http://dx.doi.org/10.22034/hmrj.2022.321648.1039

Original Article

Examination of the oral health-related quality of life in rural pregnant women after receiving the Health Evolution Plan services

Bahram Torabi[1], Asgar Aghaei Hashjin[*1], Seyyed Ahmad Ahmadi Teymourlouy[1]

[1] Department of Health Services Management, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran

Received: 26 December 2021
Revised: 27 January 2022
Accepted: 29 January 2022

Keyword: Oral health-related quality of life, Oral health, Pregnant women, Health evolution plan services

***Correspondence:** Asgar Aghaei Hashjin
Affiliation: Department of Health Services Management, School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran
Email: aghaei.a@iums.ac.ir

Abstract

Introduction

The aim of this study was to examine the quality of life regarding the oral health in pregnant women in the village of Robat Karim after receiving the Health Evolution Plan services.

Methods

The research sample population was 554 pregnant women who visited the designated dental clinics. After obtaining the informed consent, the data was collected, recorded, handwritten, and analyzed by content analysis method using Maxqda software version 2020. In order to support the accuracy and robustness of the data, the criteria of acceptability, verifiability, and transferability were considered.

Results

There is a significant relationship between education and enjoying oral care. There was a relationship between benefit and pregnancy rank. It was also found that there was no significant relationship between the reason for visits, insurance of paid expenses, and benefit of care. In the qualitative part, there are three themes of dissatisfaction, lack of good psychological sense, physical problems, nine sub-themes, including lack of services, the unwillingness of dentists to provide services, insufficient awareness of pregnant mothers, distrust of the health care system, out-of-pocket payments, complaints about tooth extraction, remorse for not repairing teeth before pregnancy, dysfunction of daily functioning, and pain were extracted from patients' shared experiences.

Conclusion

Low use of oral care by pregnant women can mean the Health Evolution Plan approaches for pregnant women have failed, hence the impact of oral problems on quality of life (dissatisfaction, physical and mental health problems) for pregnant women.

Introduction

Pregnancy is a natural biological process that involves a nine-month stage in which fetal development occurs and is a unique period for most women, with physiological changes occurring during pregnancy, biochemistry, and anatomy of organs and systems. They affect different parts of the body. One of the most important systems of the body affected by negative physiological changes is the anterior part of the gastrointestinal tract, including the mouth and teeth [1]. These

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physiological changes and poor understanding knowledge in the field of oral health care have caused a number of discomforts and problems affecting their quality of life [2].

It has been reported that 40-100% of pregnant women have periodontal disease, a bacterial infectious disease that leads to the destruction of bone and fibers supporting teeth [3]. Studies conducted in Iran also showed the poor oral health status in pregnant women, especially rural women with lower education [4-6] so the periodontal prevalence in pregnant women is high and estimated to be 66.7% [7].

Decreased quality of life in pregnancy results in toothache, insomnia, lack of eating, nervousness, absenteeism, and reduced social interactions, with irreversible adverse effects such as the birth of premature babies; low-weight, abortion, and transmission of tooth decay to children in the first years of life and pregnancy poisoning [8.9]. Experts believe that the second trimester of pregnancy is the most appropriate time for all dental treatments because in this period the fetus is not very sensitive to external movements and its organs are formed and differentiated. In addition, the pregnant woman has adapted to her new condition, the fetus's weight is not too much, and sitting on a dental chair is not a problem for the mother [10]. Accordingly, most governments reforming their health systems in the last half-century have attempted to provide better access to dental care for target groups and reduce the patient's share of costs [11]. The health evolution plan, launched in 2014, is the newest reform in the Iranian health system [12]. In the second phase of the plan, oral health services were included for the benefit of vulnerable groups in the community (people under 14, pregnant women, and lactating mothers).

Oral health approaches include free dental services and expanding free health insurance coverage to uninsured individuals. A dentist and an assistant should be employed for every 15,000 population, and the centers implementing the health evolition plan were equipped (13,14). Although, six years have passed since the implementation of the program, no research has been conducted to evaluate the success rate of cares provided to improve the quality of life of pregnant women as guardians of the health of the next generation [15]. Accordingly, in this study, oral and dental in rural pregnant women of Robat Karim city, an area covered by the Iran University of Medical Sciences, has been evaluated using combined methods (quantitative-qualitative).

