PSIWORLD 2011

Diabetes's adherence to treatment: the predictive value of satisfaction with medical care

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Abstract

Problem Statement: Diabetes mellitus has a significant physical and emotional impact, involving difficult lifestyle adjustments, complex and long term treatment.

Purpose of Study: To investigate the predictive value witch can have patient satisfaction, socio-demographics, clinical factors and self-efficacy on diabetes's adherence.

Research Methods: 78 outpatients diagnosed with Type 2 diabetes completed Patient Satisfaction Questionnaire III, The Medical Outcomes Study Adherence Questionnaire and The Diabetes Empowerment Scale.

Findings: Multivariate regression indicates that residence and self-efficacy were independent predictors for general adherence while self-efficacy was independent predictor for specific adherence.

Conclusions:. Identifying adherence's factors facilitates the optimization of this health behaviour with high benefits for quality of life of diabetic patients.

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Keywords: adherence to treatment; patient satisfaction; Type 2 diabetes mellitus; chronic disease.

1. Introduction

The World Health Organization underlies "*One of the greatest challenges that will face health systems globally in the Twenty-first century will be the increasing burden of chronic diseases*" with considerable implications for health systems and society (European Observatory on Health Systems and Policies Series, 2010). Globally, in 2007, the total number of diabetes patients was estimated to 246 million. Official statistics indicated that, in Romania, in 2007, 570.000 people have been diagnosed with diabetes

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(Morgovan, C., Cosma, S., Ghibu, S., Burta, C., Bota, M. & Polinicencu, C., 2010). In Romania, diabetes treatment is offered without any payment by the national program 3.6. for all the patients. The cost related with diabetes has recorded a significant increase, like everywhere in the world. In nine years, the budget allotted by the Ministry of Health (MSP) and National House of Health Insurance (C.N.A.S.) increase over 9.5, from 32,053 thousands RON to 306,243 thousands RON, in order to provide the treatment with oral anti-diabetic drugs and insulin (Morgovan, C., Cosma, S., Ghibu, S., Burta, C., Bota, M. & Polinicencu, C., 2010). The St. Vincent Declaration produced with the initiative of The International Diabetes Federation and World Health Organization in 1989 underline the magnitude of the problems produced by diabetes in all countries and postulated several objectives: effective self-management of the diabetes; recognize the diabetes patients as key members for the therapeutic partnership and also provision of education, information and preparation (The St. Vincent Declaration, 1989). For patient living with diabetes, this illness means significant physical and emotional impact, involves difficult lifestyle adjustments, and requires complex and long term treatment (Lerman, I., 2005). When addressing diabetes treatment goals for patients living with multiple conditions the responsibility for self-management will become even more complex (Ritchie, C., 2007). Diabetics seem to be more susceptible to non-adherence than patients suffering from other chronic diseases, especially when patients are not confronted with severe complications (Bezie, Y., Molina, M., Hernandez, N., Batista, R, Niang, S., & Huet, D., 2006). Adherence in term of health care is "the extent to which a person's behaviour – taking medication, following diet, and/or executing lifestyle changes – correspond with agreed recommendations from a health care provider" (World Health Organization, 2003).

The purpose of this study was to investigate the predictive value witch can have patient satisfaction, socio-demographics, clinical factors, frequency of medical visits during previous year and self-efficacy on Type 2 diabetes's general and specific adherence behaviours.

2. Methods

2.1. Participants

Seventy-eight outpatients diagnosed with Type 2 diabetes were included in this study. The mean age was 59.73 years, 73.1% were females, 75.6% were married and 75.6% live in urban area. Nearly half of the participants (48%) had high school education, 33.3% had primary studies and 17.9% had university diploma. Half of the patients had between 4-5 medical visits for diabetes care during previous year and 43.3% were already treated with insulin. The mean of the diabetes duration was 8.05 years and 84.6% of the respondents reported presence of co-morbidity.

2.2. Instruments

The socio-demographics characteristics measured were: age (years), gender, education (primary studies, high school education, university diploma) and residence (urban, rural). Clinical factors assessed were: the presence of co-morbidity (yes or no), disease duration (years) and disease severity (treatment with insulin). The number of medical visits during previous year was also recorded. Patient satisfaction with medical care was evaluated using PSQ III (Hays, R.D., Hayashi, T. & Ware, J.E., 1987). The questionnaire investigates seven dimensions of patient satisfaction (Table 2). Patient adherence was measured using The Medical Outcomes Study Adherence Questionnaire (Hays, R.D., Kravitz, R.L., Mazel, R.M., Sherbourne, C.D., DiMatteo, M.R., Rogers, W.H. et al., 1994). Perceived self-efficacy was assessed using Diabetes Empowerment Scale (Anderson, R.M., Funnell, M.M., Fitzgerald, J.T. &

Marrero, D.G., 2000). The questionnaires were administrated by interview, in a diabetes centre from Cluj-Napoca, Romania.

