# Self-care Assessment in Patients with Diabetes in Qom city in 2013

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### A-R-T-I-C-L-E I-N-F-O

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#### A-B-S-T-R-A-C-T

**Background & Aims of the Study:** Diabetes is considered a major concern in the third millennia A.D. and is increasing day by day. This disease shows a high prevalence in Iran as well. Meanwhile, self-care is the best solution for controlling and preventing diabetes. This study aimed at self-care assessment in patients with diabetes in Qom city in 2013.

**Materials & Methods:** A total of 251 diabetes patients referring to Qom city Diabetes Association were chosen through simple accidental method. Two questionnaires including demographic and SDSCA standard questionnaires and also an information paper were used in this study. The questionnaires were completed through an organized interview in order to achieve the best accuracy. The data was analyzed by SPSS18 software by less than 0.05 significance.

**Results:** The results showed that 32.99% of the subjects had no self-care activity against diabetes and only 7.97% of the subjects followed self-care activities during the week. FBS rate among the patients was 157.74 mg/dl and HbA1c rate was 7.74 mg/dl, and self-care score was also 46.53. The results showed an adverse significant relation between self-care and FBS plus HbA1c rates.

**Conclusions:** Diabetic Patients lacked a desirable self-care condition in such a manner that patients didn't take care of self-care activities including: having a diet, doing enough physical activity, controlling blood sugar, taking care of their feet, and also consuming drugs or injecting insulin, completely and regularly. Consequently, FBS and HbA1c rates were undesirable in the subjects.

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## Background

Today morbidity and mortality have taken a different approach in most of the countries, and

infectious and communicable diseases are replaced by chronic and uncommunicable diseases to the extent that these diseases' mortality is 2-5 times more than infectious diseases in Asian countries (1). Iran has also

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been recently in this epidemiologic pass. Diabetes is a serious global problem in such a manner that 2004 reports stated that there is at least 194 million diabetic patients all over the world and according to WHO prediction it will reach about 333 million patients by 2025 (2).

Diabetes is currently known as a major public health concern in the third millennia and is considered the fifth main reason of morbidity in the world (3). This disease results in 4 million deaths annually which is 9% of all the deaths in the world (2). National Study of Investigating the Risk-factors of Communicable Diseases has estimated diabetes rate by 7.7% in 2008, in Iran (4).

Today diabetes is highly remarked due to its high prevalence, the costs imposes to health system, and also its various negative effects on the patients (5), since, affecting diabetes chronic troubles decreases life expectancy and increases mortality rates and imposes a great financial burden to individuals, families, and society and affects individuals and families' life quality (6).

Diabetes has no definite remedy currently but can be controlled. Meanwhile, health-care providers should remember that non-drug treatment strategies work as effective as drug treatments at preventing and treating diabetes troubles (7). Therefore, emphasizing on selfcontrol in chronic diseases forms the basis of patients' care model and directing them towards egotism through education can improve the disease control and leads to care costs reduce (8). Diabetes is a chronic disease that needs self-care behaviors to be most effectively controlled (9, 10).

Meanwhile, self-care is considered one of the most essential ways to control the disease (11) and strongly depends on one's tendency and intention in self-management and taking self-

## • Self-care Assessment in Patients ...

care actions (12). Self-care activities among diabetic patients include: having an adequate diet to control the blood sugar, doing enough physical activity, having a drug diet, selfcontrolling the blood sugar to adjust their diet, exercising, and consuming drug (13, 14).

Neglecting each self-care activity results in an increase in the disease troubles and sticking to those activities reduces cardiovascular troubles responsible for 70-80% of the deaths in diabetic patients (15). Thus, self-care activities are considered the most important factors in controlling chronic diseases like diabetes (16).

Nevertheless, studies indicate that self-care condition isn't perfect in diabetic patients and they lack enough self-care potentials (17, 18). Dailey study results showed an undesirable self-care condition in diabetic patients (19, 20). Studies by Jafarian (21), Shakiba Zadeh (22), Morovati (23), and Baghaie (24) showed similar results in such a manner that in a study by Shahab Jahanloo only 27% of diabetic patients followed the advised nutritional directions (25).