Methods

This combined research (quantitative-qualitative) was conducted from February to November 2016 with the ethics code of IR.IUMS.REC.1398.1166. In the quantitative part of the information required for the objectives of the research using a checklist researcher that included two structural and functional parts were collected.

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Information about the structure of the program including the number of rural residents (48,304 people), the number of selected centers providing dental care (3 selected centers, Nuclear Martyrs of Parand, Shahid Shaterian and Allard which covered Sefidar, Adran, Anjumabad, Allard, Manjilabad villages). The study population (759 pregnant women referring to dentistry) sample size (554 eligible patients); the number of dentists and assistants (10 people) were collected from the Vice-Chancellor for Health of Iran University of Medical Sciences. Then, the functional information including 1- number of clients, 2- number of people benefiting from care, 3- gestational age of clients, 4- education, 5- age pregnancy of clients 6- Number of pregnancies/pregnancy rank, 7- Reason for referral, 8- Type of insurance, 9- Paid expenses, by referring to the city health center, the Integrated health system (SIB), and patients' files were collected. Then, the collected quantitative data were analyzed using SPSS statistical software version 25 at the significance level α=0.05.

The statistical test was chi-square, which was selected based on the nature of the research data, which were of the category (nominal quality) with at least two subgroups, and the relationship between health care as the main goal of the transformation plan with demographic information (education). Pregnancy rank, the reason for referral, insurance and payment costs were investigated; then, to describe the experiences of patients after referring to the dentist, a qualitative method was used with semi-structured interview tools and the researcher's mobile phone to record conversations. The statistical population of this section was women eligible to receive care in the second quarter (554 people) and purposeful sampling continued until the information was completed. Finally, 23 people including 18 pregnant women, two dentists, and three health care providers were selected. The interviews were conducted face to face. Eight people participated with the presence of a relative and another 10 without the presence of acquaintances. The interview time for each participant was 25-30 minutes. The researcher listened to the interviews several times and reviewed the text of the manuscripts several times. For data analysis, the content analysis method was performed using Maxqda software version 2020. Guba and Lincoln criteria including credibility or acceptability, transferability, consistency or dependability, confirmability were used to evaluate narrative validity, accuracy, and reliability. The patients reviewed the accuracy of their expressions in the manuscripts by allocating sufficient time to collect data, as well as due to the researcher's long-term involvement and good communication with participants, gaining their trust and understanding of the researcher's experiences, the acceptability of the data became possible. Also, sampling with the maximum number of personnel involved in the program increased the validity of the data. The transcripts of the interviews, codes, and classes extracted were confirmed by three external

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Table 1. Frequency of demographic variables, pregnancy rank, insurance, cost, and reason for referral

		n(%)
Age	<21	55(10)
	21-25	89(16)
	26-30	244(44)
	31-35	77(14)
	36-40	72(13)
	>40	17(3)
Education	Diploma and lower	471(85)
	Associate Degree	55(10)
	Masters	22(4)
	Ph. D and higher	6(1)
Pregnancy rank	First	299(54)
	Second	222(40)
	Third and more	33(6)
Insurance	insurance	446(81)
	Not insurance	108(19)
Cost	Free	488(88)
	Payment	66(13)
Reason for referral	Dental and toothache problems	338(61)
	Disease gum	216(39)

dentists and faculty members, and the use of their supplementary opinions and the validity of the findings were determined. In order to be transferable and reliable, the results were evaluated by five pregnant women who did not participate in the study. In the next step, after incoding and summarizing the data based on similarities and differences, the classification of the codes was performed.

Results

The average age of patients referred to dentistry was 28 years, of which 85% (471) had a diploma or lower; the frequency distribution of clients in terms of demographic information is in Table1.

Out of 554 eligible pregnant women, only 10% (53) had utilization from the Health Evolution Plan in addition to the medical examination. The distribution of the frequency of eligible individuals who have to utilize the Health Evaluation Plan care package in addition to the visit is in Table 2.

