

Original Article

Retention of dental practitioners in rural health services in Iran: Experiences from Kerman province

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ABSTRACT

Background: In Iran, the inequitable distribution of health-care staff, especially dental practitioners between rural and urban areas has a major impact on the delivery of care for those living in rural communities. This study investigated the factors affecting the retention of dental practitioners to stay in the rural areas.

Materials and Methods: This is a cross-sectional study conducted in 2019. All dental practitioners working in health services centers covering a population lower than 20,000 people in Kerman province participated in this study ($n = 81$). A researcher-designed questionnaire was used for the data collection. The data were analyzed using the descriptive statistics and logistic regression through the SPSS software.

Results: The mean age of the participants was 29.2 ± 6.5 and 39.5% were female. The results showed that about two-thirds of native dentists (with local origin), 73.3% of married dentists, and all dental practitioners who had no children or had a child under the age of six were willing to continue working with their current Comprehensive centers of health services compared to other dentists. Univariate and multivariate logistic regression showed that there was a significant relationship among dentists' age, monthly salary, and facilities available in the area (place of residence, availability of vehicles, etc.), view of dental practitioners on living in a rural area, and view of dentists' families on living and working in the area ($p < 0.05$).

Conclusion: More than half of the dental practitioners declared their willingness to stay in rural areas, although, in practice, this amount of presence in rural areas does not meet the needs of residents. Financial issues, amenities, and facilities in the rural areas can have a positive impact on the retention of dental practitioners.

Key Words: Dental health services, health personnel, Iran, retention in care, rural health services

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INTRODUCTION

Human is the most valuable asset of any organization and is also a fundamental component of health system for the delivery of quality services.^[1,2] Sixty

ninth summit of World Health Organization, asked country members especially developing countries,

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to develop a global human resource strategy in line with the millennium development goals to deliver quality, effective, efficient, accessible, and reliable services through competent, skillful, motivated and responsive human resources.^[1,3,4] To achieve this goal, access to a sufficient number of skilled and motivated health-care workers must be available for all segments of society, especially the disadvantaged ones.^[2,3] The fair distribution of health-care human resources in remote and urban areas is one of ways of achieving human rights.^[5] However, residents of rural and rural areas still do not have fair access to health services in comparison with urban dwellers. In fact, according to the reverse care law, people who need more care access it less.^[6,7]

About 75% of the world's population is reported to be in poverty and more than half of the world's population live in the rural areas.^[8,9] Population growth, socioeconomic deprivation, poverty, unhealthy lifestyles, and emergence of new diseases have increased the demand for health services all around the world, especially in rural areas.^[10-12] Hence, greater number of health-care professionals is expected to be working in such areas, but according to studies only a quarter of health-care workforce is available in the remote areas.^[13] According to studies, nearly half of the world's physicians work in areas where only 20% of the world's population resides.^[8] Meanwhile, African people have access to only 1% of health-care professionals despite the fact that, Africa has the highest prevalence of disease across the world.^[3] Asia, with half of the world's population, only has 30% of the world's physicians.^[9]

The coverage of health-care services is very poor in the rural areas.^[14] All countries, rich or poor, have reported the lower rates of coverage of health-care services in remote and deprived areas.^[9,15-17] The prevalence of oral diseases is on the rise worldwide, especially in rural areas.^[18] Oral hygiene is one of the branches of public health, which has a major impact on public health and quality of life and healthy teeth are very important for people, as they are the first thing that others notice during verbal communication and speech.^[19] It also has a great impact on people's nutrition, digestion, and physical appearance and is one of the valuable assets of every individual.^[20] Therefore, we need experienced and committed dental practitioners to provide adequate dental services, but the distribution of dental practitioners is uneven across the world. On the one hand, reports indicate

a shortage of dental practitioners and inadequate coverage of oral health services in rural and rural areas. On the other hand, the number of dental practitioners and university graduates in the field of dentistry is increasing in developing countries.^[20] Although the number of medical university graduates is increasing in Iran, studies of disadvantaged and remote areas of Iran show a severe shortage of health care workforce relative to the population of these areas due to migration of health-care professionals to urban areas. As a result, rural areas are facing with uneven distribution of health care human resources.^[9]

Equity in providing services in urban areas is achieved when the services in rural areas are offered at the same price, quality, accessibility, and acceptability as those offered in urban areas.^[14] Geographical disparities in distribution of health-care professionals between rural and nonrural areas even in developed countries affect service coverage in rural areas.^[21] From the perspective of policy-makers, geographical distribution of human resources in the health sector of low-income countries is very challenging, because rural areas in these countries are facing with a shortage of health-care workers.^[14,22] On the other hand, these areas are much more populated than urban areas and health-care professional prefer to work in urban areas due to high workload, long working hours, and high clinical responsibility that they have in rural areas compared to urban areas.^[11]

