



RESEARCH ARTICLE

EVALUATION OF PATIENT WITH CHRONIC DISEASE USING PATIENT ASSESSMENT OF CHRONIC ILLNESS CARE QUESTIONNAIRE (PACIC) IN RIYADH KSA

Rabaa K AlMomen^{1*}, Osama Abdelhay², Noura A Alrowais³ and Tarek Elsaid⁴

^{1,2,4}Department of Family and Community Medicine, Prince Sultan Military Medical City, Riyadh KSA

³Department of Family and Community Medicine, King Khalid College of Medicine, King Saud University, Riyadh

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ABSTRACT

Background: Chronic disease is a major health problem in Saudi Arabia necessitating continues highly cost treatment and follows up. This study was carried out with the main aim of evaluating patient's perspective on receipt healthcare using Patient Assessment of Chronic Illness Care questionnaire (PACIC).

Methods: This cross sectional study was carried out in the Chronic Disease Center (CDC) between December 2014 and January 2015. It used a validated version of PACIC questionnaire which depended on Chronic Care Model. The model consisted of five subclasses namely, patient activation, delivery system design and decision support, goal setting and tailoring, problem-solving and contextual counselling, follow-up and coordination. This is the first study to use the PACIC instrument in the Kingdom of Saudi Arabia. Four hundred and sixty eight patients were selected using systematic sampling method. Data was analyzed with SPSS version 20 for windows. Percentages and frequencies were calculated and association between socio-demographic characteristics and PACIC score was determined.

Results: Our results showed that 186 or 40.26 of the participants severed from diabetes mellitus while 114 or 24.68 were affected by hypertension. Study participants were mostly male (286 or 61.9%) with 42% aged above 42 years old and one third or 36% had university education. Socio-demographic characteristics were not associated with PACIC score. Some PACIC subscale such as patient's activations, problem solving, follow up and co-ordination were highly correlated with patient's educational level $p < 0.03$, $p < 0.01$ and $P < 0.04$ respectively.

Conclusion: The Patient Assessment of Chronic Illness Care questionnaire (PACIC) demonstrated an excellent tool for evaluating patients perspective on received healthcare. A more prospective study on developing an Arabic version of this instrument and determining its reliability and validity will significantly improve the management of patients with chronic disease in Kingdom of Saudi Arabia.

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INTRODUCTION

Chronic illnesses can be defined as an illness which is controlled but cannot be cured such diabetes mellitus in which the treatment is based on controlling and monitoring the high blood glucose level[1, 2]. The country spends billions of Saudi Riyals (SR) yearly on the management of patients with chronic illnesses without evidence of reduction in the prevalence or improvement of the provided quality of care[3]. This is due to the fact that most of the health care systems are designed to manage acute disease rather than chronic conditions which demands more high quality of care including excellent patients-healthcare provider's relationship[4]. Saudi Arabia is among the top ten countries with highest prevalence rate of DM worldwide[5].

The Patient Assessment of Chronic Illness Care (PACIC) is used for determining the quality of treatment received by patients with chronic illnesses such as diabetes Miletus and hypertension[6]. The first version of PACIC consisted of 20

items which depends on Chronic CareModel (CCM)[7]. It also consisted of five subclasses namely, patient activation, delivery system design and decision support, goal setting and tailoring, problem-solving and contextual counselling, follow-up and coordination[8]. PACIC has been tested, validated and use in many international studies to measure the quality of care provided to diabetic patients[9, 10].

One of the most important factors in the management of patients with chronic illness is the extent to which he or she is capable of understanding and coping with his health conditions which is known as patient enablement[11, 12]. The concept of enablement was further focused in the general practice setting, to the extent of the patient's own feelings of his/her condition after the medical consultation with his healthcare provider. Several studies have shown a significant improvement in the treatment of patients with chronic diseases when patients are enabled about their treatment [9, 13, 14]. There is no much studies conducted on assessment of patients with chronic diseases using PACIC instrument in

Riyadh and patient level of enablement is not known. Based on the above the authors were determined to assess the diabetic patient's enablement using The Patient Assessment of Chronic Illness Care (PACIC) in Riyadh.

METHODOLOGY

Study Design and Area

This cross sectional study was carried out in Chronic Disease Center (CDC) in Al wazarat health center of Prince Sultan Military Medical City (PSMMC). Is one of primary health center which Joint Commission International (JCI) accredited centers in Riyadh. It provides health services for military personals and their dependents. Riyadh is the capital city of the Kingdom of Saudi Arabia.