Quantitative research tests show that there is a significant relationship between education and the use of oral care (p-value <0.001), so people with diploma and lower education, had chosen tooth extraction more often. There was also a relationship between benefit and pregnancy rank (P-value <0.001), in other words, it means that

Table 2. Frequency of utilizing dental care among pregnant women

Type of service	n(%)
Dental restoration	0
Dental extraction	28(5)
Dental scaling	25(5)
Pulpotomy	0

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Table 3. Relationship between the utilizing of dental services and age, education, pregnancy rank, insurance, cost, and reason for referral

		Utilization		Pearson chi-square	P-value
		Yes	No		
Education	No university degree	40	439	6	0/01
	Has a university degree	13	62		
Pregnancy rank	First	18	281	26	<0/001
	Second	24	198		
	Third and more	11	22		
Insurance	Has insurance	39	407	1/78	0/2
	No insurance	14	94		
Reason for referral	Toothache and dental problems	28	310	1/64	0/19
	Oral and gum disease	25	191		
Paid the cost has been	Yes	24	11	1/50	<0/001
	No	29	490		

there is a possibility that more pregnancies have led to an increase in dental visits.

In this study, it has been found that there is not a significant relationship between the cause of referrals (P-value = 0.199, insurance P-value = 0.2) and payment costs (P-value = 0.00) with the benefit of care. the results of the chi-square test are shown in Table 3.

Results of the qualitative section

In this part, 18 patients, 3 health care providers, 2 dentists were present. The age range of patients was 18 to 38 and their education was diploma to master's degree. Their information is presented in Table 4.

Topic one: Lack of patients' satisfaction

Based on the data analysis process, the interviewers 'experiences had six sub-themes, including lack of benefit from Transformation Plan Services, dentists' unwillingness to treat pregnant women, insufficient knowledge of pregnant mothers about the importance of oral health before and during pregnancy, distrust complaints to the health care system about receiving preventive services, out-of-pocket payments related to patients' dissatisfaction.

Not benefiting from the services of the Health Evolution Plan

One of the main functions in the field of health is to benefit from health services that result from the interaction between the behavior of users and the professionals who guide them in this system(15).

"I went to the center to have my teeth filled. The doctor told me that your tooth decay was severe and that I should go to the city dentist's office (Patient 10)."We do not do any special work here. If you can bear it, come back some time after the birth to do the work of repairing your teeth. I have to suffer until after the birth!" (Patient 5).

Other patients have also confirmed that after visiting the center, they faced similar answers about not providing the service.

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Table 4. Frequency of pregnant women requesting dental services based on age, education, and reason for referral

Patient number	Age(years)	Education	Reason for referral
1	34	Diploma	Pain and perforation of the teeth
2	26	Bachelor	Toothache
3	22	Associate Degree	Toothache and dental problems
4	19	Diploma	Toothache
5	27	Masters	Dental problems
6	24	Bachelor	Jaw bone protrusion
7	21	Diploma	Dark gum color
8	29	Bachelor	Toothache
9	28	Diploma	Toothache
10	31	Diploma	Toothache and gum infection
11	28	Diploma	Pull tooth
12	18	Diploma	Toothache
13	27	Diploma	Dental problems
14	38	Masters	Dental sensitivity
15	26	Bachelor	Toothache
16	32	Bachelor	Toothache and dental problems
17	23	Diploma	Black spots on the teeth
18	26	Bachelor	Tooth sensitivity

Dentists' reluctance to treat pregnant women

Dental care is an integral part of prenatal care. However, experts in the field say that the second trimester of pregnancy is safe to provide dental services and still do not admit the required pregnant women.

"Every patient who comes here with a sign of toothache has a severe caries that has reached the nerve and needs root-canal therapy and may even need a crown. These specialized services are not provided here, so I can not do anything, and then to some extent, I remember not being told anything special about the treatment of pregnant women during my college years "(Dentist 1).

"I'm not sure about the safety of dental treatment. I prefer not to do it as much as possible. Most patients want to ensure that there is no problem for their child. Now, think about it. God forbidden,after receiving dental treatment services, if there is a little problem, they would come to sue me, and I have to be countable "(Dentist 2).