Inappropriate policies and planning formulated in the health system of low-income countries on one hand and the effects of political environment on the other hand create many problems in recruiting and more importantly retaining health-care professionals in rural and remote areas.^[23] Recruiting and maintaining health-care professionals in rural areas is a major concern for most countries.^[24] Today, health-care managers and policy-makers have realized that shortage of health-care workers in rural areas has a great cost for the country.^[24] Studies have found that, the cost of hiring a new healthcare professional is far greater than paying compensation to existing professional in rural and rural areas, so it can be much more cost-effective to maintain professionals than to hire new ones.^[4,11] Health-care managers should therefore have the necessary knowledge on the complexities of recruiting and retaining healthcare workforce, so they should design and execute an attractive program to recruit and retain healthcare workers in remote and disadvantaged

areas.^[8] Understanding all factors affecting the decision of health-care professionals to leave or stay in rural areas, and providing practical and attractive solutions for hiring/retaining health-care workers in rural and low-income areas are among measures that can be taken by health-care managers and policy-makers to enhance public health and provide quality services in rural areas.^[4,13,22]

In the present study, the theory of reasoned action was selected as the research model and the tendency to stay in rural areas was measured by this model.^[25] Among the models that aim to understand and predict health behaviors, the theory of reasoned action has been a successful one. This theory was developed by Ajzen Fishbein in 1975 to predict and explain behavior by arguing that; (1) individuals make their behavioral decisions based on a rational review of available information and (2) people consider the outcomes of their action before making decision. According to this theory, the best predictor of behavior is the individual's intention to engage in behavior. Intention is predicted by two variables of attitude related to behavior (positive or negative evaluation of behavior) and subjective norms (general perception of social pressure to perform or not to perform the behavior).

As in Iran, the inequitable distribution of health-care staff, especially dental practitioners between rural and urban areas has a major impact on delivery of care for those living in rural communities. This study investigated the factors affecting the retention of dental practitioners to stay in rural areas.

MATERIALS AND METHODS

Settings

This is a cross-sectional study. The present study was conducted in Kerman province of Iran. The study setting was all comprehensive health centers of Kerman province in areas that had less than 20,000 residences (122 centers). The comprehensive health centers, depending on the number of population they covered geographical area and size of the region, were divided into two categories of rural health centers (small population and small size) and urban-rural health centers (more populated and larger size). The dental practitioners were working in the health centers under five types of contracts: Formal (state employee), contractual, recall (family dentist contracts), human resources plan (according to Iranian law, medical graduates including dental

practitioners are required to work in public health centers designated to graduates by the Ministry of Health), and health messenger contract which is for male dentistry graduates who have not completed their compulsory military service and are required to do so.

Sampling and study type

This cross-sectional study was conducted in Kerman province in 2019. The participants included all dental practitioners working in rural and urban-rural comprehensive health centers of areas that had <20,000 populations and were under the supervision of Kerman, Jiroft, Bam, Rafsanjan and Sirjan universities of medical sciences (Kerman province has five universities of medical sciences). The census method was used in this study considering the limited number of comprehensive health centers and dentists. The questionnaire was sent to 96 dental practitioners and 81 questionnaires were included (response rate: 84.4%). After sending three reminders 15 dental practitioners were reluctant to participate in the study because of different personal excuses.

Data collection

The data collection tool was a researcher-made questionnaire that was designed based on Ajzen Fashion's theory of reasoned action. This model was used because of its high capability in measuring different aspects of tendency to stay in rural area. To ensure content validity, the questionnaire was sent to faculty members, human resource experts and managers of dental units, and was approved by them with CVI = 0.99 and CVR = 0.85. Internal consistency and Cronbach's alpha were used to assess the reliability of the questionnaire. The questionnaire was then sent to 10 dental practitioners and its Cronbach's alpha was calculated to be 0.74, indicating an acceptable reliability. The questionnaire consisted of two parts: the first part was related to the dentists' demographic information with 23 questions, and the second part included questions that measured aspects of the theory of reasoned action by 22 questions in a 5-point Likert scale. Using the model, we measured the factors affecting the tendency to stay in rural area in four dimensions, including dentists' view on living in rural areas (background of living in rural area), dentists' view on working conditions in rural areas, dentists' view on social relations in the workplace (quality of social relations and cooperation in the comprehensive health centers), and the dentists'

family view on living and working in rural areas. The questionnaire was distributed in 20 towns and several reminders were sent to the dentists, because of the geographical distribution of comprehensive health care centers and high workload of the dentists.

