

High Levels of Self-efficacy in Patients with Type 2 Diabetes Attending a Tertiary Level Clinic

ABSTRACT: *Self-management is a vital element in the care of type 2 diabetes patients. In turn, self-efficacy plays a major role in patients' self-management. Self-efficacy is the patient's personal judgement of his/her confidence in performing aspects of diabetes self-management. This study investigated the level of self-efficacy of patients attending the Pretoria Academic Hospital Diabetes Clinic, in the light of high levels of re-admission due to complications, suggesting low self-efficacy levels.*

Eighty type 2 diabetes patients, mean age of 59 years, completed the published IDEALL baseline questionnaire, to establish a self-efficacy score. Relationships between self-efficacy and demographic factors were investigated using the chi-square test. The mean self-efficacy level of the sample population is excellent (mean = 85.44%).

*Although self-reported self-efficacy levels are excellent, in comparison to the Sarkar study (2006) in which participants only scored "fair", it is speculated that self-efficacy is not transferred to self-management behaviour in this population. Afrikaans and English speaking participants score significantly better than those from other language categories. There is a positive relationship between self-efficacy and level of education and employment status (tended towards significance with *p* values of 0.06 and 0.07 respectively). Although self-efficacy scores of clients at this tertiary level outpatient clinic are excellent, further research is necessary to quantify self-management strategies and to correlate these with self-efficacy levels.*

KEY WORDS: TYPE 2 DIABETES, SELF-EFFICACY, PHYSIOTHERAPY/ PHYSICAL THERAPY.

INTRODUCTION

Type 2 diabetes is a chronic disease that affects two percent of the South African population and is one of the major causes of premature death worldwide largely due to the complications caused by incorrect or ineffective management of the disease (Diabetes SA 2008). (Sarkar et al 2006) believe that the keystone of diabetes care is self-management and propose that self-efficacy plays a major role in a patient's self-management.

"The theory of self-efficacy proposes that patients' confidence in their ability to perform health behaviours influences which behaviours they will engage in." Sarkar et al 2006, p. 824). Certain factors can either act as barriers or facilitators to a patient's self-efficacy. These factors include demographic variables such as age, gender, educational level, personality types and other health related problems, e.g. depression and cancer (Ciechanowski and Katon 2006). The

relationship between self-management and self-efficacy is shown in Figure 1.

It has been proposed that a reciprocal relationship exists between self-management and self-efficacy (Sarkar et al 2006). Self-efficacy in this article is conceptualised as the patient's personal judgement of his/her confidence in performing activities in different domains as listed in Figure 1, e.g. making and staying with a regular exercise programme. In turn, self-efficacy may be influenced by certain demographic variables, such as a low income and increasing age, which is also associated with physical inactivity (Nelson et al 2002). Improvement in a patient's self-efficacy may lead to improvement in self-management of diabetes, where self-management refers to the daily performance of a diabetes self-care regime.

Diabetes management at Pretoria Academic Hospital is conducted within a multidisciplinary team, consisting of

doctors, physiotherapists, occupational therapists, podiatrists, dieticians, ophthalmologists and nurses. This approach ensures that patients receive education about the disease process and its management from different health care professionals' perspectives. Despite this education, it has been observed by the team that patients fail to adhere to self-management regimes and are often admitted to hospital due to complications of diabetes, e.g. renal failure and

