonary edema, sudden death of mother, transient hypoglycemia, and tachypnea are other complications among newborns due to drug use by their mothers during pregnancy (9). In addition, it is specified that quality of family environment, poverty, violence, and disadvantaged family environment play important role in the developmental abnormalities among the infants (10). Thus, given significance of these issues and lack of clear statistics about the incidence of this problem in Shahroud City, Iran, investigation of early complications resulting from opioid drugs in Fatemieh hospital in Shahroud seems necessary.

Methods

This study was a cross-sectional descriptive-analytical study. The study population included 986 women who gave birth in Fatemieh hospital in Shahroud in 2011. Data collection tool was a researcher-made questionnaire based on scientific books and resources. Validity of the questionnaire was obtained using ideas of fertility health experts and clinical psychologists and its reliability was confirmed by Cronbach's alpha coefficient of above 0.7. The questionnaire consisted of 8 items on demographic information including maternal age, gestational age, infant gender, type of delivery, neonatal weight, duration of drug use before delivery, type of drug, and duration of addiction, in addition to 6 items on complications of drug use among the infants and mothers. Given the study objective and questions, descriptive statistics and analytical statistics including chi-square test, Pearson correlation coefficient (PCC), Spearman's correlation coefficient, t-test, and analysis of variance (ANOVA) or equivalent non-parametric tests were used to analyze data in SPSS software (version 16.0, SPSS Inc., Chicago, IL, USA).

Results

Results showed that 1.5% of women delivered in Fatemieh hospital in Shahroud City were addicted. Mean ages of addicted and non-addicted mothers were 30.10 ± 6.20 and 26.70 ± 5.35 years, respectively. The highest rate of drug used by addicted mothers in this study was related to opium, however crack, methadone, and opium were used in the same rate. 52.5% of deliveries were cesarean section (C-section), and 50.7% of infants were boys. Most infants were in 2501-3500 g weight group. 75.9% of mothers had term pregnancy (37-42 weeks of gestational age), and membrane was healthy before delivery among 78.0% of cases (Table 1).

The results also indicated that 99.8% and 98.7% of infants born from addicted mothers were restless and with muscle tremor, respectively. Complications of poor breastfeeding, tachypnea, vomiting, need for resuscitation, crying with treble sound, fever, hyperreflexia, diarrhea, and seizure with rates of 98.5%, 98.7%, 98.5%, 98.6%, 98.6%, 98.5%, 98.5%, 98.6%, and 98.5%, respectively, were higher among newborns with addicted mothers. There was a significant relationship between the mentioned variables and drug use among mothers ($P < 0.050$) (Table 2).

The results of the present study indicated that most addicted mothers (98.8%) did not mention pregnancy poisoning history, and no significant relationship was observed between pregnancy poisoning and drug use. In addition, 1.4% of individuals had rupture of membranes (ROM) and no significant relationship was observed between early ROM and drug use by mothers ($P = 0.992$) (Table 3).

Table 1. Rate distribution of delivered mothers and their infants in Fatemieh hosptial in Shahroud City, Iran

Characteristics of mothers and infants		Rate	%
Mother addiction	Yes	15	1.5
	No	980	98.5
Mother age (year)	15-25	435	43.7
	26-35	487	48.9
	36-45	62	6.2
	> 46	11	1.1
Rate of pregnancy	0	194	19.5
	1	13	1.3
	2	222	22.3
	3	565	56.8
	4	1	0.1
Gestational age (week)	29-36	45	4.5
	37-42	949	95.4
	42 <	1	0.1
Infant weight (g)	1000 >	20	2.0
	1000-2500	317	31.9
	2501-3500	614	61.7
	3501-4000	29	2.9
	4000 <	15	1.5
Premature rupture of membranes	Yes	213	21.4
	No	782	78.6
Need for postpartum resuscitation	Yes	14	1.4
	No	981	98.6
Delivery type	NVD	456	47.2
	C-section	519	52.5
Infant gender	Girl	491	49.3
	Boy	504	50.7
Receiving prenatal care	Yes	820	82.4
	No	175	17.6
Discharge of infant after birth	1 day	452	45.4
	2 days	507	51.0
	3 days	24	2.4
	3 <	12	1.2

