



**Research Article**

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## Governmental services in prenatal care and its related factors in the suburban women of Bandar Abbas city in the South of Iran: A cross-sectional study

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### Abstract

**Background:** One of the major problems in many communities in maternal health is that most pregnant women do not receive the necessary care during pregnancy, while care is provided in various forms by Comprehensive Health Services Centers and Health Centers. However, there is lack of information about pregnancy care status in suburban regions which is necessary on health care planning and policy making. **Aims and objectives:** The primary objective was to determine the governmental services in prenatal care in the suburban women of Bandar Abbas city in south of Iran. Also, we determined its related factors as secondary objectives. **Study design:** This was a cross-sectional study. **Setting:** It was conducted at Bandar Abbas city of Hormozgan province, Iran. The research sample was the population covered by Takhti Comprehensive Health Services Center. **Materials and methods:** 100 pregnant women and women with children under one year of age who wished to participate in the study were included by cluster sampling in February 2020. The participants did not wish to continue the study or incomplete questionnaires were excluded. The outcome was pregnancy care status which was divided into optimal and not-optimal groups based on receiving at least 6 cares during pregnancy. In order to collect information with interview by trained people, a researcher-structured questionnaire was used, which includes personal information and information about pregnancy status. **Statistics:** Data were analyzed by SPSS software, version 24.0 and descriptive statistics and statistical tests such as independent sample *t* test, chi-squared test and Fisher's exact test. **Results:** Data of 100 participants with mean age of 28.6 years were statistically analyzed. Most participants (83%) had an optimal status for receiving pregnancy care. Among different personal and pregnancy factors, the timing of prenatal care initiation in the first trimester of pregnancy was significant, as most people who were cared at the first months of pregnancy received optimal care (69 out of 78) ( $P=0.007$ ). The care provider ( $P=0.172$ ) or place of care ( $P=0.580$ ) had no association with optimal care. **Conclusion:** Most of the participants in the study had favorable pregnancy care status. People with unfavorable prenatal care status were mainly mothers whose pregnancy care had begun in the third trimester. There was no difference between the two groups in terms of demographic variables, family and previous pregnancy history.

**Keywords:** Prenatal Care, Pregnancy Care, Suburban Area, Cross-Sectional Study, Iran.

### INTRODUCTION

Providing health care during pregnancy is one of the main health issues in any society and is considered as a health indicator. Attention to this issue, in addition to affecting the health system of countries and having the physical and mental health of mothers and children, also affects the social and economic situation of countries [1]. Improving maternal health requires the provision of effective and appropriate services for all pregnant mothers in a way that the effectiveness of interventions in terms of delivery time, repetition, acceptance for mother and family has been proven and has many benefits against its potential risks. Increasing awareness and preparation during pregnancy allows the mother to go through this stage of life with fewer and more pleasant complications [2]. Pregnancy care refers to the correct and accurate implementation of principles that are performed with the aim of maintaining a healthy pregnancy in terms of physical health and favorable mental outcomes for mother, baby and family. Adequacy of prenatal care is an important indicator in predicting infant and maternal mortality [3]. In general, prenatal care has a

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positive effect on reducing mortality and complications during pregnancy and childbirth and healthy birth in mothers [4].

Pregnancy is a natural phenomenon and many changes occur during this period in order for the mother to adapt to the new conditions. Access to routine pregnancy care plays an important role in reducing maternal mortality, miscarriage, birth complications, low birth weight and other neonatal problems [4]. Therefore, the ultimate goal of prenatal care is that each pregnancy leads to the birth of a healthy baby, without harming the mother's health [5].

Pregnancy care is routinely provided to pregnant women in both the public and private sectors [6]. The overall fetal mortality rate was 2.7 per 1000 live births in cases of prenatal care and 14.1 per 1000 births in cases of non-prenatal care. In other words, not receiving prenatal care increases the relative risk of stillbirth by 3.3 times. In addition, not using prenatal care is associated with a twofold increase in the risk of preterm delivery [7].