Self-care activities may be so difficult and often require making essential changes in life style that most of the patients would neglect the physicians' advice despite being aware of the troubles, and as a result the disease troubles would probably increase.

However, studies by Heisler (26), Rubbin (27), and Mahmoodi (28) showed a positive self-care effect on blood sugar and HbA1c control. A study by Parchman also showed that diabetic patients who were self-caring continuously had lower HbA1c rates (29). Studies by Waltson (30), Kitis (31), and Schilling (32) also stated that patients with better self-care had lower blood sugar rates.

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#### • Self-care Assessment in Patients ...

Aims of the study: This study aims at selfcare assessment in patients with diabetes in Qom city in 2013.

## **Materials & Methods**

This study is a descriptive-analytic and crosssectional one and the study population included all Qom city Diabetes Association diabetic members in 2013. Hence, 251 diabetic patients referring to the mentioned association were chosen from 4153 members through simple sampling method. Patients with at least one year of diabetes diagnosis record and a private file in the association entered the study voluntarily.

Exclusion criteria included unwillingness to cooperate, and also having more than 75 or less than 15 years old. The data was collected two SDSCA and demographic through questionnaires and also an information paper. SDSCA questionnaire is a scale invented by Toobert and Glasgow.

This is a self-report questionnaire consisting of 12 questions designed to evaluate self-care behavior indicators which examines 4 aspects of personal management in the original version (diet, exercise, blood sugar revision, and injection), and in the last version examines 5 aspects (diet, exercise, blood sugar test, feetcare, and smoking) during the last seven days. This instrument has been scored by sevenpoint-Licert-scale.

Toobert showed a reasonable internal constancy for diet (0.64), exercise (0.83), and blood sugar test (0.80), and it was considered a reliable indicator for diabetes self-management (33). Furthermore, the questionnaire's reliability and validity were confirmed by Pour Sharifi in Iran (34).

Mohebi S, et al./ Arch Hyg Sci 2014;3(4):167-176.

The internal constancy in the current research equaled 0.86 by means of Cronbakh Alpha scale. In this scale each action receives a score from 0 to 7 and a total following score is achieved through adding each question's scores. Besides this questionnaire, the subjects' last FBS and HbA1c tests information (during the last 3 months) were gathered by virtue of an information record paper.

The patients received enough information about the study goals before filling the questionnaires out, in order to consider ethics and the subjects participated in the study willingly.

Data analysis: Eventually, the data was analyzed by SPSS18 software by using central statistics indicators, and Pearson correlevance coefficients, independent-T and ANOVA tests with less than 5% significance.

**Results** 

Findings showed that the subjects included 48.2% (121) males and 51.8% (130) females. 59.4% (149) of them had junior degrees, 24.3% (61) had senior degrees, 8.8% (22) had academic degrees, and 7.6% (19) had religious degrees. Furthermore, 13.6% (9) affected diabetes type 1, and 96.4% (242) affected diabetes type 2 Patients' age and disease interval mean were 45.71±11.33, and 7.57±9.81 years, respectively.

The results demonstrated that 22.99% of the subjects had no self-care activities against diabetes and only 7.97% of them followed their daily self-care activities during the week. The activities' details are presented individually in table 1.

Archives of Hygiene Sciences	Volume 3, Number 4, Summer 20	014
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Days of the	D	iet	Phys Acti	sical vity	Glyc con	emic trol	Foot	Care	Tak medicat insu	ing ions or llin	То	tal
WEEK	Ν	%	Ν	%	Ν	%	Ν	%	Ν	%	Ν	%
0	92	36.7	97	38.6	88	35.1	126	50.2	11	4.4	414	32.99
1	40	15.9	66	26.3	65	25.9	45	17.9	15	6	231	18.41
2	31	12.4	22	8.8	43	17.1	31	12.4	20	8	147	11.71
3	2	11.2	20	8	34	13.5	14	5.6	22	8.8	118	9.40
4	24	9.6	15	6	12	4.8	14	5.6	26	10.3	91	7.25
5	22	8.8	14	5.6	5	2	8	3.2	32	12.7	81	6.45
6	10	4	13	5.2	2	0.8	8	3.2	40	15.9	73	5.82
7	4	1.6	4	1.6	2	0.8	5	2	85	33.9	100	7.97
Total	251	100	251	100	251	100	251	100	251	100	251	100