Study population

The study population consisted of participants diagnosed with diabetes mellitus and other chronic diseases and were seen in the CDC for treatment and follow up. Participants who made the inclusion criteria and agreed willingly to participate were included.

Inclusion criteria and Exclusion criteria

Adult participants who are above 18 years of age, male and female who can read and understand the self-reported questionnaire were included in the study. Those who could not read the questionnaire or very sick and refused to participate in the study were excluded from the study.

Sample size and sampling technique

Sample size was calculated using Raosoft sample size calculator version 2012 and based on 1% confidence interval, 99% confidence level, with response distribution of 50% and study population of 550. The calculated sample size was 533 participants based on the above stated factors. Random technique was used to select the requested sample size. Selection bias and recall bias were overcome by ensuring the questionnaire was well formatted and the language was clearly understood by participants.

A self-reported questionnaire which developed by the research team from the literature consisted of two parts.

Part 1 contained the socio-demographic characteristics while part 2 was mainly the Patient Assessment of Chronic Illness Care (PACIC).

The first version of PACIC consisted of 20 items which depends on Chronic Care Model (CCM). It also consisted of five subclasses namely, patient activation, delivery system design and decision support, goal setting and tailoring, problem-solving and contextual counselling, follow-up and coordination. PACIC has been tested, validated and use in many international studies to measure the quality of care provided to diabetic patient. The authors are currently validating an Arabic version of this instrument to be used on the same chronic diseases.

Data collection

Data was collected by a nurse who acted as a research assistant at the patient waiting area. Privacy and confidentiality were maintained throughout the process of data collection.

Data entry and analysis

Collected data was entered into SPSS version 18, before analysis data was cleaned and normality tests were used to check its distribution. Descriptive statistics such mean, standard deviation, frequencies and percentages were calculated and tabulated. The association between socio-demographics characteristics and PACIC score were tested by means of the spearman's rank correlation coefficient putting into consideration calculation for potential confounders. *P value* < 0.05 was considered to be statistically significant.

RESULTS

Table 1 Socio-Demographic characteristics of participants (n =462)

Variable	Number	Percent (%)
Gender		
Female	176	38.10
Male	286	61.90
Total	462	100
Age (Years)		
18-25	060	12.98
26-33	092	19.91
34-41	118	25.54
>42	192	41.56
Total	462	100
Marital status		
Married	225	48.70
Single	39	8.44
Divorced	98	21.21
Widow	46	9.96
Widower	54	11.69
Total	462	100
Education level		
No formal schooling	28	6.06
Primary school	143	30.95
Secondary school	124	26.84
University	111	24.03
Postgraduate	56	12.12
Total	462	100
Employment Status		
Not employed	245	53.03
Employed	217	46.97
Total	462	100

Table 2 Types of chronic disease in Wazarat Family Medicine Center (n=462)

Disease	Number of patients	Percent (%)
Diabetes Mellitus	186	40.26
Hypertension	114	24.68
Bronchial Asthma	58	12.55
Osteoarthritis	66	14.29
Other chronic illnesses *	38	8.23

* Includes: dyslipidemia, hypothyroidism

DISCUSSION

In this study participants were mostly male (286 or 61.9%) with 42% aged above 42 years old and one third or 36% had university education. Our results showed that 186 or 40.26 of the participants severed from diabetes mellitus while 114 or

Table 3 Patient with Chronic Disease Scores using (PACIC) Instrument (n =462)

No. Of question on PACIC	Domains	Mean	Std. Deviation
1-3	Overall PACIC*	1.9863	1.4856
	Patient activation	1.8234	1.2404
4-6	Delivery system/practice design	2.5623	1.8765
7-11	Goal setting/tailoring	1.7682	0.9236
12-15	Problem solving/contextual	2.4539	1.7698
16-20	Follow-up/coordination	1.7003	0.9563

* PACIC: Patient Assessment of Chronic Illness Care.

