



Association Of Self Efficacy And Locus Of Control In The Management And Self Care Of Type 2 Diabetic Patients

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ABSTRACT

The present research paper investigates the association of self efficacy and the locus of control in the management and self care of type 2 diabetic patients. In India, there are estimated 77 million people above the age of 18 years are suffering from diabetes (type 2) and nearly 25 million are pre-diabetics (at a higher risk of developing diabetes in near future). More than 50% of people are unaware of their diabetic status which leads to health complications if not detected and treated early (World Health Organization Report, 2024). In addition to physiological effects of diabetic on health, the psychological burden of this disease is substantial and quality of life can be markedly reduced in affected people (Bradley & Speight, 2002; & Peyrot, 2001). This research paper will try to attempt to predict and improve diabetes self care and management is become increasingly important to optimize patient glycemia control to delay or prevent long term ill consequences of diabetes. Researches in this field show that adults with diabetes have a two- to three-fold increased risk of heart attacks and strokes. Combined with reduced blood flow, neuropathy (nerve damage) in the feet increases the chance of foot ulcers, infection, and the eventual need for limb amputation. Diabetic retinopathy is an important cause of blindness and occurs as a result of long-term accumulated damage to the small blood vessels in the retina. Diabetes is among the leading causes of kidney failure. Type 2 diabetes is primarily a self managed disease as treatment relies heavily on self care and self management skills (Song, 2010). Diabetes required lifelong adherence to demanding and often complex self care regimens, as well as major lifestyle changes. Recent research studies have shown that diabetic education and adherence to self care behavior improves health outcomes. In this paper 200 participants of Chhattisgarh state have taken from private clinics and hospital that are coming for their routine checkup. Relevant information regarding diabetes and other illness associated with this disease has taken. For collecting data behavior chance self efficacy, locus of control, confidence in diabetes self care scale and measure of diabetes self care behavior scale was used. For analyzing descriptive

statistics and Multiple Regression Analysis was used. The result of the study reveals a significant role of self efficacy and locus of control in predicting diabetes self health care behavior. This finding may be crucial for health care professional, dietician and diabetes educators to determine an approach for assessing individuals with diabetes not only with initiating self care behavior, but also maintaining that behavior change.

KEYWORDS: Type 2 Diabetes Mellitus, Self efficacy, Perceived control, Diabetes self care, confidence in diabetes self care

INTRODUCTION

According to the report of International Diabetes Federation (IDF), India currently has approximately 77 million individuals aged 20–79 living with diabetes, a number projected to rise to 134.2 million by 2045 (IDF, 2019). Diabetes mellitus is a fatal disease that can affect all sphere of life. Much of the care plan for this disease is interwoven with the daily life behaviors, thus diabetic persons are the most responsible for control and management of the disease (Funnell MM et al., 2009). Self-efficacy is one of the contributing factors which can have a major role in the success of diabetic control and self health care. The researchers believe that self-efficacy is an appropriate framework to understand and predict the behavior and commitments of patients to self-care in the treatment of diabetes (Sarkar U et al., 2006; King DK et al., 2010).

The evidence of self efficacy theory as an explanatory framework for health behaviors and outcome is extensive. It includes application in anxiety disorder, depression, smoking avoidance, weight loss, pain management, cardiac rehabilitation and adherence to both simple and complex regimens (Bandura 2001; Schwarzer & Fuchs, 1995). Increased efficacy belief can predict future positive health related behavior change (Glasgow et al., 1989; Kavanagh, Gooley, & Wilson 1993). Although, not consistently for all self care behaviors. The concept of self efficacy has received considerable support from empirical literature demonstrating its significant effect on health functioning among individual diagnosed with diabetes.

The concept of Self-Efficacy was first given by the psychologist, Albert Bandura. According to Bandura, self-efficacy is a belief of individuals in their abilities to carry out a successful practice and is a theory in itself, as well as a structure of the social cognitive theory. The self-efficacy theory argues that people will take action when they believe they are able to do it and will avoid and action when they believe they may fail. Self-efficacy is the prerequisite of a behavior and should be considered as an independent part of basic skills (William BW et al., 2014). In total, Bandura believes that self-efficacy is the main structure in predicting individuals' behavior change and usually the ones that show a high level of behavioral changes have higher efficacy (Bandura A., 1977). Self-Efficacy has prominent role in diabetes self – management and predicts its outcome. In their study Didarloo et al. reported in their study that self-efficacy explained 11.4% of variance regarding to diabetes self care and 31.3% variance of diabetes self care behavioral intention (Didarloo A, et al., 2012). Diabetes management self-efficacy (DMSE) which developed by Kara and colleagues measures the diabetic patients confidence regarding to diet, exercise and medical treatment (Kara M et al., 2006). The study

on 8796 subjects from five countries revealed that General Self-Efficacy (GSE) has notable association with specific self-efficacy; optimism, self-regulation, and self-esteem; whereas the converse associations with depression and anxiety (Luszczynska et al., 2005)