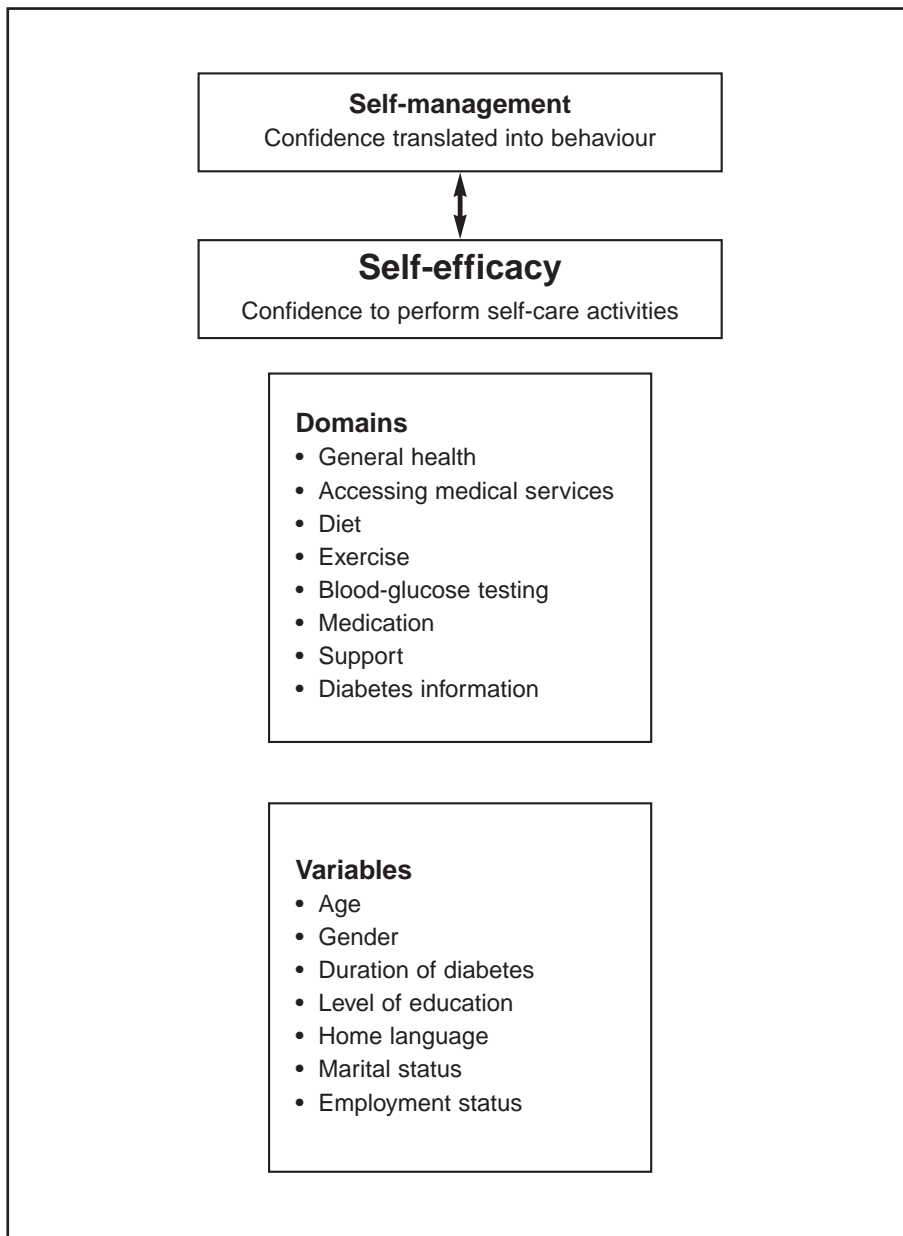
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Figure 1: Self-efficacy and factors influencing it, in relation to self-management



pertaining to mentally-ill patients. Biographic data were collected for each participant covering the variables in Figure 1. Thereafter the IDEALL baseline questionnaire was administered on a one to one basis by one of the researchers, in the language of preference of the participant (English or Afrikaans).

The *IDEALL baseline questionnaire* is a valid self-efficacy scale adapted from a reliable instrument measuring self-efficacy in post myocardial infarction patients (Coyne and Smith 1994; Skaaf et al 2003). The scale measures diabetes-specific domains such as confidence in self-monitoring blood glucose, as well as general health domains such as confidence in the ability to get medical attention and to take care of one's health. The questionnaire consists of eight questions with a 4-point Likert-type response from "1=not at all" to "4=very sure". For each question patients rate their confidence in their ability to perform a recommended self-care routine. The responses from the *IDEALL baseline survey questionnaire* were summed to obtain an overall self-efficacy score. The total scores are categorised as follows: 8-13 = poor, 14-19 = fair, 20-25 = good and 26-32 = excellent, with eight being the lowest possible score and 32 the highest. The score indicates the self-reported self-efficacy of the participant, with a higher score indicating better self-efficacy.

Permission to conduct the study was obtained from the superintendent of the Pretoria Academic Hospital, the chief coordinator of the Diabetes Clinic at Pretoria Academic Hospital and the Student Ethics Committee of the Faculty of Health Sciences (S21/2007), University of Pretoria.

The patients read an information leaflet about the study, explaining the process and ethical considerations such as confidentiality. Voluntary completion of the questionnaire implied informed consent for participation in the study. Patient anonymity was ensured throughout the study.

Due to the qualitative nature of variables, categorical analysis was used to examine the relationships between the overall self-efficacy score and the demographic data. The chi-square test was

gangrene. It was speculated that poor levels of self-efficacy might be a possible reason for this. The current importance of self-efficacy in the management of chronic diseases and from observations at the clinic deemed it necessary to conduct this study with the aim of determining the level of self-efficacy and its influencing factors.

METHOD

A cross-sectional descriptive study was conducted using a survey. The study population consisted of patients attending the diabetes clinic at the Pretoria Academic Hospital, a public tertiary care institution.