Table 1: Distribution of self-care behaviors on weekdays

The results showed that FBS and HbA1c rates, and self-care score in the patients were  $157.74\pm43.63$  mg/dl,  $7.74\pm2.83$  mg/dl, and  $46.53\pm10.61$ , respectively. The results showed an adverse significance between self-care and FBS plus HbA1c rates (Table 2).

Table 2: Correlation between age, duration o	f
disease, FBS, HbA1c and self-care in patients	5

			Durati		TTL A	Self
		Age	on of	FBS	пра 1с	-
			illness		К	care
•	r	1				
Age	Р	-				
Duratio	r	0.41	1			
illness	Р	0.007	-			
FDC	r	0.11	0.134	1		
гдэ	Р	0.147	0.223	-		
	r	0.27	0.205	0.31	1	
IIDAIC	Р	0.230	0.198	0.018	-	
Self-	r	0.53	0.612	-0.50	- 0.453	1
care	Р	0.066	0.211	0.006	0.024	-

Independent-T test showed a significant difference between to genders in self-care rates. ANOVA results also showed the mean of self-care scores differs according to educational status and is significantly more among subjects with academic and religious education. The details are presented in table 3.

Table 3: Mean scores of patient care in terms of
sex, education, type of diabetes

Varia	ables	Mean	Standard deviation	Р
Sov	Female	53.12	8.18	D <0.001
Sex	Male	39.94	12.54	r<0.001
Education	Secondary	41.72	12.33	
	High	41.85	14.41	D 0 021
	Collegiate	51.93	10.54	P=0.021
	Regional	49.97	8.80	
Diabetes I		48.25	6.68	D_0.092
<b>Type</b> II 44.81		44.81	11.23	P=0.085

Furthermore, there is a significant difference in FBS and HbA1c rates between male and female subjects. FBS and HbA1c means and standard deviations are also presented according to

Archives of Hygiene Sciences	Volume 3, Number 4, Summer 2014
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gender, educational status, and diabetes types in table 4.

		I	FBS		Н	bA1c	
Varia	ables	Mean	Standard deviation	Р	Mean	Standard deviation	Р
Corr	Female	138.27	21.18	D = 0.021	6.51	1.56	<b>P_0</b> 011
Sex	Male	177.22	32.43	P=0.021	8.97	2.31	P=0.011
	Secondary	178.07	27.23		8.76	2.03	<b>D</b> 0.044
Education	High	168.21	21.19	$D_{-0.020}$	8.27	1.29	
Education	Collegiate	140.67	11.87	P=0.039	6.81	1.21	P=0.044
	Regional	144.01	19.54		7.12	1.64	
Diabetes	Ι	140.25	14.54	D 0.042	7.44	0.91	D 0 59
Туре	II	175.23	27.64	P=0.045	8.04	2.73	P=0.58

# Table 4: Mean FBS and HbA1c in patients by sex, education, type of diabetes

# Discussion

Diabetes and such disorders are treated and managed mainly by the patients through selfcare activities. Self-care is a central concept in health promotion and refers to the choices patients make and activities they do to get along with the problem or to recover or regain their health (35). Any negligence in self-care activities by diabetic patients leads to an increase in diabetes troubles and doing appropriate self-care activities reduces cardiovascular troubles responsible for 70-80% of deaths among diabetic patients (36).

The results showed that self-care in the subjects was not in a suitable condition in such a manner that at least 50% of the scores couldn't be obtained. Previous studies on diabetic patients' self-care activities in Qom city also declared it as in a study by Abedini the majority of diabetic patients had a moderate function (37). However, diabetes self-care improper condition in diabetic patients has unfortunately become so current that self-care condition in diabetic patients from Asian countries like Singapore (38), India (39), Taiwan (40), and Iran (41), and also European countries (42), and the United States (43) lacked an appropriate condition and it requires more effective and practical public health and clinical interventions. It may be the reason that turned diabetes to a challenge for primary health care in 21 century by WHO and Diabetes International Federation, and this challenge is even more serious in the Middle East (44).