The focus of diabetes research has been on educational interventions to improve knowledge of diabetes, self care behavior and improvement in metabolic control (Welch, Dunn & Beeney, 1994). The main reason for the emphasis on the client's behavior and knowledge in earlier studies may have been related to an assumption that the right behavior will result in a positive health outcome. In facts, there is evidence that this view still prevails among medical practitioners (Hunt et al., 1998), nurses (Michael & Sabo, 1996) and the research literature (Brown, 1999; Fain, 1999; Glasglow & Anderson, 1999). To an extent the clinical focus can be understood, in that non-compliance with a diabetic self-care regimen has serious medical consequences, including death. Diabetes educations programmed are important (Glasglow & Anderson, 1999), but an increase in knowledge to predict behavior change or health status has rarely been supported in the short term and its effect after 3 months is untested (Fain, 1999). The complexity of diabetes self-management is such that some individuals will need to attend several courses with years of guidance to learn the principles of diabetes knowledge (Brown, 1999).

Research in this area found that self-efficacy is associated with diabetes self-care in the areas of diet, exercise and glucose monitoring (Lewis & Garg, 2002). Few research demonstrated that relationship between self efficacy and medication self care (Hurley & Shea, 1992). Overall, however, these studies reported that patient with higher level of self efficacy have better self care practices. Some studies show the significant relationship exist between self efficacy and glycosylated haemoglobin (HbA1c) (Griva et al., 2000; Johnston-Brooks et al., 2002). But others have not replicated these findings. (Rose, Fliege et al., 2002).

Improvement in person control beliefs as measured with specific self efficacy scales has been shown to promote positive behavioral outcomes within elderly chronic illness populations (Clark & Dodge, 1999). In a one year prospective study of 570 older women with heart disease, in which 22% of the sample reported heart failure as a primarily diagnosis.(Clark & Dodge, 1999) demonstrated that the higher level of perceived self-efficacy at baseline was predictive of following a diet and maintaining an exercise program. These same women demonstrated significant decrease in their body weight and walked greater distance at both 4 months and one year valuations (Clark et al., 2000). A unique prospective study was reported that compare the general self efficacy beliefs of Individual prior to the oneset of heart failure with their functional decline 8 week later (Kempen, Sanderman, Miedema, Meyboom-de Jng, & Ormel, 2000).

In conclusion Self efficacy theory has demonstrated that it has the potential to improve health outcomes and facilitates behavior change in chronic illness, both concurrently and in the future. Self efficacy theory suggests that people with strong efficacy beliefs are more likely to persist with difficult tasks, even after experiencing an initial setback or failure. This is important as chronic illness regimens to manage the symptoms of diabetes as well as prevent further complications, are psychologically and behaviorally

demanding (White et al., 1992). Whereas self management health care programs facilitates increased confidence in specific self care behavior are more likely to contribute to the adaptation process and health outcome.

OBJECTIVES OF THE STUDY

1. To study the role of Self efficacy and perceived control in the management and care of type 2 diabetic persons.

RESEARCH QUESTION

The following research questions related to the relationship of self efficacy and perceived control to diabetes self care behavior of individual with type 2 diabetes are addressed in the present research.

1. What are the aspects/components of self efficacy and perceived control have to predict in diabetes self care behavior of people with type 2 diabetes?

RESEARCH HYPOTHESIS

The research hypothesis is rely on the theoretical structure of Self regulation theory by Leventhal et al., (1984) and social cognitive theory given by Bandura (1977,1986). The hypothesis examines the relationship between perceived control and self efficacy as predictors of self health care activities of type 2 diabetic individuals. Following hypothesis will be made in the present study.

1. Self efficacy and perceived control aspects/components will significantly predict diabetes self care behavior of people with type 2 diabetes.

METHODS

Participants: Participants for the present study were 200 male and females with type 2 diabetes randomly selected from private clinics and hospital of Raigarh, Raipur and Bhilai city of Chhattisgarh. The age of participant is from 20 to 70 year. The consent was taken before the filling the questionnaire. Patients were included in the study if they had diabetes mellitus according to the 2022 American Diabetes association criteria.