The World Health Organization (WHO) focuses on accelerating the reduction of maternal mortality in connection with pregnancy and childbirth, which is at the top of the WHO's reproductive health program priorities [8]. In Iran, the prenatal care program usually starts with a positive pregnancy test or ultrasound and continues monthly until the 28th week, every two weeks until the 36th week and every week until the 40th week. During pregnancy, 2 routine tests are requested and the necessary supplements are prescribed, and in case of abnormal cases, referral to higher levels of health and treatment is performed [4].

Studies showed that in pregnant women whose number of visits decreased, neonatal outcomes were not significantly different from those in mothers who received adequate care during pregnancy. As a result of inadequate care, the risk of miscarriage, intrauterine death and ectopic pregnancy increases [3]. The US Centers for Disease Control has reported that maternal mortality rates among women who did not receive prenatal care were 6.5 times higher than among women who received adequate care [2]. In addition, the results of a study in Kurdistan showed that the probability of maternal mortality among pregnant women who did not receive care is 22 times higher than mothers who received care [9]. Studies have also shown that the characteristics of the care facility are related to women's satisfaction with prenatal care [2].

Promoting maternal health is one of the basic pillars in health care. In the early years of the establishment of the health care system in Iran, maternal health as a vulnerable group, was seriously considered by health policy makers. Increasing access to pre-pregnancy, pregnancy, delivery and postpartum care was considered a priority. Gradually, this became possible with the development of the country's health care network. Comprehensive health service centers in Bandar Abbas city provide services in the field of maternal care in three periods of pre-pregnancy, pregnancy and postpartum and at all levels of maternal and infant health. The Bandar Abbas city located at the south of Iran with a population of about five hundred thousand people in south of Iran has more than 70 Comprehensive Health Service Centers and an average of two to three thousand people are covered by a health care provider and suffers from suburbia. Suburbia is a global problem both in developed and developing countries such as Iran [10]. According to the latest statistics in Iran, the population of informal settlers has raised to about 10.3 million people [11], and poor lifestyle and health status have been reported among suburban women [12]. The suburban population under coverage of Hormozgan University of Medical Sciences is 237539 in 2015 [1]. According to the study in 2018, most of suburban women in the southeast of Iran did not receive adequate prenatal care despite of free health services availability [13]. However, there is lack of information about pregnancy care status in such regions which is necessary on health care planning and policy making. Thus, the primary objective was to determine the governmental services in prenatal care

in the suburban women of Bandar Abbas city in south of Iran. Also, we determined its related factors as secondary objectives.

## MATERIAL AND METHODS

### Study design and setting

This was a cross-sectional study conducted at Bandar Abbas city of Hormozgan province, Iran; February 2020. The research sample was the population covered by Takhti Comprehensive Health Services Center. In this study, pregnant women and women with children under one year of age who wished to participate in the study were included in the study. The participants did not wish to continue the study or incomplete questionnaires were excluded from the analysis process.

### Sample size

Sample size was calculated for the primary objective. Based on the relative frequency of at least 6 pregnancies in Takhti Comprehensive Health Services Center reported by Hormozgan Health Center in the first six months of 1398 about 65% ( $p = 0.65$ ), 20% accuracy relative frequency, type one error of 5%, and using the formula  $n = (z_{1-\alpha} / 2)^2 p(1-p) / d^2$ , 92 samples were estimated as minimum sample size which were included in the study by one stage cluster sampling. Five blocks were covered by Takhti Comprehensive Health Services Center. We used one-stage cluster sampling. Therefore, the comprehensive center of Takhti health services was considered as cluster-head. Then, blocks 3 and 5 were randomly selected from five blocks and the status of pregnancy care in all residents of these two blocks was assessed by door-by-door sampling.