In this study, in spite of the importance of selfcare, only7.97% of the patients did all the advised self-care activities daily. In a study by Safford 37.9% of diabetic patients had no feetcare and 37.7% didn't exercise (45). Also in a study by Jafarian 41.3% of the patients had a good diabetic diet, and 32.8% of them checked their blood sugar only once a week (21). In a study by Jafarian only 3% of the patients controlled their disease by having a diet and 61.4% of them didn't have adequate exercise (46). In a study by Hariss and Lostman 35-75% of the subjects had no adequate diet, 20-80% had no insulin injection, 30-70% didn't have

Archives of Hygiene Sciences	Volume 3, Number 4, Summer 2014
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• Self-care Assessment in Patients ...

feet-care, and 70-81% had no regular exercise (47).

Nevertheless, some studies showed different results as in a study by Nelson 73% of the patients had enough physical activity, 92% had a healthy diet, and 98% took care of their feet (48). In a study by Nwasuruba 85.3% of the patients stuck to their medication diet all the week and 58% of them were controlling their blood sugar at least once a day (49). The fundamental reason for these differences may refer to the patients' ability in the disease' selfcare or self-management through educational because specific interventions. factors diabetes including regarding inadequate knowledge about diabetes (50), a low health literacy level, and lacking enough knowledge about correct diabetes care methods may prevent diabetes effective self-management (51).

In this study FBS and HbA1c rates were not in a desirable condition due to lack of appropriate self-care. Studies by Kashfi (52), Aqamollaie (53), and Qenaie (54) also confirmed the aforementioned condition in patients without self-care activities. Meanwhile, researchers believe that in chronic diseases like diabetes, the disease approaches gradually and makes patients less aware of the disease malignancy, hence, they won't be concerned enough to start self-caring and would affect the disease troubles.

In this study there was an adverse significant relation between FBS plus HbA1c rates and self-care activities in such a manner that the more self-care activities were done, the less FBS and HbA1c rates became, vice versa. This is obvious, however. Similar condition was shown in studies by Tol (55), waltson (30), Kitis (31), and Schilling (32). Unlike some studies, in this study self-care rate among female subjects was significantly more than male subjects means that men were less likely to accept treatment and did generally weaker than women in self-care activities.

In a study by Chang women were more regular than men in having a healthy diet. Also in a study by Dashif self-care condition among women was remarkably better than in men. In a study by Waltson (30), McCollum (58), and Tal (59) men had a better self-care condition than women.

In a study by Jafarian (21), Hatamlouie (59), and Baghaie (24), there was no significant difference in self-care rates between men and women.

Furthermore, educated people had a better selfcare condition and did self-care activities much more properly. Similar results were reported in a study by Jafarian (21), Chang (56), Dewalt (60), Sloan (61) and Osbom (62). Even in a study by Shakibazadeh (22) educational status was considered a second preventive factor for self-care activities. Thus, higher educational status, facilitates the disease' self-care and selfmanagement, whereas, lower educational status puts self-care in real hazard, therefore, improving commitment to self-care behaviors can be the first step to help patients specially male patients and also less educated ones to best manage and take care of their disease.

Although the mean of self-care in diabetic patients was higher in type1 diabetic patients compared to type 2 diabetic ones, but there was no significant difference between diabetic types, which type 1 diabetes limited sample seems to be the reason. Studies by Abedini (37), Ruggiero (63) and Karter (64) also showed that type 1 diabetes patients had a better self-care condition compared to type 2 diabetic patients.

Archives of Hygiene Sciences	Volume 3, Number 4, Summer 2014	4
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#### • Self-care Assessment in Patients ...