Ethics approval

The present study was approved by the Ethics Committee of Kerman University of Medical Sciences (ethical approval code: IR. KMU. REC.1398.093).

Data analysis

After collecting the completed questionnaires, the responses were coded according to the tool's instructions and then entered into the SPSS software v. 16 (SPSS Inc., Chicago, IL, USA). Reverse coding was used for negatively worded items. A new variable was defined for questions related to each aspect of the model from the questions related to each dimension. Data were analyzed using descriptive statistics, Chi-square test, Mann – Whitney test, and univariate and multivariate logistic regression models. In all analyzes, a significance level of < 0.05 was considered.

RESULTS

The mean age of the dental practitioners was 29.2 years (standard deviation = 6.5). More than half of the dental practitioners were male and about 55.6% of them were married. 59.3% were native and 85.2% had been graduated from public universities. Almost half of the dental practitioners (48%) had been graduated between the years 2017 and 2018. The majority them were working according to compulsory human resources services for medicines and paramedics law (31 dental practitioners had human resource plan contract and 9 dental practitioners had health messenger contract). The salary of most dental practitioners was <70 million Rials (Official currency of Iran with 1USD was 150000 Rials at the time of study). The results of the analysis showed that 64.2% of the participants were willing to continue working with the centers where they worked at the time [Table 1].

Chi-square and Mann–Whitney tests showed that about two-thirds of native dentists (with local origin), 73.3% of married dentists, and all dental practitioners who had no children or had a child under the age of six were willing to continue working with their current comprehensive health centers compared to other dentists. There was a significant relationship

Table 1: Summary of demographics variables

Variable	Frequency
Gender	
Female	32 (39.5)
Male	49 (60.5)
Having a child	
Yes	22 (27.2)
No	59 (72.8)
First child's age (years)	
<6	72 (88.9)
≥ 6	9 (11.1)
Type of cooperation	
Permanent	6 (7.4)
Temporary to permanent	22 (27.2)
Under a contract/contractual	13 (16)
Educational	31 (38.3)
Soldier	9 (11.1)
Workplace	
Comprehensive rural health service centers	34 (42)
Comprehensive urban-rural health service centers	46 (56.8)
Work experience	
Yes	6 (7.4)
No	73 (90.1)
Responsible for the comprehensive health service center	
Yes	28 (34.6)
No	53 (65.4)
Number of service centers	
Presence in a facility	11 (13.6)
Presence in more than one facility	70 (86.4)
Number of days presence (days)	
All days of the week	76 (93.8)
Between 3 and 5 days in week	4 (4.9)
<3 days in week	1 (1.2)

between dentists' age and their tendency to stay in rural area ($P = 0.008$). Dental practitioners who had formal, contractual, or family dentist contracts were more willing to stay in disadvantaged areas than the dental practitioners who were serving their compulsory services and health messenger contracts. There was also a significant relationship between dentists' year of graduation from university (P value = 0.036), history of working in comprehensive health centers, facilities provided for them (place of residence, vehicle, etc.), and their tendency to stay in rural areas [Tables 2 and 3].

Univariate and multivariate logistic regression showed that, there was a significant relationship among dentists' age, monthly salary, facilities available in the area (place of residence, availability of vehicles etc.), view of dental practitioners on living in rural area, and view of dentists' families on living and working in the area (two aspects of the theory of reasoned action). Furthermore, dental practitioners under 30 years of age

Table 2: Summary of Chi-square test results

Variable	Tendency to retention		P
	Yes	No	
Marital			
Unmarried	19 (52.8)	17 (47.2)	0.04
Married	33 (73.7)	12 (26.7)	
First child's age (years)			
x<6	43 (59.7)	29 (40.3)	0.02
x≥6	9 (100)	0	
Type of employment			
Permanent	6 (100)	0	0.01
Temporary to permanent	15 (68.2)	7 (31.8)	
Under a contract/contractual	12 (92.3)	1 (7.7)	
Educational	15 (48.4)	16 (51.6)	
Soldier	4 (44.4)	5 (55.6)	
Native			
Native	35 (72.9)	13 ()	0.04
Nonnative	17 (51.5)	16 (27.1)	
Work experience			
Yes	24 (85.7)	4 (48.5)	0.003
No	28 (52.8)	25 (47.2)	
Facilities			
Quite desirable	2 (100)	0	0.01
Desirable	29 (80.6)	7 (19.4)	
Undesirable	12 (50)	12 (50)	
Quite undesirable	7 (43.8)	9 (56.2)	

Table 3: Summary of Man-Whitney test results

Variable	P
Age	0.008
Year of graduation	0.036

had a more tendency to stay in rural areas than those who were over 30 years old and those who thought their monthly salary was not proportionate with their work. Areas that had more facilities had a positive impact on the decision of dental practitioners to stay in those areas. To assess the dentists' view on living in disadvantaged areas, we examined their evaluation of quality and quantity of educational facilities and services available to their children, as well as opportunities, facilities, and amenities available in the rural areas. We also examined the perspective of dentists' families on living in rural areas, availability of job and education opportunities, and staying in rural areas (dental practitioners whose view and their families' view were positive about the rural areas were more likely to stay in the rural areas) [Table 4].