Due to a limited number of patients, consecutive sampling was done. All the patients who attended the clinic when the researchers were present, and who met the inclusion criteria, were included in the study sample. The inclusion criteria were: (i) a confirmed diagnosis by the diabetes clinic physician of type 2 diabetes according to the World Health Organization (WHO) criteria (WHO 2006), and (ii) patients between the ages of 25 and 80 years. (Statistics from the Diabetes Clinic database show that the majority of patients fall within this age group.) Patients previously diagnosed with a psychiatric disorder were excluded due to ethical guidelines

Table 1: Summary of demographic data (n=80)

Variable	Frequency (%)
Gender	
Male	39 (49.00)
Female	41 (51.00)
Duration of diabetes (in years)	
1-4	13 (16.25)
5-9	15 (18.75)
10-20	32 (40.00)
>21	20 (25.00)
Level of education	
None	6 (7.50)
Grade 1- 3	2 (2.50)
Grade 4-7	7 (8.75)
Grade 8-9	11 (13.75)
Grade 10-12	41 (51.25)
Post matric	3 (3.75)
College or University	10 (12.50)
Home language	
Zulu	4 (5.00)
Sotho	1 (1.25)
Xhosa	0 (0.00)
Tsonga	3 (3.75)
Pedi	4 (5.00)
Tswana	4 (5.00)
Venda / Ndebele/ Swazi	4 (5.00%)
Afrikaans	46 (57.50%)
English	13 (16.25%)
Other (Portuguese)	1 (1.25%)
Marital status	
Single	10 (12.50%)
Married or living together	49 (61.25%)
Widowed	10 (12.50%)
Separated or divorced	8 (13.75%)
Employment Status	
Unemployed	16 (20.00%)
Retired	35 (43.75%)
Office Worker	3 (3.75%)
Homemaker	6 (7.50%)
Dressmaking	0 (0.00%)
Non-office worker	1 (1.25%)
Other	19 (23.75%)

Table 2: Distribution of self-efficacy scores (n = 80)

Self-efficacy score category	Frequency	Percentage
Poor	1	1.25
Fair	2	2.50
Good	19	23.75
Excellent	58	72.50
Total	80	100.00

used with 0.05 as the level of significance. Further categorising of the data into fewer groups revealed no changes in the level of significance for the different relationships.

When the data were investigated with other statistical tests, such as Kruskal-Wallis, no further significant relationships

were found. The scale reliability coefficient of the *IDEALL baseline questionnaire* (8 item scale) was 0.70 while the coefficient of the demographic questions with the self-efficacy questions (15 item scale) was 0.67 in this study. Data were analysed using the STATA 8.0 statistical analysis programme.

RESULTS

Table 1 gives a profile of the sample (n=80). The mean and mode age was 59 years (SD±10.2), with a range of 29 to 76 years. Table 2 shows that the overall self-efficacy was excellent among the patients attending the clinic with a mean self-efficacy score of 27.34 (SD±3.6) out of 32, i.e. 85.44%. The overall scores ranged from 13 to 32. The probability of someone having a poor or fair score (between 8 and 19) was 1:26.

The scores for the self-efficacy questions on health, diet and exercise were relatively poor in comparison with the other questions. (Refer to Tables 3 and 4.) These are areas in which health care workers interact with patients and so would require further emphasis.

Generally without categorising the patients into language groups (Group 1 consisting of Afrikaans and English and Group 2 consisting of all the other language groups) there is no dependence (although nearly significant) when considering the relationship between the language of the patient and the overall self-efficacy score. However, when the grouping was done, it was found to be a significant relationship (0.001). (See Table 4.)

Apart from the home language of the patient, there was no other evidence to show that the overall self-efficacy score was dependent on the demographics of the patient. (See Table 4.) However, participants with higher levels of education tended to have higher levels of self-efficacy and employment status demonstrated similar results (tended towards significance with p values of 0.06 and 0.07 respectively).

DISCUSSION

No previous research on self-efficacy in patients with diabetes that has been conducted in South Africa could be found and therefore the results from this study have been compared with results from studies conducted elsewhere.

The self-efficacy scores are unexpectedly high in the sample, with the mean score in the "excellent" category. The sample in the study done by Sarkar et al (2006) have overall mean self-efficacy scores in the "fair" category. When a percentage for the mean self-efficacy was calculated for the sample, it

Table 3: Distribution of self-efficacy score per IDEALL question by Likert category (n= 80)

Dimension	Not at all sure	Just a little sure	Fairly sure	Very sure
Frequency (percentage)				
Take care of health	6 (7.50%)	10 (12.50%)	26 (32.50%)	38 (47.50%)
Get medical attention when needed	2 (2.50%)	6 (7.50%)	20 (25.00%)	52 (65.00%)
Make and stay with changes in diet	5 (6.25%)	15 (18.75%)	29 (36.25%)	31 (38.75%)
Make and stay with a regular exercise plan	14 (17.50%)	16 (20.00%)	22 (27.50%)	28 (35.00%)
Test blood sugar regularly	4 (5.00%)	0 (0.00%)	10 (12.50%)	66 (82.50%)
Take all diabetes medicines correctly	2 (2.50%)	1 (1.25%)	9 (11.25%)	68 (85.00%)
Get people around to help with diabetes when needed	2 (2.50%)	6 (7.50%)	16 (20.00%)	56 (70.00%)

