Original Article

Patients' Satisfaction with the Diabetes Control and Prevention Program in Tehran, Iran, 2013: A Cross Sectional Study

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ABSTRACT

Background: Although diabetes control and prevention program has been initiated in Tehran, Iran and five other large cities in the country since 2010, patients' satisfaction with the services provided by this program has not been evaluated yet. The aim of this study was to determine the patient satisfaction with this program in Tehran.

Methods: This cross-sectional study, were conducted in 15 primary health care centers in Tehran, Iran in 2013. We enrolled 386 people aged older than 30 yr referred to primary health care centers. A questionnaire was used to evaluate the degree of patients' satisfaction with the services (the questionnaire included six domains: access to services, continuity of care, the humanness of staff, provision of health education materials, effectiveness of services, comprehensiveness of care). The chi-square test, independent t test and one-way ANOVA were used for data analysis.

Results: Overall, 239 patients (62%) were female. The mean age (SD) of the patients was 51±11 yr. Overall, 263 patients (68%) were highly satisfied with providing services. The highest levels of patients' satisfaction were in the domains of continuity of care, the humanness of staff, and effectiveness of services. The lowest level of satisfaction was in the domain of provision of health education materials.

Conclusions: Diabetes control and prevention program seems to be a suitable program in health care centers in Tehran, however, it is necessary to make further plans to improve the level of training materials provided to patients and comprehensiveness of care.

Introduction

The main objectives of the health system are health status, fairness in financial contribution, and responsiveness. Responsiveness typically has two major components; the first is to respect to the dignity, position, personal autonomy, and individual privacy. The second is customer centeredness, which covers many aspects of health clients' satisfaction[1]. Health system researches have increasingly focused on patients' satisfaction as an important factor in understanding the reactions and experiences of patients and users of health services, to measure and improve the quality of service delivery[2,3]. Clients' satisfaction is associated with the way that health care centers meet the general and specific needs of patients and their satisfaction with service providers' participation in fulfilling the needs and providing proper medical interventions[4]. On the other hand, health service authorities are always trying to ensure the effectiveness of services and precision of programs administration as well as to modify them as necessary[5]. Non-communicable diseases and their related risk factors are among the major causes of disease burden in Iran and other Middle Eastern countries[6]. Diabetes is one of the most common and important non-communicable disease that is currently affecting approximately 246 million people in the world, and with a growth rate of 5.4%, it will have amounted to 330 million or more by 2025 [7-9].

Considering the importance of diabetes and its complications, diabetes control and prevention program in Iran, has been actively started in rural areas since 2005. It has been non-actively integrated into the health system in Tehran and five other major cities in Iran[10]. Despite the implementation of urban phase of diabetes prevention and control program for more than two years, the clients' satisfaction with service delivery in this program have not been measured yet. As we know, increasing the satisfaction of clients can improve the quality of services and outcomes and reduce the costs[11].

The purpose of this study was to evaluate the client's satisfaction referred to the diabetes prevention and control program in selected primary health care centers in Tehran and the subjects affecting their satisfaction.

Methods

This cross-sectional study was conducted in 15 primary health care centers in Tehran, Iran (Supervised by Shahid Beheshti and Tehran Universities of Medical Sciences) from February 2013 until May 2013. The health centers were selected via two stage sampling method. At first using stratified method, Tehran was divided into five geographic regions of North, South, East, West, and center to cover clients with different levels of socioeconomic status. Then, in each region, using clustering method, three urban health centers were selected and people over 30 yr old referred for diabetes control and prevention program were enrolled in the study. Overall, 386 clients from public urban health centers of Tehran were selected. The sample size was calculated considering type 1 error of 5% and degree of satisfaction of 50%. Approximately 25 to 26 patients from each center were enrolled.

After obtaining informed consent from patients participated in the study, their demographics (age, sex, occupation, education level) and their insurance data were collected. The Ethical Committee of Shahid Beheshti University of Medical Sciences approved the study.

A questionnaire was used to evaluate patients' satisfaction with the services provided. Patients were asked about the number of visits to the center and the overall satisfaction with the diabetes prevention and control program. The questionnaire was designed based on the standard satisfaction questionnaire previously used by other researchers, [2,10,12,13]. The questionnaire consisted of 38 items; each of them was scored based on Likert five-point scale (zero to four). The questionnaire included six domains of access to services (6 items), continuity of care (5 items), the humanness of staff (4 items), provision of health education (4 items), effectiveness of services (9 items) and comprehensiveness of care (10 items). To calculate the score for each domain, we used the sum of scores for all items in each domain divided by the maximum attainable score on that domain. Accordingly, the score for each domain was calculated from zero to 100, where the higher score indicated better condition.