Insufficient awareness of pregnant mothers about the importance of oral health

Although misconceptions about oral health are inherently individual, they are strongly rooted in people's traditions and will lead to a lack of timely

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care and a reduction in the level of oral health of mother and child.

"My mother-in-law used to tell me that every time I got pregnant it was like losing a tooth; I agree with that because I know the mother's body calcium is consumed by the baby, so I think coming to the doctor is something useless to do. "Every time I had a toothache, I turned brewed mint in my mouth, and then I got better.

"Our family believes in traditional medicine and thank God we have never needed medicine and dental services. The dentist I went to said that neurosurgery was necessary. As a matter of fact, my husband and I think that anesthesia used for treatment can cause miscarriage, so I did not go to the doctor anymore "(patient 12).

In this regard, health care providers acknowledge that the oral health conditions of the mothers are influenced by the beliefs and rumors of cyberspace. For example, one of these clients, whose dental condition was very bad and I wanted to refer her to the doctor, said: "Madam ....., I am not going to the doctor because I read somewhere; I do not know where (was it Instagram or WhatsApp?) which said " The dentists' office causes AIDS and hepatitis; How can I know that these equipment are clean!" (Health Care 1).

"Most pregnant women do not floss after eating. For example, I know a pregnant mother who said that during pregnancy every time I brush my teeth I feel nausea and vomiting, that why they do not brush their teeth "(Health Care 2).

Distrust of the health care system

Pregnant mothers did not hope to receive services due to their referral to the office and judged the health care system with skepticism and distrust.

"Referral of a patient means frustrating the patient and they do not want to do anything. I had an infection and swelling of my gums in my previous pregnancy. No dentist was willing to extract my teeth. They do not want me to do their job "(Patient 18).

One of the important consequences of trust in care is satisfaction, which is the product of quality of care, good delivery and patients' level of expectation, but the low sensitivity of health care providers and stressful communication, has caused distrust.

Complaining about the process of receiving tooth extraction services

Pregnant mothers complained about the way they received dental extraction services due to their special physical and physiological conditions.

"You consider that apart from the cost of the visit and the travel, I have a backache and I can not sit on a chair for a long time and the delay of the specialist doctor who only gives us a letter, I think it would not be bad if you should also consider our physical conditions. "(patient 13).

Out-of-pocket payments

Regarding their out-of-pocket payments, the interviewees stated that "nowhere does they accept our medical insurance and say that Ms: We do not

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work with these insurances if you want you can pay it yourself. We have been broke for pregnancy tests expenses, this is beyond our financial ability; leave it for another time "(patient 2).

"With this situation and the high cost of dentistry, I had to stop the second screening test to fix my teeth" (Patient 4).

Subject: Lack of good spiritual-psychological health

Regarding the lack of good spiritual-psychological feelings in patients, two sub-themes of regret of oral health behavior and dysfunction of daily functioning were extracted.

Remorse about past health behaviors

Interviewees regretted the missed opportunity for pre-pregnancy screening and dental fixing, and also stated that they had a negative feeling about pregnancy.

"I did all the necessary medical care and tests before I got pregnant, but the only thing I did not do was not going to the dentist. (Patient 17).

"I remember my previous pregnancy when I did not have a problem with toothache. I was very happy. I talked to my baby every night. Now I am insomniac and have a toothache. I do not have that motherly feeling. I am just waiting to get rid of this pregnancy to get my teeth fixed "(Patient 16).

Dysfunction of daily

Patients complained of malnutrition, insomnia, nervousness, and lack of social interaction with their loved ones; As they were deprived of a normal life, the comments of some of them are as follows.

"I remember one night I was about to go crazy because of a severe toothache. I did not talk to anyone, not even my little girl whom I love (patient 1).

"As soon as I ate a piece of hard food, my whole tooth ached, I was eating watery soup! Can a person just eat soup?" (Patient 15). The narrative scripts of pregnant mothers show that untreated oral diseases are a network of factors, each of which cyclically aggravates the disease and reduces the quality of life. For example, toothache causes insomnia and lack of attendance at work, and ultimately economic problems and inability to pay for treatment and has intensified the disease cycle; or swelling of the face due to gum infection causes not leaving home and late treatment; and finally, not referring to the dentist would exacerbate the disease.