Also, FBS and HbA1c rates showed a significant difference between two genders, as these rates were significantly lower among women due to their better self-care condition, and these rates were also significantly lower among subjects with academic and religious education. These findings show that the better self-care condition was, the less these rates were. Studies by Tol (55) and Sabet Sarvestani (65) were similar and confirmed these results. It is being more and more important according to the adverse relation between self-care and FBS plus HbA1c rates in such a manner that without self-care, as HbA1c increases to 1%, FBS rate increases to almost 30 mg/dl (66) and it follows a 20-30% increase in cardiovascular-resulted deaths (67, 68).

## Conclusion

Diabetes require life-time self-care behaviors and it is determined that the disease acute and chronic troubles can be prevented or it can be a continuous follow-up. delayed bv Nevertheless. promoting self-care and achieving a desirable self-control condition are considered this century's major challenges and necessities for diabetes. These results showed that self-care didn't have a good condition among Qom city Diabetes Association members, in such a manner that they didn't do self-care activities including: having a diet, doing physical activity, controlling blood sugar, taking care of their feet, and also consuming drugs or injecting insulin, properly and regularly that follows undesirable FBS and HbA1c rates among them, as well.

It seems that self-care depends on personal, mental, and social factors and understanding them would help health service providers

#### Mohebi S, et al./ Arch Hyg Sci 2014;3(4):167-176.

design and perform appropriate and strong interventions to promote diabetes selfmanagement behaviors. Hence, we believe that more studies should be conducted on self-care and factors affect it based on Behavioral Change theories and models, longitudinally.

## Footnotes

## **Conflict of Interest:**

The authors declared no conflict of interest.

## References

1. Vongpatanasin W. Cardiovascular morbidity and mortality in high-risk populations: epidemiology and opportunities for risk reduction. J Clin Hypertens (Greenwich) 2007; 9 Suppl 4: S11-5.

2. International Diabetes Foundation. The International Diabetes Federation welcomes adoption of WHO global strategy on diet, physical health. activity and In: 2004. from http://www.idf.org/home/index.cfm.

3. Roglic G, Unwin N, Mathers C, Tuomilehto J, Nag S, Connolly V. et al. The burden of mortality attributable to diabetes: realistic estimates for the year 2000. Diabetes Care. 2005; 28: 2130-2135.

4. Esteghamati A, Gouya MM, Abbasi M, Delavari A, Alikhani S, Alaedini F. Prevalence of Diabetes and Impaired Fasting Glucose in the Adult Population of Iran: National Survey of Risk Factors for Non Communicable Diseases of Iran. Diabetes Care 2008; 31(1): 96-8.

5. Dickson JA. Critical social theory approach to nursing care of adolescents with diabetes. Issues compr pediatr Nurs 1999; 22: 143-152.

6. Funnell MM, Anderson RM. Empowerment and Self- Management of Diabetes Clinical Diabetes 2004; 22: 123-7.

7. Cornell S, Briggs A. Newer Treatment Strategies for the Management of Type 2 Diabetes Mellitus J Pharm Pract 2004;17:49-54.

8. Cumbie SA, Conley VMC, Burman ME. Advanced practice nursing model for comprehensive care with chronic illness: model for promoting process engagement.Advances in

Archives of Hygiene Sciences	Volume 3, Number 4, Summer 201	4
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Nursing Science. Nursing Care Management. 2004, 27(1):70-80.

9. Allison SE. Self care requirements for activity and rest: an Orem nursing focus. Nurs Sci Q 2007; 20(1): 68-76.

10. Nelson KM, McFarland L, Reiber G. Factors influencing disease self-management among veterans with diabetes and poor glycemic control. J Gen Intern Med 2007; 22(4): 442-7.

11. Siguroardottir AK. Self-care in diabetes: model of factor affecting self-care. J clin Nurs 2005; 14: 301-314.

12. Fischer J, Kozewski W, Jones G, Staneu Kogstrand K. The Use of Interviewing to Assess Dietetic Internship Preceptors Needs and Perceptions. Journal of the American Dietetic Association 2006; 106: A48-A48.

13. Tan MY, Magarey J. Self care practices of Malaysian adults with diabetes and sub-optimal glycaemic control. Patient Educ Couns 2008;72(2):252-67.

