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Original Article

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Factors Affecting Adequacy of Prenatal Care in Suburban Women of Southeast Iran: A Cross-sectional Study

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ABSTRACT

Introduction: Prenatal and delivery care should be considered as a priority for women and society's health. Residents of the suburbs are among the groups who do not have enough access to such services.

Aim: The present study aimed to determine the pregnancy care as well as factors affecting adequacy of prenatal care for suburban women in Southeast Iran.

Materials and Methods: This cross-sectional study was conducted from July 2016 to December 2016. A total of 384 women were evaluated by a single stage cluster random sampling. Inclusion criteria included women living in Zahedan suburbs areas and women in their reproductive ages who gave birth. Exclusion criteria was the history of diseases affecting pregnancy and multiple pregnancies. Safe motherhood questionnaire was completed by face to face interview in order to gather data. The questionnaire includes items for assessing prenatal and delivery care. Descriptive, chi-square and Spearman's correlation coefficient tests were used to analyse data. SPSS version 20.0 software was used for analyses. A p-value <0.05 was considered significant.

Results: A total of 372 (96.9%) of subjects received prenatal care however 189 (50.8%) of them received inadequate care. There was a statistically significant relationship between adequate care and women's education level (p-value=0.009), marriage age (p-value ≤0.001), husband's education (p-value=0.05), husband's employment status (p=0.01), age in the first pregnancy (p-value=0.003), the time intervals among pregnancies (p-value=0.04), place of receiving care (p-value=0.004) and health care provider (p-value=0.006).

Conclusion: We found that most of suburban women did not receive adequate prenatal care, although, free health services were available for these mothers. Individual, familial features, care provider and place of receiving services were found effective for the quality and productivity of such services.

Keywords: Delivery, Obstetric, Prenatal care, Reproductive health, Suburban population

INTRODUCTION

One of the basic steps for family and societal health is to develop reproductive health care and its different dimensions [1]. Pregnancy care, safe delivery, and postpartum care are considered as the most important dimensions of reproductive health [2,3]. Although Pregnancy Care Services (PCSs) as well as medical and health services have been developed and advanced [4], PCSs are provided poorly in many groups. Poor PCSs lead to pregnancy and delivery complications and the maternal mortality whereas most of such mortality and morbidity are preventable [4].

Suburban women are considered as a group who do not have an access to the reproductive health care services [5]. Poor access to the health services leads to unwanted pregnancies, unsafe abortions, sexually transmitted diseases and high rates of morbidity and mortality for women [6] and eventually, the health indicators in such women are lower than that in the normal population [7].

The rate of mortality in suburban mothers' is higher than the other communities [8,9]. The high rate of maternal mortality associates with lack of access to prenatal care services as well as lack of professional delivery specialists, both of which are remarkable in suburbs [8]. Delivery and abortion by using unskilled agents and lack of health care facilities in such regions are more common than the other communities [9]. In a study from India, Devasenapathy N et al., showed that PCSs in poor regions were less optimal [10]. Chhabra I et al., have found that 52.3% of suburban women in the west of Delhi received the prenatal care [11].

Many suburban women have to perform heavy manual work during pregnancy even until delivery, thus they are under the risk of abortion. In addition, they are married and pregnant in young ages [12]. A study in Dankuni indicated that 54% of women delivered their first baby when they were younger than 20-year-old and 11.36% of them delivered at their home [13]. The place for delivery is one of the important health indicators. About 10.28% of Bengal suburban women delivered their babies at home [12]. As a result, pregnancy care should be improved in the suburbs.

Suburbia is a global issue and Iran is suffering from this problem as well [14]. The number of suburban people in Iran 10,280,270 in 2016. Zahedan located at the Southeast Iran and is a suburb. The suburban population under coverage of Zahedan university of medical science increased from 304,204 in 2015 to 422,149 people in 2016 [15]. Khayat S et al., revealed that socioeconomic factors in suburban women of Zahedan were inappropriate [15,16]. Studies show that socioeconomic factors, such as residential place, access to services, number of deliveries, number of alive children, woman education, husband's education, economic status are associated with the use of pregnancy health services [17]. As a result, the characteristics of suburban women in Zahedan can be made effective by the use of PCSs, but there is no information about pregnancy care in such regions.