### Variables and measurements

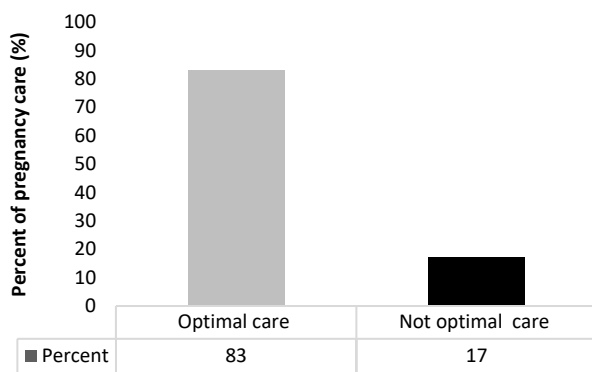
The studied variables were considered based on a review of related studies. In order to collect information, a checklist was used, which includes personal information (such as age, level of education and job (woman and husband), smoking (at least one cigarette during pregnancy), second hand smoking (mother's exposure to cigarette or hookah smoke in place of residence during pregnancy), health status (self-rated health of mothers in pregnancy was measured by the answer to the question: "How do you evaluate your health in general?" [14]. and economic status (self-rated of economic status in comparison with neighborhood), presence of co-wife and first marriage status, and health insurance) and information about pregnancy status (such as desire for pregnancy, pregnancy history, history of pregnancy complications, abortion and stillbirth, initiation time of pregnancy care, care provider and place of pregnancy care, reasons for choosing the place of pregnancy care, spouse's support for receiving care, knowledge, attitude and practice toward pregnancy care).

### Statistical analysis

Categorical variables were reported as number and percent. In order to compare categorical variables, chi-square test was used and in case of small frequencies, Fisher's exact test was used. Normality of continuous variables was checked by the Shapiro- Wilk test. Continuous variables were reported as mean and Standard Deviation (SD) and were compared using independent sample t-test. P value less than 0.05 was considered as statistically significant. The statistical package IBM SPSS for Windows, version 24.0 (IBM Corp.) was used for the statistical analyses.

## RESULTS

Data of 100 participants were statistically analyzed. The cases were divided into optimal and not-optimal groups. Most participants (83%) had an optimal status for receiving pregnancy care (Fig. 1).



**Fig 1:** Status of pregnancy care in the study population

The characteristics of study population according to pregnancy care status has been showed in Table 1. According to this table, the mean age of participants was 28.6 years. The majority of women had academic education and was housewife. Good health and economic status was expressed by most of participants. In addition, smoking and second hand smoking were not reported by the most of participants (93% and 87%, respectively). Results of bivariate analysis indicated that there was no association between age, level of education and job status of the individual and spouse, health insurance, health and economic status, presence of co-wife and first marriage of woman and pregnancy care status (Table 1).

**Table 1:** Characteristics of study population according to pregnancy care status

		Total (n=100)	Pregnancy care status		P_value
			Optimal (n=83) Number (percent)	Not-optimal (n=17) Number (percent)	
Age (year) [mean (SD)]		28.6 (5.5)	28.6 (5.6)	28.1(5.1)	0.729
Woman Education	Illiterate & elementary	20	4 (20.0)	16 (80.0)	0.886
	High school & diploma	34	6 (17.6)	28 (82.4)	
	Academic	46	7 (15.3)	39 (84.7)	
Spouse Education	Illiterate & elementary	19	6 (31.6)	13 (68.4)	0.119
	High school & diploma	40	4 (10.0)	36 (90.0)	
	Academic	41	7 (17.1)	34 (82.9)	
Woman job	Staff	9	7 (77.7)	2 (22.3)	0.648
	Housewife	91	76 (83.5)	15 (16.4)	
Spouse job status	Employed	95	79 (83.1)	16 (16.9)	0.614
	Unemployed	5	4 (80.0)	1 (20.0)	
Woman smoking	Yes	7	7 (100.0)	0 (0.0)	0.599
	No	93	86 (81.7)	7 (18.3)	
Second hand Smoking	Yes	13	10 (76.9)	3 (23.1)	0.691
	No	87	73 (83.9)	14 (16.1)	
Health insurance	Yes	66	56 (84.8)	10 (15.2)	0.493
	No	34	27 (79.4)	7 (20.6)	
Presence of Co-wife	Yes	8	6 (75.0)	2 (25.0)	0.621
	No	92	77 (83.6)	15 (16.4)	
First marriage	Yes	95	79 (83.1)	16 (16.9)	1.000
	No	5	4 (80.0)	1 (20.0)	
Health status (Self-rate)	Poor	8	7 (87.5)	1 (12.5)	0.464
	Moderate	22	20 (90.1)	2 (9.9)	
	Good	70	56 (80.0)	14 (20.0)	
Economic status in comparison with neighborhood	Very good	5	4 (80.0)	1 (20.0)	0.280
	Good	40	35 (87.5)	5 (12.5)	
	Similar	31	24 (77.4)	7 (12.6)	
	Poor	20	18 (90.0)	2 (10.0)	
	Very poor	4	2 (50.0)	2 (50.0)	