The theme of three physical problems

Regarding physical problems in patients under the theme of tolerating toothache and oral discomfort were obtained.

Tolerance of toothache and oral discomfort

"Believe me, because of the severe toothache, my whole face and even my eyes hurt so much that I have to put my face near the heater to relieve the pain a little (I felt that my face was burning). Until after delivery, God is great "(Patient 8).

"I do not have pain now, I only feel pain by

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Table 5. Themes and sub-themes obtained from the experiences of pregnant women

Theme	Sub-theme
Dissatisfaction	Lack of service
	Reluctance of dentists to provide services
	Awareness of pregnant mothers about the importance of oral care in pregnancy
	Distrust of the health care system
	Payment from patients' pockets
	Complaints about the tooth extraction process
Lack of good spiritual-psychological feeling	Remorse for past oral health behaviors
	Disruption of daily activities
Physical problems	Pain and oral diseases of Tolerance

drinking cold water and sweets. The doctor says that decay has reached the nerve and it is very decayed. I do not know if it has an infection or not.

The patients' statements show that some patients inevitably endure the physical problems caused by toothache, and others tried to relieve the pain and improve their oral diseases by using unusual and self-remedy treatments.

Discussion

A comparison of quantitative and qualitative results of the study showed that the Health Evolution Plan approaches regarding the benefit of pregnant women from oral care have not been very successful and the results of the qualitative research also prove it. Quantitative results show that only 10% of eligible pregnant women benefited from such cares, and in the qualitative study, the first theme of dissatisfaction of pregnant women was the lack of required care due to factors such as low level of oral health among pregnant women and high prevalence of tooth decay in them [4,5,6]. It is also related to their ignorance to receive oral care on time, the non-acceptance of patients' insurance in the private sector, and also the refusal of dentists to provide care to this vulnerable group.

The World Health Organization (WHO) has also acknowledged that dentists are reluctant to provide services to pregnant women [16,17]. Another study showed that dentists' knowledge about dental services during pregnancy was low [18]. It seems that the courses on oral diseases of pregnant women in dental schools need to be reviewed and also the need for education and promotion of oral health is felt from primary school. Another factor of dissatisfaction is the

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distrust of the health care system following the implementation of the Transformation of Oral Health Plan, referral of patients to the private sector, and the high cost of dental services [19] induced the mentality of not providing services and lack of trust in the health care system.

The results of this study showed that the quality of life of the untreated patients with reduced spiritual-psychological conditions has been reduced. It is said that pregnant women are very upset and regretful that they lost the opportunity to repair their teeth before pregnancy [20]. Another study confirms that there is a relationship between poor oral health and levels of depression in rural pregnant women [21]. Another result of this study was the existence of physical problems. A study consistent with the results of the present study confirms that toothache in pregnant women is the main cause of patients' complaints and lack of access to dental services has been introduced as the main factor [22]. Numerous studies in line with the results of this study confirm that oral discomfort affects a person's daily activities (talking, eating, cleaning the mouth, and other daily activities) [23]. One of the most important daily activities is comfortable sleep, which plays an important role in the physical and mental health of people, if it is disturbed due to oral diseases, it reduces the body's immunity and increases the inflammatory factors that can aggravate the periodontal disease and affect the quality of life of the patients [24].

Conclusion

Low access of pregnant women to oral care can mean the failure of the Health Evolution Plan approaches for pregnant women and consequently the impact of oral problems on their quality of life (dissatisfaction, physical and mental health problems). It is necessary to emphasize more courses for pregnant women in the education of dental students and at the executive level, relying on preventive medicine with the approach of oral health education from primary school in order to provide the basis for promoting oral health and improving the quality of pregnant mothers.

Competing interests

"There is no conflict of interest between the authors of this article"

Acknowledgement

The authors of this article would like to express their gratitude to the Health Deputy of Iran University of Medical Sciences and Robat Karim Health Center.

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