14. Franz MJ, Bantle JP, Beebe CA, Brunzell JD, Chiasson JL, Garg A, et al. Nutrition principles and recommendations in diabetes. Diabetes Care 2004; 27(Suppl 1):36-46.

15. Jordan DN, Jordan Jl. Self-care behavior of Filipino-American adults with type 2 diabetes mellitus. J Diabetes Complication 2010;24(4):250-8.

16. Toljamo M, Hentinen M. Adherence to self-care and glycemic control among people with insulindependent diabetes mellitus. J Adv Nurs 2001;34(6):780-6.

17. Lee HJ. Park Ky. Park HS. Self-care activity, Metabolic control, and cardiovascular risk factors in accordance with the levels of depression of clients with type 2 diabetes mellitus., Taehan Kanho Hakhoe Chi 2005; 35: 283-291.

18. Mahmood K, Aamir A H. Glycemic control status in patients with type 2 diabetes. J Coll Physicians Surg Pak 2005; 15: 323-25.

19. Dailey George. A timely transition to insulin: Identifying type 2 diabetes patients failing oral therapy. Formulary 2005; 40: 114-130. • Self-care Assessment in Patients ...

20. Dailey George. Fine-Tuning therapy with basal insulin for optimal glicemic control diabetes: a review. Curr Med Res Opin 2004; 20: 2007-14.

21. Jafarian Amiri SR, Zabihi A, Babaieasl F, Eshkevari N, Bijani A. Self Care Behaviors in Diabetic Patients Referring to Diabetes Clinics in Babol City, Iran. Journal of Babol University of Medical Sciences 2010;12(4): 72-78

22. Shakibazadeh E, Rashidian A, Larijani B, Shojaeezadeh D, Forouzanfar MH, Karimi Shahanjarini A. Perceived Barriers and Self-efficacy: Impact on Self-care Behaviors in Adults with Type 2 Diabetes. The Journal of Faculty of Nursing & Midwifery 2010;15(4): 69-78.

23. Morowati Sharifabad M, Rouhani Tonekaboni N. Social support and Self-care Behaviors in Diabetic Patients Referring to Yazd Diabetes Research Center. Zahedan Journal of Research in Medical Sciences, Journal of Zahedan University of Medical Sciences (Tabib-e-shargh) 2008;9(4): 275-284

24. Baghaei P., Zandi M., Vares Z., Masoudi Alavi N., Adib-Hajbaghery M. Self care situation in diabetic patients referring to Kashan Diabetes Center, in 2005. Feyz, Kashan University of Medical Sciences & Health Services 2008;12(1): 88-93

25. Jahanloo ASh, Ghofranipour F, Vafaei M, Kimiagar M, Heydarnia AR, Sobhani A. Health Belief Model constructs measured with HbA1c in diabetic patients with good control and poor. Journal of Hormozgan University of Medical Sciences 2008;12(1): 37-42

26. Heisler M, et al. How well do patients assessments of their diabetes self management correlate with actual glycemic control and receipt of recommended diabetes services? Diabetes Care 2003; 26(3): 738-43.

27. Rubbin R. Differential effect of diabetes education on self-regulation and life stage behaviors. Diabetes Care 1998; 14(4): 335-8.

28. Mahmoodi A. Effects of self care planning on reduction of A1C hemoglobin in adults with diabetes mellitus. Medical Science Journal of Islamic Azad University,tehran Medical Unite 2006;16(3): 171-176

Archives of Hygiene Sciences

Volume 3, Number 4, Summer 2014

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• Self-care Assessment in Patients ...

29. Parchman ML, Pugh JA, Noël PH, Larme AC. Continuity of care , self management behaviors and glucose control in patients with type 2 diabetes. Med Care 2002; 40(2): 137-44.

30. Wallston KA., Rothman RL., Cherrington A. Psychometric properties of perceived diabetes self-management scale (PDSMS). J Behav Med 2007;30(5):395-401.

31. Kitis Y., Emiroglu ON. The effects of home monitoring by public health nurse on individuals diabetes control. Appl Nurs Res 2006;19(3):134-43.

32. Schilling LS., Dixon JK., Knafi KA. A new self-report measure of self-management of type 1 diabetes for adolescents. Nurs Res 2009:58(4):228-36.