Table 4: Correlation between the scores for the self-efficacy categories and demographic variables using the chi-square test

Variable	p = value
Gender	0.78
Duration of diabetes	0.29
Levels of education	0.06*
Home language	0.0001**
Marital status	0.87
Employment status	0.07*

** Significant at p < 0.05

* Tend towards significance

was found to be 85.44% as compared to 74.00% in the study by Sarkar et al (2006). With a high self-efficacy score, patients should have confidence in performing tasks, but the high number of patients being re-admitted to the Pretoria Academic Hospital with diabetes related complications, is suggestive that self-efficacy does not translate into good health behaviour and self-management of the disease irrespective of the duration of diabetes.

A barrier to achieving glycaemic control, as investigated by Apparico et al (2006), was increasing age. Contrary to their finding, this study found that self-efficacy was high regardless of age, indicating that clients at the Pretoria Academic Hospital clinic have high levels of confidence in managing the disease. However, with increasing age, even if one feels confident, i.e. have a high self-efficacy score, and even when adhering to the self-management programme, complication may develop (Foundation for Health in Aging 2007), such as blindness or heart attacks. In other words, high self-efficacy may be seen in older patients even though they present with diabetes related complications.

However, this study did not investigate the relationship between age and complications, neither is the relation between age and re-admittance of this study population known.

Results from this study suggest that self-efficacy is similar in males and females. However, Hawthorne and Tomlinson (1999) found that only 24% of diabetes participants knew how persistent hyperglycaemia should be managed, with women being worse at this than men (19% vs 31%). Women were less likely to understand why it is necessary for glucose levels to be monitored regularly, and therefore they ultimately had poorer control over their glycaemic levels.

Insufficient attention has been given in the literature to what the effect of the duration of diabetes is on the level of self-efficacy of a patient. Research from a cross sectional observational study found that the duration of clinic attendance was inversely related to glycaemic control (Apparico et al 2007), suggesting that self-management did not improve as time went by. Self-management was not investigated in this study and although confidence in performing a task, accord-

ing to social cognitive theory, increases proportionally with the duration of performing the task; this relationship was not found. It may be that health education by the team at the Pretoria Academic Hospital clinic is effective, and that patients feel confident in the domains tested in this study.

Participants with higher educational levels tended to have better self-efficacy scores than those with lower levels of education. Findings in another study on adult diabetic patients suggest that "The low educational level of the participants, illiteracy, and language proficiency may have had an influence on the understanding of the educational material about good dietary practices" (van Rooijen et al 2004 p. 353). This finding emphasises that greater care should be given when educating participants with lower levels of education.

Social support is important in the management of any chronic disease. Diabetes self-care is for example more effective when using a family-centered or church-based approach (Samuel-Hodge et al 2000). Widowed patients have less emotional support and therefore experience more difficulty with the management of diabetes (Westaway et al 2005). When comparing self-efficacy between patients who were married or living together with all other marital status groups, no significant differences were found. This finding could be explained by the increase in diabetes support systems available to patients suffering from diabetes. These systems include electronic support groups, Diabetes SA and the support provided at the health clinics and hospitals.

In terms of the relationship between employment status and diabetes self-efficacy, Barrett et al (2007) and Westaway et al (2005) found that patients from higher income groups tend to have better health and engage in more regular leisure time physical activity. In this study a similar correlation was found between employment status and high levels of self-efficacy, which tended to approach significance.

CONCLUSION

The purposes of the study, to determine the degree of self-efficacy of patients at the Pretoria Academic Diabetes Clinic and to correlate these with certain demographic variables, were achieved. The mean self-efficacy level of the sample population is excellent, with English or Afrikaans as a home language being a predictor of high self-efficiency. Higher levels of education and employment status are weakly related to self-efficiency.

RECOMMENDATIONS

Although the *IDEALL baseline questionnaire* was reported to have been validated in diabetes patients, evidence of published findings from reliability testing could not be found on further investigation. Although there is no reason to doubt its test-retest reliability, it is suggested that this be determined in the South-African context before use in future studies. It appears that self-efficacy does not necessarily translate into health behaviour and therefore further studies should investigate self-efficacy, behaviour and health outcomes simultaneously. These investigations should give a clearer understanding of which diabetes domains patients struggle most with in the South African context.

Clinical implications from the results suggest that clinicians should be aware that self-efficacy as reported by patients, does not necessarily lead to good self-management behaviours and adherence to diabetes programmes. Adherence to these programmes must be monitored in relation to patients' behaviours.

More care should be taken when educating patients with lower levels of education and employment status, as well as those who do not have Afrikaans or English as a home language.

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