NVD: Normal vaginal delivery; C-section: Cesarean section;

98.6% of addicted mothers had C-section. Mean weight of infants born from addicted mothers was 2913 ± 551 g, and there was significant statistical relationship between neonatal weight and type of delivery and drug use by mothers ($P < 0.050$), so that most addicted mothers had low-weight infants and C-section. No significant relationship was observed between gestational age and infant gender and drug use ($P < 0.050$) (Table 4).

Discussion

The present study was conducted aiming at investigating complications of drug use among infants born from addicted mothers in Fatemieh hospital in Shahroud City. The results illustrated that 1.5% of women delivered in Fatemieh hospital were addicted. Opium was the drug with the highest rate of use among the addicted mothers. Based on the results, most of the infants born from addicted mothers were restless and showed muscle tremor. Complications of poor breastfeeding, tachypnea, vomiting, need for resuscitation, crying with treble sound, fever, hyperreflexia, diarrhea, and seizure were higher among newborns with addicted mothers. There was a significant relationship between the mentioned variables and drug use among mothers. There was a significant statistical relationship between neonatal weight and type of delivery (C-section) and drug use by mothers, so that most addicted mothers had low weight infants and C-section.

The rate of drug abuse in pregnancy was differently reported in different countries. It was reported as 5.5% (11) in USA and 5% (12) in England, respectively, however this rate was reported to be 5.1% in the current study.

Table 2. Distribution of rate of preterm neonatal complications among infants in terms of maternal addiction in Fatemieh hospital in Shahroud City, Iran

Neonatal complications		Maternal addiction		P-value
		No Rate (%)	Yes Rate (%)	
Restlessness	No	4 (66.7)	11 (1.1)	< 0.001
	Yes	2 (33.3)	976 (99.8)	
Poor breastfeeding	No	0 (0.0)	15 (1.5)	< 0.001
	Yes	5 (100)	978 (98.5)	
Crying in treble sound	No	1 (50.0)	14 (1.4)	< 0.001
	Yes	1 (50.0)	976 (98.6)	
tremor	No	2 (66.7)	13 (1.3)	< 0.001
	Yes	1 (33.3)	977 (98.7)	
Tachypnea	No	2 (40.0)	13 (1.3)	< 0.001
	Yes	3 (60.0)	975 (98.7)	
Vomiting	No	0 (0.0)	15 (1.5)	< 0.001
	Yes	1 (100)	977 (98.5)	
Fever	No	3 (50.0)	15 (1.5)	< 0.001
	Yes	3 (50.0)	978 (98.5)	
Hyperreflexia	No	0 (0.0)	15 (1.5)	< 0.001
	Yes	0 (0.0)	978 (98.5)	
Diarrhea	No	0 (0.0)	15 (1.5)	< 0.001
	Yes	0 (0.0)	976 (98.6)	
Seizure	No	0 (0.0)	15 (1.5)	< 0.001
	Yes	0 (0.0)	978 (98.5)	
Need for resuscitation	No	0 (0.0)	14 (1.4)	< 0.001
	Yes	14 (100)	965 (98.6)	

The incidence of drug use in Iran during 2001, 2003, and 2011 was 0.9% (13), 1.4% (14), and 0.5% (14), respectively. Opium was the drug with the highest rate of use in this study. According to the World Health Organization (WHO), opium and heroin were the most commonly used inhaler in Iran (15) and London, respectively (16). In the study by Javan et al., the drug with the highest rate of use by addicted mothers was opium, which is consistent with the results of the present study (17). Access to drugs is easy in Iran due to geographical location, however cocaine is less available.

The results showed that complications of restlessness and muscle tremor, poor breastfeeding, tachypnea, and vomiting among the infants born from addicted mothers were higher in this study. In the study by Gargari et al., 38.6% of the infants of the addicted mothers showed NAS. The most common NAS among the addicted infants was respiratory distress, and restlessness, seizure, and tremor were in the next levels (14).