Since safe pregnancy is an important part of health, as well as an important factor for reaching human development [18], no study addressed the status and adequacy of safe pregnancy care in

Iranian suburban women. Therefore, the present study aimed to investigate the status of pregnancy care and to determine factors affecting adequacy of such care for these women.

MATERIALS AND METHODS

This cross-sectional study was conducted on 384 suburban women of Zahedan in 2016. Cochran formula [19] was used to determine sample size The sample size was determined to include 384 people. Inclusion criteria were women living in Zahedan suburb areas and women in their reproductive ages who gave birth. The exclusion criteria included the history of diseases affecting pregnancy, such as: high blood pressure, blood disorders, chronic kidney disease, diabetes, being HIV-positive, depression, thyroid disease, and multiple pregnancies. A single stage cluster random sampling was used in this study. In this way, health centers of suburbs were specified as clusters and four health centers were selected randomly. After taking a written consent, all women voluntering to participate entered the study until completion of the number of samples.

Sampling lasted for six months from July 2016 to December 2016. Safe Motherhood questionnaire was used to collect the data. The questionnaire was a section from sexual and reproductive health needs assessment questionnaire for vulnerable communities in Zimbabwe which was developed by UNFPA in 2008 [20].

The questionnaire was translated by Khani S et al., and its validity and reliability were studied [21]. In the present study, content validity was confirmed by ten specialists. It was conducted on 30 individuals by pre and post tests to determine its reliability. Its ICC was calculated as 0.87. The questionnaire evaluated prenatal, delivery and postpartum care, and its items were nominal. The questionnaire was completed by the researcher with face to face interviews.

The present study was approved by Ethics Committee of Shahid Beheshti University of Medical Sciences (Code No. IR.SBMU.RETECH.REC.1395.244). The importance, goals, results, and information confidentiality were explained to the participants and written consent was taken from them.

Kotel Chuck index was used to evaluate adequacy of prenatal care. The index is derived from the two items: when prenatal care began and proportion of the number of visits recommended by the American College of Obstetricians and Gynecologists received from the time prenatal care began until the time of delivery [22]. The calculation of the index is explained in [Table/Fig-1].

Adequate Plus:	Prenatal care began by the end of the 4th month and 110% or more recommended visits received
Adequate:	Prenatal care began by the end of the 4th month and 80-109% recommended visits received
Intermediate:	Prenatal care began by the end of the 4th month and 50-79% recommended visits received
Inadequate:	Prenatal care began after the 4th month or less than 50% recommended visits received

[Table/Fig-1]: Calculation and interpretation of Kotel Chuck index [22].

RESULTS

A total of 384 suburban women participated in the present study. The mean age of the samples was 26.9±6.43 years, the mean age of their husbands was 31.52±7.67 years and the mean marriage age was 17.02±3.47 years. Demographic characteristics of the samples are summaried in [Table/Fig-2].

Most of the subjects (n=146, 38%) had ≤4 pregnancies and the mean number of their pregnancies was 3.3±1.94 ranging from 1 to 14. The first pregnancy in (n=251, 65.4%) of subjects experienced in young ages (10 to 19 years). The mean age of samples at the first pregnancy was 18.42±3.63 ranging from 12 to 34. The interval between pregnancies in most samples (n=255, 80.2%) was below 3 years. The mean interval between pregnancies was 2.46±1.47 years ranging from 0.5 to 10. A total of (n=42, 10.9%) of women received care below standard care recommended by WHO. The mean number of prenatal care was 6.43±2.59 ranging from 0 to 18. The first prenatal care in most samples (n=308, 82.8%) was received before the fourth month of pregnancy [Table/Fig-3].

The evaluation of adequate prenatal care services shows that (n=189, 50.8%) of received inadequate care and only (n=103, 27.7%) of subjects received adequate pregnancy care [Table/Fig-4].