3. Results

Table 1 shows the calculated non-adherence values. The results indicated that 43.24% of the patients exercise regularly none/a little/some of the time. Also 32% respectively 40% of the patients follow a low fat diet and a diabetic diet none/a little/some of the time. Higher levels of adherence were found concerning taking and carrying prescribed medication.

Table1. The non-adherence data of the patients

Type of adherence	N[a]	Non-adherence n(%)
Exercise regularly	74	32 (43.24)
Take prescribed medication	76	1 (.8)
Check blood for sugar	74	11 (14.86)
Check feet for injuries	76	12 (15.78)
Carry a source of glucose for emergency	62	14 (22.58)
Carry medical supplies	69	2 (2.89)
Follow a low fat diet	76	24 (31.57)
Follow a diabetic diet	76	30 (39.47)

[a]N=the number of patients that receive the recommendation

The majority of the participants rated high or very high satisfaction with almost all the aspects of care. The mean for self-efficacy scales between 4.28 and 4.53 (maximum 5) strongly suggested high levels of self-efficacy.

Table 2. Correlations of the General and Specific Adherence (MOS) with all variables (N=78).

Variables	General Adherence	Specific Adherence
Age	.159	.038
Sex (male=0, female=1)	-.054	-.175
Education (primary=1, secondary=2, high=3)	.042	.005
Residence (urban=0, rural=1)	-.272*	-.057
Frecvency of medical visits during previous year	-.022	.188
Insulin (no=0, yes=1)	.014	.322*
Co-morbidity (no=0, yes=1)	-.061	.166
Disease duration	.060	.057
General Satisfaction	-.022	.131
Technical quality	-.044	.113
Interpersonal aspects	.209	.247*
Communication	.095	.066
Financial aspects	.103	.101
Time spent with doctor	-.063	.186
Acces, availability, convenience	.069	.299**
SE1	.220	.376**
SE2	.151	.150
SE3	.369**	.420**

**P <0.01; * P <0.05. SE1, Managing the psychosocial aspects of diabetes; SE2, Assessing dissatisfaction and readiness to change; SE3, Setting and achieving diabetes goals.

Results of correlation analysis displayed in Table 2. indicated that general adherence to treatment was significantly negatively associated with residence and positively associated with setting and achieving

diabetes goals. Specific adherence behaviours were significantly associated with disease severity; interpersonal aspects, access and two scales of DES. The results of multilevel regression (Table 3) show that, adjusted for age and education, patients who live in urban area (P=0.43) and those who believe that can establish and achieve diabetes goals (P=0.002) had a significantly grater tendency to adhere to treatment.

Table 3. Results of multiple (linear) regression analyses of variables associated with General and Specific Adherence.

	General Adherenc	Specific Adherence
Covariates	B	B
Age	.015	-.058
Education (primary=1, secondary=2, high=3)	.065	-.078
Potential predictor variables		
Place of residence (urban=0, rural=1)	-.519*	--
SE3	.510**	--
R² (R² adjusted)	**.205 (.161)**	--
Insulin taking (no=0, yes=1)	--	4.93
Interpersonal Aspects	--	.352
Access, availability, Convenience	--	.452
SE1	--	4.94
SE3	--	5.79*
R² (R² adjusted)	--	**.322 (.254)**

**P <0.01; * P <0.05. SE1=Managing the psychosocial aspects of diabetes; SE2=Assessing dissatisfaction and readiness to change; SE3=Setting and achieving diabetes goals.

Residence and Setting and achieving diabetes goals were independent predictors for general adherence and collectively explained 16.1% of the variation. Setting and achieving diabetes goals (P=0.041) was the only independent predictor for specific adherence behaviours. Collectively all variables explained 25.4% of the variation.

4. Conclusion

The present study reveals high levels of adherence to taking prescribed medication and checking blood for sugar. A possible explanation for this result is the fact that, in Romania, diabetes treatment (including consultations and drugs) is free of charge for all the patients by the national programme. On the other hand we found low adherence levels to follow diabetes and low fat diet and also exercise regularly. One more finding, according to the multivariate analysis was that self-efficacy was uniquely related both with patient tendency to adhere to treatment and also with specific adherence behaviors, demonstrating that psychosocial variables are important in determining patient adherence (Cramer, J.A., 2004; Glasgow, R.E., Tobbert, D.J. & Gillette, C.D., 2001). Second, the results also indicated a significant negative association between living in rural area and patient's adherence. These results indicate the main areas that require interventions programs, targeting diabetes patients. The results show no relationship between adherence and the presence of co-morbidity, disease duration, age, gender, education and the number of medical visits during previous year. In the univariate analysis, disease severity, doctor-patient relationship and access to health services were found to be positively related with

specific adherence behaviors. When entered in the multivariate model this variables were not independent predictors. Considering the limitation of this study, given by the small number of participants, the findings support the argument that providing individualised treatment plans and taking into consideration the psychosocial factors is, therefore, of critical importance for effective care.

Acknowledgements

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