In addition, an extra question was used to ask patients about their overall satisfaction with services provided in diabetes control and prevention program. In this item, general satisfaction was categorized into three states, including low (score <25), moderate (25≤ score <50), and high (score ≥50). In order to examine Content Validity Index (CVI), the questionnaire was given to five experts and they were asked to review every item in the questionnaire carefully and determine how much an item meets study objectives, choosing one of the four following options: (a) irrelevant to the study objectives, (b) need some modification, (c) requires a slight modification, (d) fits the study objectives[14-17].

To calculate the CVI in each list, the number of experts who had chosen option 3 or 4 was divided by the total number of experts. A CVI larger than 75% or 80% was regarded as acceptable. To assess reliability, Cronbach's alpha was calculated for the six domains separately: access to services (78%), continuity of care (75%), the humanness of staff (80%), provision of health education materials (85%), effectiveness of services (88%), and comprehensiveness of care (82%).

SPSS 16 software (Chicago, IL, USA) was used for data analysis. Qualitative variables were described using frequencies and percentages and quantitative variables were described using mean and standard deviation. The chi-square test, independent t test and one-way ANOVA were used for statistical analysis and $P<0.05$ was considered as significance level.

Results

Demographic Characteristics

Overall, 239 patients (62%) were female. The mean age (SD) of the patients was 51±11 yr and 249 patients (65%) had an educational degree of lower than a high school diploma. Considering the occupational status, 175 patients (45%) were homemakers, 80 (21%) employees, 71 (18%) retired and 60 patients (16%) were working on their own business. A total of 345 patients (89%) had insurance. Considering the number of visits to the center, only 22 patients (6%) had not a history of previous visit. Totally, 169 patients (44%) had previously visited health centers one to four times and 195 patients (51%) more than four times.

The domains of satisfaction with the services

A total of 123 patients (32%) had low to moderate satisfaction with services provided, while 263 (68%) were very satisfied. Table 1 shows mean (SD) scales of patients' satisfaction with Diabetes Prevention and Control Program. As it is observed, the highest level of patients' satisfaction was associated with continuity of care, and then humanness of staff and effectiveness of services. Provision of health education was associated with the lowest level of satisfaction. Table 2 compares the mean (SD) scores of different domains of patients' satisfaction with programs based on patients' demographic data. As shown, considering gender, education, occupation, having insurance, and the way of referring to the centers, there was no significant difference in satisfaction scale scores ($P>0.05$). Nevertheless, the score of provision of health education among those who did not previously referred to health center was higher than those who had referred more ($P=0.003$). Additionally, the scores of all domains except the domain of access to services among patients who had greater overall satisfaction scores were significantly higher than those who had low or moderate satisfaction scores ($P<0.001$).

Table 1: Mean (SD) scores for different scales of patients' satisfaction with Diabetes Prevention and Control Program

Area	Range	Mean (SD)
Access to services	17- 83	53 (9)
Continuity of Care	100-25	76 (13)
Humanness of staff	100-13	74 (15)
Provision of health education	0-100	43 (19)
Effectiveness of services	19-100	71 (13)
Comprehensiveness of services	13-100	57 (16)

Table 2: Comparison of the mean (SD) scores of different areas of patients' satisfaction in terms of patients' demographics