The results of chi-square test and Spearman's correlation coefficient showed that there were statistically significant relationships between

Sociodemographic characteristics		Number (%)
Marriage age (in years)	<18	266 (69.3)
	≥18	118 (30.7)
Education	Illiterate	111 (28.9)
	Primary	212 (55.2)
	High school	61 (15.9)
Employment status	Housewife	375 (97.7)
	Employed	9 (2.3)
Husband's education	Illiterate	69 (18)
	Primary	206 (53.6)
	High school	98 (25.5)
	University	11 (2.9)
Employment status of husband	Unemployed	61 (15.9)
	Employed	323 (84.1)
Economic situation*	Adequate	159 (41.4)
	Relatively adequate	65 (16.9)
	Inadequate	160 (41.7)

[Table/Fig-2]: Sociodemographic characteristics of participants.
* The economic situation: the ability to pay living costs, such as food, housing and health care with respect to income (adequate: income > living costs, relatively adequate: income= living costs, inadequate: income < living costs) [23]

Characteristics		Number (%)	Total numbers
Number of pregnancy	1	66 (17.2)	384
	2	80 (20.8)	
	3	92 (24)	
	≥4	146 (38)	
Age at first pregnancy	<20	251 (65.4)	384
	≥20	133 (34.6)	
Interval between pregnancies	≤3	255 (80.2)	318
	>3	63 (19.8)	
Receiving prenatal care	Yes	372 (96.9)	384
	No	12 (3.1)	
Place of prenatal care	Health Center	314 (84.4)	372
	Midwife office	2 (0.5)	
	Obstetricians' office	56 (15.1)	
Prenatal Care Provider	Doctor	56 (15.1)	372
	Midwife	47 (12.6)	
	Health workers	269 (72.3)	
Number of prenatal care	0	12 (3.1)	384
	<4	30 (7.8)	
	≥4	342 (89.1)	
When prenatal care began (month)	≤4	308 (82.8)	372
	>4	64 (17.2)	
Tetanus injection before birth	Yes	368 (95.8)	384
	No	16 (4.2)	

Getting Supplements In Pregnancy	Iron	Yes	341 (88.8)	384
		No	43 (11.2)	
	folic acid	Yes	346 (90.1)	384
		No	38 (9.9)	
	multi vitamin	Yes	341 (88.8)	384
		No	43 (11.2)	
Live birth in the last pregnancy	Yes		372 (96.9)	384
	No	Stillbirth	10 (2.6)	
		Abortion	2 (0.5)	
Type of delivery	NVD*		308 (80.6)	382
	Cesarean section		74 (19.4)	
Place for delivery	Maternity facilities		48 (12.6)	382
	Hospital		309 (80.9)	
	Office		3 (0.7)	
	Home		22 (5.8)	
Delivery care provider	Doctor		72 (18.8)	382
	Midwife		292 (76.5)	
	Other people		18 (4.7)	
Receiving postpartum care	Yes		347 (90.8)	382
	No		35 (9.2)	

[Table/Fig-3]: Distribution of safe motherhood of suburban women.
*Normal Vaginal Delivery

Adequacy of care	Number	Percent
Inadequate	189	50.8
Average	60	16.1
Adequate	103	27.7
Intensive care	20	5.4
Total	372	100

[Table/Fig-4]: Distribution of the adequacy of prenatal care.
* The adequacy was calculated based on the Kotel Chuck index

adequate care and women's education level (p-value=0.009), marriage age (p-value ≤0.001), husbands' education (p-value=0.05), employment status of their husbands (p-value=0.01), the age of the first pregnancy (p-value=0.003), interval between pregnancies (p-value=0.04), place of care giving (p-value=0.004) and care providers (p-value=0.006) [Table/Fig-5].

Independent variables	Results of Spearman correlation coefficient (r) and Chi-square test (p)
Age	r=0.08 p=0.11
Education	p= 0.009*
Employment status	p=0.45
Marriage age	r=0.19 p≤0.001*
Husband's age	r=0.02 p=0.68
Husband's education	p=0.05*
Employment status of husband	p=0.01*
Economic situation	p=0.19
Parity	r=-0.08 p=0.11
Age at the first pregnancy	r=0.15 p=0.003*
Interval between pregnancies	r=0.11 p=0.04*
Place of care	p=0.004*
Care Provider	p=0.006*

[Table/Fig-5]: Results of the chi-square test and Spearman's correlation coefficient in factors related to the adequacy of prenatal care.
*p-value< 0.05 was concidered statistically significance

DISCUSSION

The present study aimed to evaluate pregnancy and delivery care and factors related to adequacy of such care in suburban women in southeast of Iran.