Regarding the status of pregnancy care based on pregnancy and pregnancy care characteristics of individuals, it was found that receiving or not receiving optimal prenatal care was not associated with the individual's desire for pregnancy, pregnancy history, history of pregnancy complications, abortion and stillbirth, preceding birth

interval, and husband support for receiving care. However, the timing of prenatal care initiation in the first trimester of pregnancy was significant, as most people who were cared at the first months of pregnancy received optimal care (69 out of 78). The care provider or place of care had no association with optimal care (Table 2).

**Table 2:** Pregnancy and pregnancy care characteristics of study population according to pregnancy care status

		Total (n=100)	Pregnancy care status		P_value	
			Optimal (n=83) Number (percent)	Not-optimal (n=17) Number (percent)		
Desire for pregnancy	Yes	72	61 (84.7)	11 (15.3)	0.555	
	No	28	22 (78.5)	6 (21.5)		
Pregnancy History	Yes	39	31 (79.4)	8 (20.6)	0.586	
	No	61	52 (85.2)	9 (14.8)		
Pregnancy complications History	Yes	9	6 (6.6)	3 (3.4)	0.178	
	No	91	77 (84.3)	14 (15.7)		
Preceding birth interval	≤3 years	70	55 (78.5)	15 (21.5)	0.072	
	>3 years	30	28 (93.3)	2 (6.7)		
History of stillbirth	Yes	2	2 (100.0)	0 (0.0)	1.000	
	No	98	81 (82.6)	17 (17.4)		
History of abortion	Yes	17	13 (76.4)	4 (23.6)	0.481	
	No	83	70 (84.3)	13 (15.7)		
Initiation time of pregnancy care	1 <sup>st</sup> trimester	78	69 (88.4)	9 (11.6)	0.007*	
	2 <sup>nd</sup> trimester	17	12 (70.6)	5 (29.4)		
	3 <sup>rd</sup> trimester	5	2 (40.0)	3 (60.0)		
Care provider	Midwife	58	50 (86.2)	8 (13.8)	0.172	
	Physician	13	12 (92.3)	1 (7.7)		
	Midwife & Physician	29	21 (72.5)	8 (27.5)		
Place of pregnancy care (self-report)	Primary health care	50	41 (82.0)	9 (18.0)	0.580	
	Private office	16	15 (93.7)	1 (6.3)		
	Primary health care & private office	33	26 (78.7)	7 (21.3)		
	Hospital	1	1 (100)	0 (0.0)		
Reason for choosing the place of pregnancy care	Easy to access	Yes	65	53 (81.5)	12 (18.5)	0.782
		No	35	30 (85.7)	5 (24.3)	
	Much confidence	Yes	15	12 (80.0)	3 (20.0)	0.716
		No	85	71 (83.5)	14 (16.5)	
	Providing more services	Yes	23	17 (73.9)	6 (26.1)	0.211
		No	77	66 (85.7)	11 (24.3)	
Lower cost of care	Yes	33	27 (81.8)	6 (20.2)	1.000	
	No	67	56 (83.5)	11 (16.5)		
Husband support for receiving care	Yes	92	76 (82.6)	16 (17.4)	1.000	
	No	8	7 (87.5)	1 (12.5)		