1. Fasting plasma glucose greater than = to 126mg/dl(7.0mmol/L). Fasting is defines as no caloric intake for at least 8 hours.
2. 2-h PG \geq 200 mg/dL (11.1 mmol/L) during OGTT. The test should be performed as described by WHO, using a glucose load containing.
3. In a patient with classic symptoms of hyperglycemia or hyperglycemic crisis, a random plasma glucose \geq 200 mg/dL (11.1 mmol/L)
4. Patient were exclude from the study if they diagnosed by type 1 diabetes, psychiatric illness, unwillingness to participate in the study and having cardiovascular disease.

5. Any factors likely to preclude adherence to the self care such as dementia, substance abuse. Severity of diabetes of the subjects was determined by the consulting physician by given ratings.

Measures: The following measures are used in the study

1. **Behavior Chance efficacy:** This scale is developed by Sniehotta, Scholz, & Schwarzer (2006) for assessing specific health behavior self efficacy of patients in the different phase of health behavior. These measures have following five areas: Nutritional self efficacy, motivational self efficacy, preactional self efficacy, coping self efficacy and recovery self efficacy.
2. **Multidimensional Health locus of control:** This scale is developed by Ken Wallston et al., in 1978. It is the most frequently used measures to assess control of reinforcement belief of individuals with chronic illness. The MHLC subscale has internal consistency coefficients ranging 0.60-0.75 and test retest reliability coefficients ranging from 0.60 to 0.70.
3. **Measure of diabetics self care:** This scale is developed by the Rand Corporation based on a large scale project in the United States (Toobert et al., 2000). It is 11 item Likert scale, self report questionnaire of diabetic regimen requirement over the course of the past 7 days. It assesses the following aspects of the diabetes specific regimen: general diet, specific diet, exercise, and glucose testing and diabetes medication taking.
4. **Confidence of diabetics self care scale:** This scale is developed to assess diabetes specific self efficacy in people with type 1 diabetes in a USA and Dutch population. It is 21 item self report questionnaires. (Weingner, Ven, Yi & Snock 2000)

PROCEDURE:

Persons with type 2 diabetes were identified through private clinic and hospital. Participants were invited to participate in the study when they were visiting diabetes clinic. They were informed the purpose and objective of the study and requested to participate in the study. The informed consent and contact number were obtained from selected patients directly. Those are willing have given the questionnaire and demographic sheets and ask them if you face any difficulty in understanding you can ask to researcher and after filling the questionnaire you can return back to the researcher . We assure them that whatever information was given by them was kept confidential.

Analysis of Data:

This research was a cross sectional research design for a period of 2022 to 2024. For analyzing a data descriptive statistic were used to characterize the demographic variable for this sample of individuals with type 2 diabetes. These variable included age, gender, religion, and residence, duration of illness and severity of diabetes. Multiple and hierarchical regression analysis were used to predict diabetes self care behavior of the participant from different predictors variables.

Table 1: Characteristics of the Sample

	N (200)	%
Age (yrs)		
20-50	60	30
51-70	140	70
Gender		
Male	93	46.5
Female	107	53.5
Marital Status		
Married	154	77
Single	46	23
Religion		
Hindu	97	48.5
Muslim	25	12.5
Sikh	33	16.5
Christian	45	22.5
Family type		
Nuclear	170	85
Joint	30	15
Area of residence		
Urban	110	55
Semi Urban	47	23.5
Rural	43	21.5
Duration of Illness		
1-3 yrs	97	48.5
4-6yrs	55	27.5
>7 yrs	48	24
Family History of diabetes		
Yes	163	81.5
No	37	18.5
Severity of Diabetes		
Mild	97	48.5
Moderate	55	27.5
Severe	48	24

RESULTS:**Role of Self efficacy in the management and self care of type 2 diabetes**

The results of multiple regressions analysis presented in table -2 revealed different aspects of health related efficacy as significant predictors of the participants confidence in diabetes self care, $R=0.65$, $R^2=0.45$, $F(5,194)=48.06$, $p<.01$, explaining 45% variance in the criterion variable. Self efficacy emerged as stronger predictors of the participants' confidence in diabetes self-care than other variance. Self efficacy for change in nutrition habits ($b=1.23, \beta = 0.12$, $t=2.18, p<.01$), motivational self efficacy ($b=0.52, \beta = 0.15$, $t=3.11, p<.01$), preactional self efficacy ($b=0.72, \beta = 0.12$, $t=2.18, p<.01$), coping self efficacy ($b=2.15, \beta = 0.34$, $t=6.34, p<.01$)

and recovery self efficacy ($b=1.32, \beta = 0.12, t=2.79, p<.01$) were all found significantly related to scores on the measures of confidence in diabetes self care. This is because the measures of diabetes self care behavior in itself is a measure of self efficacy specific to diabetes care.