The sociodemographic characteristics of suburban of Zahedan in other studies were: large size of households, low literacy of women and their husbands, poverty and unemployment [15,24]. Also, results of our study confirmed these characteristics. These characteristics are similar to suburban people of Bengal and India [12,13,25,26].

So far, no study has been conducted on the status of pregnancy care in suburban women in Iran and our study is the first study in this field. Based on the results of this study, 65.4% of samples experienced their first pregnancy under 20-year-old whereas, 51.2% of Bengal [12] and 54% of Dankuni suburban women experienced their first birth below 20-year-old [27]. The rate of pregnancy of under 20-year-old in suburban women of Zahedan was higher than Bengal and Dankuni women.

The results of present study showed that early marriage was common in suburban women (n=266, 69.3%) and this issue can be effective in pregnancy in the adolescence ages. Studies showed that there was a strong relationship between marriage age and total rate of pregnancy. In fact, when a teenage girl is married, she will be at high risk to pregnancy for a long time [28]. Poverty, high rate of pregnancy, vulnerable jobs and low level of education are the risk factors of marriage in adolescence ages [28]. The sociodemographic characteristics of subjects in present study showed that all these risk factors exist in Zahedan suburban women.

Similar to our results, pregnancies with low interval and high numbers were common in suburban women of Launda [29]. Such pregnancies can expose the mother to complications such as; poverty, unemployment, diabetes, preterm delivery, low birth weight and intrauterine growth restriction, cesarean delivery, stillbirth, intrauterine death, mother death, placenta previa and respiratory distress syndrome [30]. As a result, pregnancies in suburban women are at high risk and require intensive prenatal care.

In present study, (n=372, 96.9%) of samples used prenatal care services. A total of (n= 342, 89.1%) of samples received above mentioned kind of care. Also, (n= 308, 82.8%) of samples received their first care before the fourth month of pregnancy. Respectively, these rates were (n=2300, 95.59%), (n=2021, 64.32%) and (n=2009, 83.54%) in Indian suburban women [31].

Although, prenatal services in Iran are free, still (n=42, 10.9%) of samples received care lower than the WHO standard and (n=189, 50.8%) of them received inadequate prenatal care. In the present study, there were significant relationships between adequate care and woman's education level, marriage age, husband's education, employment status of husband, women's age at the first pregnancy, interval between pregnancies, place of caregiving and caregivers. According to other studies, age, number of pregnancies, illiteracy, inappropriate economic status, lack of knowledge about importance of care, culture and beliefs are factors related to inadequate prenatal care [32].

The place of childbirth and delivery care provider status of suburban women in southeast of Iran were better than of suburban women of India. In India, 20.09% of women were delivered by unskilled birth attendant and 22.62% were delivered at homes [31]. In the present study, there were 4.7% and 5.8% respectively. Studies showed that causes of delivery at home were high cost of modern services, lack of knowledge, trust in

traditional system, social taboos, distance, lack of access to modern services, disagreement of families [33], traditions, lack of knowledge from delivery time and lack of vehicles [34]. Safe delivery means that the delivery should be done by a skilled agent with adequate equipment and mother-child care [35]. As a result, delivery at home via unskilled birth attendant is unsafe delivery and leading to morbidity and mortality.

Only 46% of poor women in Delhi received postpartum care [10] whereas, (n=347, 90.8%) of women in present study received postpartum care. Status of suburban women in Iran was more favourable. Lack of postpartum care associated strongly with socioeconomic status and large size of family [10]. Therefore, the characteristics of suburban women in Zahedan such as; low literacy of women and their husbands, poverty and unemployment can be effective on use of postpartum care services.

LIMITATION

The limitation of the present study was that the survey was conducted only in one city. We suggest that the other suburban areas of Iran should be evaluated to determine the status of pregnancy care also in suburbs of Iran.

CONCLUSION

Based on results of the present study, low education, unemployment, young marriage age and high number of pregnancies with short interval are obvious characteristics of the samples. Only, a small proportion of women received adequate care and there were direct and significant relationships between adequate care and women's education level, marriage age, husbands' education, employment status of husband, age at the first pregnancy, interval between pregnancies, place of caregiving and caregivers. As a result, some programs for increasing education for the women and their husbands, decreasing unemployment, timely planning and not very young age for marriage, family planning, improving the setting of services and promoting skills of healthcare givers can be effective on the usage of pregnancy care services.

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