Variables	Access to services	Continuity of Care	Humanness of staff	Provision of health education	Effectiveness of services	Comprehensiveness of services
Gender						
Female	9 ±53	13 ±75	15 ±74	20 ±43	14 ±72	16 ±57
Male	10 ±53	14 ±76	14 ±74	19 ±45	13 ±71	16 ±58
P value	0.929	0.390	0.752	0.373	0.798	0.343
Education						
Lower than high school	10 ±53	13 ±76	15 ±74	19 ±42	13 ±72	16 ±57
High school or higher	8 ±52	14 ±76	14 ±75	21 ±45	14 ±71	16 ±58
P value	0.491	0.960	0.658	0.172	0.652	0.910
Occupation						
Housewife	8 ±53	12 ±75	15 ± 74	19 ±42	13 ±72	57 ±16
Employee	11 ±51	16 ±76	13 ±74	20 ±49	12 ±70	15 ±57
Retired	9 ±53	12 ± 77	15 ±74	18 ±42	14 ±71	17 ±57
Personal business	10 ±53	14 ±76	16 ±74	21 ±43	15 ±72	16 ±60
P value	0.394	0.793	0.998	0.059	0.607	0.589
Having insurance						
No	10 ±53	13 ±74	13 ±74	18 ±41	11 ±73	14 ±56
Yes	9 ±53	13 ±76	15 ±74	20 ±44	71 ±14	58 ±16
P value	0.979	0.345	0.877	0.348	0.437	0.423
The way of referring to the center						
Walk	9 ±53	13 ±75	15 ±73	19 ±42	13 ±71	16 ±56
Transportation	9 ±52	14 ±76	15 ±75	20 ±46	14 ±72	59 ±16
P value	0.501	0.314	0.211	0.056	0.402	0.540
Number of visits to the center						
Zero	12 ±50	21 ±76	14 ±71	25 ±57	20 ±72	18 ±62
1-4 times	10 ±53	76 ±13	14 ±73	19 ±43	14 ±71	17 ±56
More than 4 times	8 ±52	13 ±76	13 ±75	19 ±42	13 ±72	15 ±58
P value	0.336	0.977	0.264	0.003	0.970	0.282
Overall satisfaction						
Low to moderate satisfaction	9 ±52	68 ±13	14 ±66	16 ±35	13 ±63	13 ±47
High satisfaction	9 ±53	12 ±79	14 ±78	20 ±48	12 ±75	15 ±62
P value	0.196	0.001	0.001	0.001	0.001	0.001

Overall satisfaction with services provided

Table 3 compares the overall satisfaction with the service provided to patients in terms of demographic characteristics. Accordingly, there was no significant difference in the overall satisfaction of patients in terms of sex, education, occupation, having insurance, the way of attending the center, and the number of visits to the center (*P*>0.05).

Discussion

In a customer-centered view, clients' satisfaction is one of the most important factors for the promotion of health services and as an index of health program quality. This study assessed the level of client satisfaction from diabetes control and prevention program. The result showed that higher levels of patients' satisfaction were in domain of continuity of care, the humanness of staff and effectiveness of services. The lowest level of satisfaction was in domain of provision of health education materials and this area should be considered as a component needs to be paid more attention. Other studies concentrated on satisfaction with health care services in general. Though the coverage of basic health services in rural areas is more than 95%, improving service quality, especially in urban areas, is a major issue[13,18]. The level of satisfaction with the basic health services was 70% to 80% in the region [19]. The overall satisfaction with primary health care services in Qatar was 75%, in the United Arab Emirates was less than 80%, in Muscat (capital of Oman) was 80% and in Riyadh, Saudi Arabia was 70% [12,19-21]. In our study, the overall satisfaction with services provided in diabetes control and prevention program was 68%, which is slightly lower than other studies.

Table 3: Comparison of overall satisfaction with the services provided in terms of different characteristics of patients

Variables	Low to moderate satisfaction n (%)	High satisfaction n (%)	*P* value
Gender			0.850
Female	77 (62)	162 (62)	
Male	46 (37)	101 (38)	
Education			0.705
Lower than high school	81 (66)	168 (64)	
High school or higher	42 (34)	95 (36)	
Occupation			0.778
Housewife	56 (46)	119 (45)	
Employee	22 (17)	58 (22)	
Retired	24 (20)	47 (18)	
Personal business	21 (17)	39 (15)	
Having insurance			0.163
No	17 (14)	24 (9)	
Yes	106 (86)	239 (91)	
The way of attending to the center			0.097
Walk	77 (62)	141 (54)	
Transportation	46 (37)	122 (46)	
Number of visits to the center			0.131
Zero	6 (5)	16 (6)	
1-4 times	63 (51)	106 (40)	
More than 4 times	54 (44)	141 (54)	

As it was mentioned, despite the passage of more than two years of implementation of diabetes prevention and control program, no study has been conducted yet to evaluate patients' satisfaction with the program in urban

primary health care centers. However, studies conducted in different cities of Iran show that there are different levels of patient satisfaction with services provided in primary health care centers. For example, in Arak University of Medical Sciences in 2009, the overall satisfaction of two-thirds of clients were moderate to high[22]. The clients'' satisfaction with the services in four urban health centers in Tehran in 2009 was 80% [13]. In Hamadan it was 83%[23].