DISCUSSION

Results of this study showed that, the tendency of dental practitioners to stay in rural area depends on

many individual and professional factors, including age, marital status, being native, age of first child, year of graduation, type of contract, history of working in rural centers, minimum salaries, and facilities available in the area. Furthermore, specialized features including dentists' views on the experience of living in rural areas (rural background) and their families' view on living in rural areas were among factors that influenced their tendency to stay in rural areas.

One of the most important problems in the health system of most countries, especially developing countries, is the migration of human resources from rural and rural areas to urban areas.^[11] Retention of staff and health-care professionals in disadvantaged areas, especially dentists, has been a serious problem for many years, and has had major impact on access to oral health care for a significant portion of population.^[26] Although the number of medical university graduates in developing countries has increased and their inclination to stay in disadvantaged areas has increased slightly, different health care needs of disadvantaged populations still are not being met.^[27] This is while the residents of disadvantaged areas have more health problems than other populations.^[27]

Results of this study showed that, there was a statistically significant relationship between dentists' age and their tendency to stay in rural area. Dentists, who were under 30 years old, were more likely to continue working with their current centers than dental practitioners who were over 30 years old. It can be argued that younger dental practitioners are looking to gain experience and find these areas as an opportunity for building up their experience and skills. Likewise, Efendi *et al.* found that younger nurses were more likely to work in remote areas if financially supported.^[28]

The results also showed that, there was no significant relationship between gender and tendency to stay in remote areas, while there was a statistically significant relationship between the dentists' marital status and their tendency to stay in remote areas. Abigail M. Hacher *et al.* found that, women and married health workers were more likely to stay in remote areas than their male and single counterparts.^[29] The reason for this discrepancy between the results of present study and other studies can be analyzed in the sense that, married people feel less alone and therefore tend to stay in remote areas longer.

Table 4: Relationship between tendency to retention in dentist program and demographic variables based analytical model of reasoned action theory

Variable	<i>P</i>	OR (CI 95%)	<i>P</i>	OR (CI 95%)
Age (years)				
<30 (reference)				
≥30	0.06	4.5 (0.939-21.57)	0.04	209.9 (1.267-34790.6)
Facilities				
Desirable (reference)				
Undesirable	0.002	4.895 (1.75-13.69)	0.041	119.7 (1.206-11882.8)
Expected minimum salary	0.169	1.000 (1.000-1.000)	0.039	1.001 (1.0000-1.002)
Dentists' perspective of life experience in rural areas (rural background)	0.196	1.79 (0.740-4.332)	0.043	0.008 (0.000-0.862)
Dentists' family perspective on living in rural areas	0.276	1.42 (0.756-2.670)	0.040	21.435 (1.157-397.05)

OR: Odds ratio; CI: Confidence interval

Native dental practitioners had amore tendency to stay in their area. Similarly, Liu *et al.* showed that rural-born physicians and health workers are more likely to stay in rural areas.^[30] Serneels *et al.* examined the effects of being native on the decision of specialists to work in rural areas and found a positive relationship between being native and deciding to stay in rural area.^[31] The greater tendency of indigenous people to stay in their area can be due to the cultural features, being with family and having motivation to serve their own people.

Our study showed that dental practitioners whose children were at school age were far more likely to leave the rural areas than those whose children were not at school age. The reason for this can be that, rural areas usually lack suitable educational and academic facilities for children. In Iran, Amiresmaili *et al.* found that, physicians with children over 6 years of age had left the family physician program 4.7 times more than those with children under 6 years of age.^[32] In a systematic review, Lehmann *et al.* concluded that lack of high quality schools for children was one of the main reasons for health personnel to leave remote areas.^[23]

The results of El-Jardali's study of nurses in Lebanon showed that nurses with little work experience were less likely to continue working in remote areas.^[33] However, result of present study showed a significant relationship between dental practitioners who had history of working in rural areas and their tendency to stay in these areas, which could be due to the fact that people who had worked in rural areas were familiar with the region, its people and beliefs, and cultural values of the region.