In the study by Sharifian et al., some complications were reported, including early abortion, early delivery, hypertension in pregnancy, premature rupture of the membrane, C-section, hepatitis, fetal distress, intrauterine growth retardation, neonatal anomalies, low Apgar score in the first and fifth minutes, intrauterine mortality, decreased blood glucose, seizure, respiratory problems and infant respiratory distress syndrome (IRDS), need for resuscitation measures and infant death in the first three days of birth, weight loss, reduced height and head size among infants of addicted mothers, and admission of infants in infants intensive care unit (NICU); these complications were significantly higher among addicted mothers compared to the control group (18).

Table 3. Distribution of rate of pregnancy complications in terms of maternal addiction in Fatemieh hospital in Shahroud City, Iran

Maternal complications		Maternal addiction		P-value
		Yes Rate (%)	No Rate (%)	
Prenatal care	Yes	1 (0.1)	13 (7.4)	< 0.001
	No	797 (99.9)	162 (92.6)	
ROM	Yes	3 (4.1)	11 (4.1)	0.992
	No	210 (98.6)	765 (98.6)	
Pregnancy poisoning	Yes	1 (1.2)	13 (1.4)	0.867
	No	82 (98.8)	977 (98.6)	

ROM: Rupture of membranes

Table 4. Distribution of rate of demographic characteristics (infant gender, delivery type, mother age, gestational age, infant weight) in terms of maternal addiction in Fatemieh hospital in Shahroud City, Iran

Demographic characteristics		Maternal addiction		P-value
		Yes Rate (%)	No Rate (%)	
Infant gender	Boy	10 (2.00)	5 (1.00)	0.222
	Girl	494 (98.00)	479 (99.00)	
Delivery type	Natural childbirth	11 (2.34)	2 (0.40)	0.04
	C-section	458 (98.60)	517 (99.60)	
		Mean ± SD	Mean ± SD	
Mother age (year)		6.20 ± 30.10	5.35 ± 26.70	0.010
Gestational age (week)		1.50 ± 39.00	1.50 ± 38.80	0.840
Infant weight (g)		551.00 ± 2913.00	448.00 ± 3167.50	0.030

SD: Standard deviation; C-section: Cesarean section

Other studies also found that NAS, infant mortality, and respiratory depression were more common among addicted mothers (19). Physical, psychological, mental, and environmental changes caused by drug use among nursing mothers can affect the quality and duration of breastfeeding and development of the infant. The addicted mothers who participated in this study did not succeed in breastfeeding, which may be due to the above-mentioned factors. In the current study, addicted mothers did not receive prenatal care with a significant statistical relationship. Lack of adequate prenatal care was reported among 75.0% of addicted women. In addition, significant relationship was observed between drug use and C-section in other studies. The most common reasons of C-section in these individuals were repetitive (20). In the present study, no significant relationship was observed between maternal addiction and preeclampsia. Thaithumyanon reported the incidence of hypertension in pregnancy as 5.2% among addicted mothers (21). Investigation of neonatal outcomes among infants born from the addicted mothers was one of the strengths of the present study, as these individuals do not adequately cooperate with the researchers due to physical and psychological changes resulting from drug use. The study executers eliminated these problems. It is suggested that more neonatal and maternal complications be investigated in these individuals.

Conclusion

The findings of this study indicated that 1.5% of women delivered in Fatemieh hospital in Shahroud City were addicted, and opium was the drug with the highest rate of use by these women. Complications of poor breastfeeding, tachypnea, vomiting, need for resuscitation, crying with treble sound, fever, hyperreflexia, diarrhea, and seizure were higher among infants with addicted mothers. Most of addicted mothers had low weight infants and C-section. Given increasing growth of addiction among pregnant mothers, training complications of maternal addiction during pregnancy to these mothers seems necessary.

Conflict of Interests

Authors have no conflict of interests.

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