Table 4 Comparison of Three PACIC scale overall score (mean ± standard deviation)

	This study (n=462)	Glasgow, Wagner et al (n=255) [15]	Glasgow, Whiteside et al (n= 336) [16]
Overall PACIC	1.99± 1.4	2.60 ± 1.0	3.2 ± 0.9
Patient activation	1.82± 1.2	2.99 ± 1.3	3.6 ± 1.1
Delivery system/practice design	2.56 ± 1.8	3.13 ± 1.1	3.5 ± 0.9
Goal setting/tailoring	1.77± 0.92	2.43 ± 1.1	3.0 ± 1.0
Problem solving/contextual	2.45 ± 1.8	2.87 ± 1.3	3.4 ± 1.1
Follow-up/coordination	1.70± 1.0	1.97 ± 1.1	2.9 ± 1.0

Table 5 Association between patients Socio-demographic Characteristics and Scores of PACIC (n=462)

Domains	Overall PACIC*	Patient activation	Delivery system/practice design	Goal setting/ tailoring	Problem solving/ contextual	Follow-up/ co ordination
Male	- 0.17	0.05	0.12	0.07	0.06	0.09
Age	- 0.06	0.01	-- 0.08	0.05	0.15	0.06
Educational level	0.01	0.03	0.06	0.12	0.01	0.04
Marital status	0.11	-- 0;09	0.21	0.07	0.09	0.11
Employed	0.08	0.14	0.19	0.08	0.19	0.66

24.68 were affected by hypertension[17, 18]. These findings agree with the prevalence of these two chronic diseases all over the country. Diabetes mellitus has destroyed the peaceful life of many Saudi Arabian and continue to fill hospital wards with a lot patients severing from its well knowing complications[19]. In terms of high cost, the country continues to spend billions of Saudi Riyals on patients' treatment and follow up of diabetics and other chronic diseases highlighted in our study. One of the main strategies used worldwide to reduce the effect of chronic disease such as diabetes was to enable such patients understand all details about the disease[6]. In Saudi Arabia low patient doctor relationship and culture have lowered patient's level of enablement as shown in our last study which necessitated another urgent study to use a better instrument such as PACIC for better understanding. This instrument was based and depends on Chronic Care Model theory which consisted of five subscales.

This study was the first in its kind to use the PACIC instrument to determine the enablement of patients with chronic disease. A large sample of diabetic patients completed the self-administered questionnaire which contains the PACIC with its 5 subscales.

Our results on PACIC score response by patients in chronic

diseases in table 3 revealed a mixed results which could be influenced by patients culture and patients doctor relationships. For example our findings revealed a mean value of the overall PACIC of 1.9863 which was much lower when compared with similar studies conducted internationally[8, 20]. On the other hand two subscales namely delivery system/practice design with mean of 2.5623 and Problem solving/contextual with mean of 2.4539 was high and comparable with findings from other studies[20]. Two subscales namely delivery system/practice design and Problem solving/contextual with mean 1.8234 and mean of 1.7692 respectively were low when compared with findings from studies conducted in Europe and USA studies[21-23].

Our study showed no association between socio-demographic characteristics and PACIC scores. We did not find any association with patient's age, sex, marital status and employment level, this finding is comparable to findings from studies conducted internationally[9, 24]. We however found high correlation with some PACIC subscale such as patient's activations, problem solving, follow up and co-ordination with patients educational level $p < 0.03$, $p < 0.01$ and $P < 0.04$ respectively. This finding could partially be compared with other studies.

As the first study in Riyadh, KSA to use PACIC the authors acknowledged limitations associated with study design, sampling methods and in general cross sectional study such as selection bias and recall bias which were overcome accordingly.

Based on our findings chronic diseases are still causing a major health problem which demands continues treatment and follow up. Improving the interaction between patients and health care providers go a long way in increasing patients level of enablement. The Patient Assessment of Chronic Illness Care (PACIC) instrument used in this study proved to be an excellent tool for assessing patients perspective on receipt healthcare. In conclusion a detailed prospective study for developing and validating an Arabic version of APACIC instrument for chronic diseases is highly recommended.

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Authors Contribution

RabaaK AlMomen is the principle investigator, wrote the proposal, provide logistics for data collection and wrote the paper while Osama A carried out data management and analysis, Noura A Alrowais and Tarek Elsaid contributed in final writing of the article. All authors read, edited and agreed to the manuscript before submission for publication.