The type of work contract also had a significant relationship with the tendency of dental practitioners

to stay in rural areas. This relationship indicated that among health care workers, those with formal or contractual contract had a more tendency to stay in rural areas than others, which may be due to the long-term contract that causes a commitment in person to continue collaborating with the current centers. Other reasons could be the job security that results from long-term contract compared to the 2-year contracts of mandatory human resource plan. According to the study of Amiresmaili *et al.*, job security was one of the main five factors that influenced family physicians to leave rural areas.^[32]

This study also revealed the effect of dentists' salaries on their tendency to stay in rural areas. Participants announced that they were willing to serve in the rural areas for higher salaries. Appropriate financial plans should be considered to increase the motivation of dental practitioners to stay in rural areas. This result is also consistent with other studies conducted in Iran.^[34,35] In one study, providing financial incentives was one of the factors that affected the neurosurgeons' tendency to stay in their workplace. Another study revealed that one of the reasons for the low tendency of family physicians to stay in Iran was their low salary.

Results of present study also showed a significant relationship between dentists' view on living in rural areas (having a rural background), their families' view on living and working in rural areas and their tendency to stay in the rural areas.

Rural dental practitioners had a more positive view on living in rural areas. One of the reasons for this result was the rural background of dental practitioners and their sense of belonging to their hometown, as they had a desire to return to their roots and be effective in serving their people. The study of Sultana *et al.*

highlighted the positive impact of rural background on physicians' tendency to remain in Pakistan.^[36] The study of Mbemba *et al.* also produced the similar result.^[37]

Another factor that contributed to the positive view of dental practitioners on living in rural areas was the quantity and quality of living and educational facilities available in those areas, which was directly related to their tendency to stay in the area. Lobena Blaynd *et al.* in Nigeria found that living conditions in areas rural of drinking water, electricity, roads and access to educational facilities were effective in the tendency of healthcare professionals to stay in the area.^[16] In another study in Bangladesh, Darkwa *et al.* found that inadequate infrastructure and lack of opportunities for educational and career advancement were effective in the tendency of rural doctors and nurses to stay in the area.^[15] Dental practitioners who had tendency to stay and work in the rural areas had a favorable assessment of the educational and living facilities available in the areas. This is while; other participants had a negative view on those variables, reflecting differences in participants' attitudes and level of deprivation in the areas. In fact, deprivation of the area was an important factor in dentists' decision to stay in the areas. Considering that, one of the important factors in the health system is the satisfaction of service providers, which if ignored will reduce the quantity and more importantly the quality of services they provide, assessing the extent of deprivation in the area and making efforts to reduce deprivation by improving living and educational conditions at the dentist's place of residence will significantly increase their tendency to stay in the area.

The last finding of this study was related to the perspective of dentists' families on living in the rural areas. As it is clear, family has a great impact on every person's attitude, and when the family's view on living and working in rural areas is unfavorable, dental practitioners will doubt their decision to continue working in that area. In this study, there was a significant relationship between dentists' view on living in rural areas and their tendency to stay there. Sultana *et al.* in their study revealed that health-care professionals, whose spouses had a more positive view on staying in rural areas, had a more tendency to stay and work in that area in comparison to others.^[36] Dentists, whose families did not consider living in disadvantaged and rural areas as a barrier to career development, were more likely to continue working

at their current health center. This finding is in line with the results obtained by Gamm *et al.*^[38] The present study, like other studies, had some limitations. None completion of the questionnaire by some dental practitioners and the small study population could be mentioned as some limitations of this study. Another limitation of this study was that, it was carried out only in Kerman province of Iran, which has different areas in terms of development levels and its southern areas are very poor. Therefore, care should be taken when generalizing the results of this study to other areas of the country.

CONCLUSION

Since one of the goals of health system is to provide health services and improve the oral health of people, and in rural areas, these issues are addressed by dental practitioners and healthcare teams, health-care managers and policy-makers are suggested to consider the factors that make dental practitioners more likely to stay in the rural and rural areas. Paying attention to financial incentives and providing living and educational facilities for dentists' families is one of the most important factors that will increase the tendency of dental staff to stay in rural areas and provide quality services. Special attention should also be paid to the living background of dental practitioners and their type of contract when planning dental human resources, as this will increase the tendency of healthcare professionals to stay and work in rural areas.

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Ethics statement

The present study was approved by the Ethics Committee of Kerman University of Medical Sciences (IR. KMU. REC.1398.093). The study was also registered in Pajoohan (code: 97000938). The participants also entered with informed consent in the study and were assured about the confidentiality of their information.

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Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or nonfinancial in this article.

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