33. Toobert DJ, Hampson SE, Glasgow RE. The summary of diabetes self-care activities measure. Diabetes Care. 2000; 23(7): 943-950.

34. Poursharifi H. The effectiveness of Motivational Interviewing in Improving Health Outcomes in Adults with Type 2 Diabetes. Unpublished Ph.D..s thesis. University of Tehran, Iran. 2007.

35. American Diabetes Association (ADA). National standards for diabetes self-management education. Diabetes Care. 2005; 28(11):72-79.

36. Maizlish, N., Shaw, B. and Hendry, K. Glycemic control in diabetic patients served by community health centers. American Journal of Medical Quality 2004; 19: 172.

37. Abedini Z, Shouri Bidgoli A, Ahmari Tehran H. Study of Knowledge and Practice of Patient Self directed Care among Diabetics Patients. Journal of Qom University of Medical Sciences 2008;2(2): 37-41

38. Lee W, Lim H, Thai A, Chew W, Emmanuel S, Goh L, et al. A window on the current status of diabetes mellitus in Singapore-the Diabcare-Singapore 1998 study. Singapore Med J 2001; 42(11): 501-7.

39. Raheja BS, Kapur A, Bhoraskar A, Sathe SR, Jorgensen LN, Moorthi SR, et al. DiabCare Asia--India Study: diabetes care in India-current status. J Assoc Physicians India 2001; 49:717-22.

40. Chuang LM, Tsai ST, Huang BY, Tai TY. The current state of diabetes management in Taiwan. J Peripher Nerv Syst 2002;7(2):137.

Mohebi S, et al./ Arch Hyg Sci 2014;3(4):167-176.

41. Delavari A, Alikhani S, Nili S, Birjandi RH, Birjandi F. Quality of care of diabetes mellitus type II patients in Iran. Arc iranian Med 2009; 12(5): 492-5.

42. Liebl A, Mata M, Eschwege E. Evaluation of risk factors for development of complications in Type II diabetes in Europe. Diabetologia 2002; 45(7): 23-8.

43. Saaddine J, Engelgau M, Beckles G, Gregg E, Thompson T, Narayan K. A diabetes report card for the United States: quality of care in the 1990s. Ann Intern Med 2002;136(8):565-74.

44. Wild S, Roglic G, Green A, Sicree R, and King H. Global prevalence of diabetes: estimates for the year 2000 and projections for the 2030. Diabetes Care 2004; 27(5): 1047-1053.

45. Safford M. Russell L. churlsuh D. Roman S. pogach L. How much time Do patients with Diabetes spend on self – care?. J Am Board Fam Pract 2005; 18: 262-270.

46. Jafarian N, Heidari AA. The study of self-care programs in the non-Insulin dependent diabetes mellitus (NIDDM) patients referring to Hamadan diabetic research center. Journal of Shahid Sadoughi University of Medical Sciences And Health Services 2002;10(3): 64-60.

47. Harris M, Lust P. The psychology in diabetes care. Clinical Diabetes 1998; 16: 1-5.

48. Nelson KM, McFarland L, Reiber G. Factors influencing disease self management among veterans with diabetes and poor glycemic control. J Gen Intern Med 2007; 22(4):442-7.

49. Nwasuruba C, Khan M, Egede LE. Racial/ethnic difference in multiple self care behaviors in adults with diabetes. J Gen Inter Med 2007;22(1):115-20.

50. Persell SD, Keating NL, Landrum MB, Landon BE, Ayanian JZ, Borbas C, et al. Relationship of diabetesspecific knowledge to self-management activeities, ambulatory preventive care, and metabolic outcomes. Prev Med 2004; 39: 746-52.

51. Sarkar U, Fisher L, Schillinger D. Is selfefficacy associated with diabetes self-management across race/ethnicity and health literacy? Diabetes Care 2006; 29: 823-9.

52. Kashfi SM, Khani jyhouni A, Bahadori khalili R, Hatami M. Evaluation of the Effects of

Archives of Hygiene Sciences	Volume 3, Number 4, Summer 2014
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• Self-care Assessment in Patients ...