In urban health centers affiliated to Shahid Beheshti University of Medical Sciences, Tehran the level of satisfaction with clinical care services and health care services was 60.5% and 64.5%, respectively[24]. Since this study only considered satisfied with diabetes prevention and control program recently settled in urban health centers, the lower levels of satisfaction compared with other centers is justifiable. However, the overall satisfaction level with services is used as a measure to assess the quality of services, to predict the acceptance and application of treatments by patients; it is necessary to examine and improve the satisfaction level constantly[25,26]. In Sohrabi et al study[13], the lowest satisfaction level was attributed to the provision of health education. Continuity and comprehensiveness of care were reported as the other problems as well. However, access to services and its effectiveness was suitable[13]. Access to services provided is one of the most important factors for the satisfaction of patients and health and clinical care administrators.

In Iran, primary health care services have been developed more in rural areas; from the early days of 1987 until now, over 95% of the rural population have benefited from these services via health houses and health care networks[27]. However, in urban areas, health care services have been accessed through referring to specialists and urban health centers have recently been considered. This policy may lead to a better health situation and may balance the condition in rural and urban areas[28]. Our study showed that there was a moderate level of satisfaction with access to services. It indicates that in Tehran, the capital of the country, access to services is not so good and further revisions and actions are needed to expand the program. In our study, like Sohrabi et al study, the lowest level of satisfaction with studied domains was associated with Provision of Health Education[13]. Therefore, it seems that although prevention programs have been appropriately initiated and implemented in health centers, the training programs is not so satisfactory for the clients; consequently, it is essential to make serious revisions in patient education programs. On the other hand, in our study, patients who were referred for the first time had higher satisfaction with the provision of health education than those patients who had previous referrals. This suggests that although the trainings had been suitable for first-time users, patients would not face new trainings in their later visits. Several factors are known to influence satisfaction with the services provided. For example, demographic factors such as age, sex, education, occupation, type of insurance and how to refer and number of visits to the center are the factors that have an impact on satisfaction[13,29].

In some studies, older patients were less satisfied[29], while in others, patients with higher levels of education were less satisfied[29]. Since the demographics of patients referring to the health center and assessment programs are different in each study, the differences in level of patients' satisfaction in different studies cannot be generalized to other studies. In our study, no significant differences were observed in terms of mentioned factors.

The strength of our study is that the participants were selected through a population-based sampling method. However, the causal direction of the association between the quality of diabetes care and patient satisfaction cannot be approved because our study was cross sectional rather than prospective. Using the results of satisfaction surveys, health administrators can identify satisfaction and dissatisfaction factors, and then design, implement and correct their health programs. In order to enhance patients' satisfaction, it is suggested to consider the following items in the short run: timely notifications about providing services; employing experienced and skilled doctors and personnel; direct monitor of personnel activities; utilizing modern equipment and facilities; establishing various training classes for clients in various areas. Additionally, the following items must be considered in the end: higher authorities' attempts to satisfy doctors and health center staff; establishing suitable referral systems; facilitating referral of the patients to health centers; planning for service quality assessment in terms of clients' views; training programs for staff working in the centers.

Conclusions

Patient satisfaction is a considerable factor to influence the effectiveness of any health program. According to the overall satisfaction of clients with services provided, it seems that diabetes control and prevention program is properly set in urban health centers, however, it is necessary to make further plans to evaluate these programs regularly to improve the health service provision.

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Conflict of interest statement

Authors have no conflict of interests.

References

1. Murray C, Frenk J. A framework for assessing the performance of health systems. *Bull World Health Organ.* 2000;78(6):717-731.

2. Ware *JE* Jr, *Davies-Avery* A, *Stewart* AL. The measurement and meaning of patient satisfaction. *Health Med Care Serv Rev.* 1978;1(1):3-15.

3. Aharony L, Strasser S. Patient satisfaction: what we know about and what we still need to explore. *Med Care Rev.* 1993;50(1):49-59.

4. World Health Organization. Obesity: preventing and managing the global epidemic: WHO website; 2000 [updated April, 2004; cited June, 2015]; Available from: http://www.who.int/nutrition/publications/obesity/WHO_TRS_894/en/.

5. Sheikhi M, Javadi A. Patients' satisfaction of medical services in Qazvin education hospitals. *JQUMS.* 2004;7(5):62-66.

6. Farzadfar F, Murray CL, Gakidou E, Bossert T, Namdaritabar H, Alikhani S, et al. Effectiveness of diabetes and hypertension management by rural primary health-care workers (Behvarz workers) in Iran: a nationally representative observational study. *Lancet*. 2012;379(9810):47-54.

7. Thomson G, Medagama A, Dissanayake A, Lenora D, Kumarihamy W, Bushby P, et al. Pandemicdiabetes: Can developed world health professionals do more to support care in developing countries? *European Diabetes Nursing*. 2008;5(1):23-27.