Conflict of Interest

Authors have no conflict of interest to declare

References

1. Lorig, K.R., *et al.*, Chronic disease self-management program: 2-year health status and health care utilization outcomes. *Medical care*, 2001. 39(11): p. 1217-1223.
2. Schmidt, M.I., *et al.*, Chronic non-communicable diseases in Brazil: burden and current challenges. *The Lancet*, 2011. 377(9781): p. 1949-1961.
3. Alqurashi, K.A., K.S. Aljabri, and S.A. Bokhari, Prevalence of diabetes mellitus in a Saudi community. *Annals of Saudi medicine*, 2011. 31(1): p. 19.
4. Almalki, M., G. FitzGerald, and M. Clark, Health care system in Saudi Arabia: an overview. 2011.
5. Hanan, A.-A. and M. Roland, Quality of primary health care in Saudi Arabia: a comprehensive review. *International Journal for Quality in Health Care*, 2005. 17(4): p. 331-346.
6. Glasgow, R.E., *et al.*, Use of the Patient Assessment of Chronic Illness Care (PACIC) With Diabetic Patients Relationship to patient characteristics, receipt of care, and self-management. *Diabetes care*, 2005. 28(11): p. 2655-2661.
7. Carryer, J., *et al.*, Modifying the PACIC to assess provision of chronic illness care: An exploratory study with primary health care nurses. *Journal of Primary Health Care*, 2010. 2(2): p. 118-23.
8. Schmittiel, J., *et al.*, Patient Assessment of Chronic Illness Care (PACIC) and improved patient-centered outcomes for chronic conditions. *Journal of General Internal Medicine*, 2008. 23(1): p. 77-80.
9. Rosemann, T., *et al.*, Evaluation of a culturally adapted German version of the Patient Assessment of Chronic Illness Care (PACIC 5A) questionnaire in a sample of osteoarthritis patients. *Journal of evaluation in clinical practice*, 2007. 13(5): p. 806-813.
10. Cramm, J.M. and A.P. Nieboer, Factorial validation of the Patient Assessment of Chronic Illness Care (PACIC) and PACIC short version (PACIC-S) among cardiovascular disease patients in the Netherlands. *Health and quality of life outcomes*, 2012. 10(104): p. 1-7.
11. Pawlikowska, T., *et al.*, Verbal and non-verbal behavior of doctors and patients in primary care consultations—How this relates to patient enablement. *Patient education and counseling*, 2012. 86(1): p. 70-76.
12. Bikker, A.P., S.W. Mercer, and D. Reilly, A pilot prospective study on the consultation and relational empathy, patient enablement, and health changes over 12 months in patients going to the Glasgow Homoeopathic Hospital. *Journal of Alternative & Complementary Medicine*, 2005. 11(4): p. 591-600.
13. Wagner, E.H., *et al.*, Finding common ground: patient-centeredness and evidence-based chronic illness care. *Journal of Alternative & Complementary Medicine*, 2005. 11(supplement 1): p. s-7-s-15.
14. Hudon, C., *et al.*, The Patient Enablement Instrument-French version in a family practice setting: a reliability study. *BMC family practice*, 2011. 12(1): p. 71.
15. Glasgow, R., *et al.*, Development and Validation of the Patient Assessment of Chronic Illness Care (PACIC). *Med Care*, 2005. 43: p. 436-44.
16. Glasgow, R., *et al.*, Use of the Patient Assessment of Chronic Illness Care (PACIC) with diabetes patients. 2005. 28(11): p. 2655-61.
17. Al-Daghri, N.M., *et al.*, Diabetes mellitus type 2 and other chronic non-communicable diseases in the central region, Saudi Arabia (Riyadh cohort 2): a decade of an epidemic. *BMC medicine*, 2011. 9(1): p. 76.
18. Warsy, A. and M. El Hazmi, Diabetes mellitus, hypertension and obesity-common multifactorial disorders in Saudis. 1999.
19. Al-Nozha, M.M., *et al.*, Obesity in Saudi Arabia. *Saudi medical journal*, 2005. 26(5): p. 824-829.
20. McCormack, L.A., *et al.*, Development and Validation of an Instrument to Measure Resources and Support for Chronic Illness Self-management A Model Using Diabetes. *The Diabetes Educator*, 2008. 34(4): p. 707-718.
21. Pollard, J., Comparing Experience of Diabetes Care with Chronic Illness Care in the Primary Care Clinic Using the Patient Assessment of Chronic Illness Care (PACIC). 2009: ProQuest.
22. Glasgow, R.E., *et al.*, Development and validation of the patient assessment of chronic illness care (PACIC). *Medical care*, 2005. 43(5): p. 436-444.
23. Wensing, M., *et al.*, The Patients Assessment Chronic Illness Care (PACIC) questionnaire in The Netherlands: a validation study in rural general practice. *BMC health services research*, 2008. 8(1): p. 182.
24. Van Ryn, M. and J. Burke, The effect of patient race and socio-economic status on physicians' perceptions of patients. *Social science & medicine*, 2000. 50(6): p. 813-828.