Educating about Nutrition and Jogging on the Blood Sugar of Type II Diabetic Patients of a Clinic in Shiraz, Iran. Hakim Research Journal 2009;12(3): 54-60.

53. Agha Molaei T, Sobhani AR, Yoosefi H, Asadi Noghabi F. Behavior and metabolic control of diabetic patients in Bandar Abbas diabetic clinic. Journal of Hormozgan University of Medical Sciences 2003;7(3): 115-111.

54. Mansour Ghanaei R, Ghanbari A, Reza Masouleh Sh, Kazem Nejad E. Effective factors on self management in Insulin dependent diabetes mellitus patients. Journal of Medical Faculty Guilan University of Medical Sciences 2005;14(55): 102-97.

55. Tol A, Azam K, Esmaeil Shahmirzadi S, Shojaeizadeh D, Mohebbi B, Asfia A, Khani HR. Relation between empowerment of diabetes control and adoption of self-management behaviors and its related factors among type 2 diabetic patients. The Razi Journal of Medical Sciences 2012;19(98): 11-18.

56. Chang HY, Chiou Cj, Lin MC, Lin SH, Tai TY. A population study of the self care behaviors and their associated factors of diabetes in Taiwan: results from the 2001 National Health Interview Survey in Taiwan. Perv Med 2005;40(3):344-8.

57. Dashif CJ, McCaleb A, Cull V. self care of young adolescents with type 1 diabetes. J Pediatr Nurs 2006;21(3):222-32.

58. McCollum M, Hansen LS, Lu L, Sullivan PW. Gender difference in diabetes mellitus and effect on self care activity. Gend Med 2005;2(4):246-54.

59. Hatamloo Sadabadi M, Poursharifi H, Babapour Kheiroddin J. The Role of Health Locus of Control on Self-care Behaviors in Patients with Type II Diabetes. Medical Journal of Tabriz University of Medical Sciences & Health Services 2011;33(4): 17-22.

60. Dewalt DA, Berkman ND, Sheridan S, Lohr KN, Pignone MP. Literacy and health outcomes: a

systematic review of the literature. J Gen Intern Med 2004;19(12)1228-39.

61. Sloan FA, Padron NA, Platt AC Preference, beliefs and self management of diabetes. Health Serv Res 2009:44(3):1068-87.

62. Osborn CY, Egade LE. Validation of an information motivation behavioral skills model of diabetes self care (IMBDSC). Patient Educ Couns 2010;79(1)49-54.

63. Ruggiero L, Glasgow RE, Dryfoos JM, Rossi JS, Prochaska JO, Orleans CT. et al. Diabetes selfmanagement: Self-reported recommendations and patterns in a large population. Diabetes Care. 1997; 20(4): 568-576.

64. Karter AJ, Ferrara A, Darbinian JA, Ackerson LM, Selby JV. Self monitoring of blood glucose: Language and financial barriers in a managed care population with diabetes. Diabetes Care. 2000; 23(4): 477-483.

65. Sabet Sarvestani R, Hadian Shirazi Z. Diabetes diagnostic indexes and self efficacy of diabetic patients referred to Nader Kazemi center, Shiraz 2006. Iranian Journal of Nursing Research 2009;4(14): 15-21

66. Danaei N, Tamadon MR, Moonesan MR. Survey of the level of diabetes control and some related to it in patients referred to diabetes clinic, Semnan Fatemieh Hospital. Koomesh Journal of Semnan university of medical sciences. 2004;1: 31-6.

67. Najimi A, Sharifirad G, Hasanzadeh A, Azadbakht L. Effect of Nutrition Education on Nutritional Behaviors and Glycemic Control Indices Based on BASNEF Model among Elderly with Type 2 Diabetes. Journal of Isfahan Medical School 2011;29(155): 1247-1258.

68. Kamran A, Savadpour M, Shekarchi AA, Iranpour S, Sharifirad Gh, Dargahi A. Prevalence and Predictors of Overweight and Obesity in Adolescents. Arch Hyg Sci 2014;3(3):120-125.