## DISCUSSION

Takhti Comprehensive Health Services Center, which is located in Hormozgan province and Bandar Abbas city, with a population of 13,000, has 160 pregnant women under its auspices. According to the statistics of the previous year, the percentage of prenatal care coverage in Bandar Abbas city is 49.9% and in Takhti center is 50%, which was much lower than the national expectation (85%). We investigated this problem and we found that 83% of women received optimal pregnancy care. While, in Khayat et al. study (2018), 50.8% of women in suburban population of the southeast of Iran did not receive

the adequate prenatal care [13]. This controversy may due to the differences among study population which indicates the necessity of pregnancy care planning for suburban regions in Iran.

In the sampling process, it was found that women, who were aware of the provision of pregnancy care services in these centers, had referred to this center during pregnancy. In the study of Mirmolai et al [2]. 85% of women received favorable or relatively favorable care. Also, 56.1% of the people referring to the comprehensive health care centers had received the desired care. This amount was 46% in the people referring to the hospital clinics or private centers. While in the present study,

most of the people referring to comprehensive health care centers and private centers had received the desired care. The reason for this difference can be related to different demographic differences between Tehran and a deprived area of Bandar Abbas city. In the present study, only 16% of people referred to private centers, which is related to the inaccessibility of several private centers and also the economic status of individuals.

Pregnancy care in comprehensive health care centers is provided free of charge and with appropriate quality according to the Ministry of Health to all women in the region. Therefore, if the awareness of pregnant mothers increases, it can increase the level of services in the covered community. Implementing educational programs and providing better conditions for self-care and support of others, especially the spouse can be appropriate strategies to increase the quality of prenatal care <sup>[1]</sup>.

Educated women of childbearing age are the first approach in designing and implementing care programs. Pregnancy education empowers women to adapt to the physical and mood changes associated with pregnancy. It can play an effective role in increasing the quality of prenatal care. Easy access to maternity care services was one of the topics of interest to the participants. Most of the participants in both groups receiving favorable and unfavorable pregnancy care stated the reason for choosing the location of the pregnancy care provider easy access. Other factors, such as reliability, more services, and lower financial costs, were not important to most people. In some studies, it has been shown that the appropriate distance from service centers and access methods are important factors in women's willingness or satisfaction to receive pregnancy care services <sup>[16]</sup>.

Transportation was one of the limitations for participants. Having a suitable vehicle, trust in the accompanying person and the time of referral are also factors that are effective in starting and continuing care. In the present study, despite the support of the spouse and proper access to care, it was not done properly. We can propose alternative methods such as tele-health communication, remote counseling for pregnant women, tele-medicine examinations, etc. Other factors such as lack of knowledge or incorrect attitude to the need for care during pregnancy have a greater role than other factors. In both groups, 47% of the participants in the study had good knowledge that this amount of knowledge was probably obtained from unscientific and unreliable sources that could cause incorrect attitudes in people. Access to appropriate information resources from health organizations such as the Ministry of Health can play an important role in providing accurate and complete information.

This study had some limitations. It was a single center study. It should be noted that sample size was calculated for the primary objective of the present study. Thus, our findings related to the secondary objective are not confirmatory and need to be evaluated through further studies.

In conclusion, most of the participants in the study had favorable pregnancy care status. People with unfavorable prenatal care status were mainly mothers whose pregnancy care had begun in the third trimester and therefore did not receive adequate care during pregnancy. There was no difference between the two groups in terms of demographic variables, family and previous pregnancy history. Lack of knowledge about the time of starting prenatal care and therefore lack of timely referral seems to play an important role in not receiving the desired care during pregnancy.

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#### Conflicts of interest

None declared.

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None declared.

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