8. George JT, Warriner DA, Anthony J, Rozario KS, Xavier S, Jude E, et al. Training tomorrow's doctors in diabetes: self-reported confidence levels, practice and perceived training needs of post-graduate trainee doctors in the UK: a multi- centre survey. *BMC Med Educ*. 2008;8(22).

9. Danaei G, Finucane M, Lu Y, Singh GM, Cowan MJ, Paciorek C, et al. National, regional, and global trends in fasting plasma glucose and diabetes prevalence since 1980: systematic analysis of health examination surveys and epidemiological studies with 370 country-years and 2.7 million participants. *Lancet*. 2011;378(9785):31-40.

10. Delavari A, Nejad AN, Ahmadi SY. National Program of Prevention and Control of Diabetes in Iran. Iran Ministry of Health and Medical Education site; 2004 [updated 2009; cited January, 2015]; Available from: http://behdasht.gov.ir/index.aspx?siteid=1&pageid=156&catid=64&dview=40.

11. Paddok L, Veloski J, Chatterton M, Felicia OG, Nash DB. Development and validation of a questionnaire to evaluate patient satisfaction with diabetes disease management. *Diabetes Care*. 2000;23(7):951-956.

12. Margolis S, Al-Marzouq S, Revel T, Reed RL. Patient satisfaction with primary health care services in the United Arab Emirates. *Int J Qual Health Care*. 2003;15(3):241-249.

13. Sohrabi M, Albalushi RM. Clients' satisfaction with primary health care in Tehran: A cross-sectional study on Iranian Health Centers. *J Res Med Sci*. 2011;16(6):756-762.

14. Yaghmaie F. Content validity and estimation. *Journal of Medical Education*. 2003;3(1):25-27. [Persian]

15. Rubio DM, Berg-Weger M, Tebb SS, Lee ES, Rauch S. Objectifying content validity: conducting a content validity study in social work research. *Social Work Research*. 2003;27(2):94-104.

16. Yunju K, PJongbae, Hyejung L, Heejung B, Hi-Joon P. Content Validity of an Acupuncture Sensation Questionnaire. THE Journal of Alternative and Contemporary Medicine. *J Altern Complement Med*. 2008;14(8):957-963.

17. Polit D, Beck C, Owen S. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health*. 2007;30(4):459-467.

18. Sadrizadeh B. Primary health care experience in Iran. *MJIRC*. 2004;7(1):79-90.

19. Zahiri R, Taheri M. Client satisfaction with health services delivery in urban and rural health centers in Markazi Province. *Journal of School of Public Health and Institute of Public Health Research*. 2010;8(3):61-72. [Persian]

20. Albalushi R, Sohrabi M, Kolahi A. Clients' satisfaction with primary health care in muscat. *Int J Prev Med*. 2012;3(10):713-717.

21. Shabrawyam E. A study of patients' satisfaction as an evaluation parameter for utilization of primary health services. *J R Soc Health*. 1992;112(2):64-67.

22. Emadi N, Falamarzi S, Al-Kuwari M, Al-Ansari A. Patients' satisfaction with primary health care services in Qatar. *MEJFM*. 2009;7(9):4-9.

23. Khodaveisi M, Alahverdipour H. The study of knowledge and satisfaction of Hamedan residents about the city health care centers in 1998. *Teb Va Tazkieh*. 2002;3(44):64-71. [Persian]

24. SeyediAndi S, Batebi AS, Hosseini S, Rezaei R. Client satisfaction with health system services offered by urban health care centers of Shahid Beheshti University of Medical Sciences. *Journal of Babol University of Medical Sciences*. 2009;10(6):80-87. [Persian]

25. Kincey J, Bradshaw P, Ley P. Patients' satisfaction and reported acceptance of advice in general practice. *J R Coll Gen Pract*. 1975;25(157):558-566.

26. Roghmann K, Hengst A, Zastowny T. Satisfaction with medical care: its measurement and relation to utilization. *Med Care*.1979;17(5):461-479.

27. Barzegar M, Djazayery A. Evaluation of rural primary health care services in Iran: report on vital statistics in West Azarbaijan. *Am J Public Health*. 1981;71(7):739-742.

28. VanLerberghe W. *Primary Health Care: No More Than Ever*: WHO; 2008 [updated 18 January, 2008; cited 10 June, 2015]; Available from: http://www.who.int/whr/2008/whr08_en.pdf.

29. Jaafari F, Johari Z, Zaieri F, Ramezankhani, Sayah Z. Evaluation of satisfaction and effective factors on inpatient in health center. *Daneshvar Med*. 2006;4(66):15-22.