Likewise, diabetes self care behavior was significantly predicted by the scores on the measures of health related self efficacy, $R=0.81, R^2=0.70, F(5,194) = 76.75, p<.01$, which explained 70% variance in the criterion variables. In this regard, self efficacy for change in nutrition habit ($b=1.13, \beta = 0.20, t=6.02, p<.01$), motivational self efficacy ($b=0.17, \beta = 0.10, t=2.58, p<.01$), preactional self efficacy ($b=0.47, \beta = 0.22, t=6.11, p<.01$), coping self efficacy ($b=1.27, \beta = 0.45, t=11.01, p<.01$) and recovery self efficacy ($b=0.54, \beta = 0.12, t=3.44, p<.01$) were all observed as significantly associated to diabetes self-care.

Table: 2

Results of Multiple Regression analysis predicting scores on the measures of confidence in Diabetes Self-care and Diabetes self care behavior from different aspects of Self efficacy.

Predictors	Confidence in Diabetes			Confidence in Diabetes Self-care		
	Self-care					
	b	β	t	b	β	t
Change of nutrition habits	1.23	0.12	2.18**	1.13	0.20	6.02**
Motivational Self efficacy	0.52	0.15	3.11**	0.17	0.10	2.58**
Preactional Self efficacy	0.72	0.12	2.18**	0.47	0.22	6.11**
Coping Self efficacy	2.15	0.34	6.34**	1.27	0.45	11.01**
Recovery Self efficacy	1.32	0.12	2.79**	0.54	0.12	3.44**
	R= 0.65			R= 0.81		
	$R^2=0.45$			$R^2= 0.70$		
	$F(5,194) = 48.06^{**}$			$F(5,194) = 76.75^{**}$		

Role of Perceived Control in the management and self care of type 2 diabetes

Results of Multiple regression analysis presented in table -3 revealed a perceived control as a significant predictors of the participants confidence in diabetes self care, $R=0.61, R^2=0.37, F(5,194) =35.16, p<.01$, explaining 37% variance in the criterion variable. The scores on the measures of confidence in diabetes self care were found significantly related to Internal ($b=0.88, \beta = 0.13, t=2.96, p<.01$), chance ($b=2.31, \beta = 0.39, t=7.09, p<.01$), powerful others ($b=2.26, \beta = 0.14, t=3.23, p<.01$), doctors ($b=1.20, \beta = 0.21, t=4.11, p<.01$) and other people ($b=1.31, \beta = 0.10, t=2.27, p<.01$) were all found significantly related to scores on the measures of confidence in diabetes self care. This is because the measures of diabetes self care behavior in itself is a measure of aspects of locus of control in specific to diabetes care.

Similarly, scores on the measures of multidimensional health locus of control were found significant predictors of diabetes self care behavior of participants. $R=0.79, R^2=0.63, F(5,194) = 104.32, p<.01$, which explained 63% variance in the criterion variables. In this regard, scores on the measure of diabetes self care

behavior of the participants were found significantly related to internal ($b=0.49$, $\beta = 0.17$, $t=4.86$, $p<.01$), chance ($b=1.15$, $\beta = 0.41$, $t=11.39$, $p<.01$), powerful others ($b=0.87$, $\beta = 0.11$, $t=3.77$, $p<.01$), doctors ($b=1.10$, $\beta = 0.40$, $t=10.91$, $p<.01$) and other people ($b=0.50$, $\beta = 0.08$, $t=2.52$, $p<.01$) dimensions of health locus of control were observed as significantly associated to diabetes self-care.

Table: 3

Results of Multiple Regression analysis predicting scores on the measures of confidence in Diabetes Self-care and Diabetes self care behavior from different dimensions of health locus of control.

Predictors	Confidence in Diabetes Self-care			Confidence in Diabetes Self-care		
	b	β	t	b	β	t
Internal	0.88	0.13	2.96**	0.49	0.17	4.86**
Chance	2.31	0.39	7.09**	1.15	0.41	11.39**
Powerful others	2.26	0.14	3.23**	0.87	0.11	3.77**
Doctors	1.20	0.21	4.11**	1.10	0.40	10.91**
Other People	1.31	0.10	2.27**	0.50	0.08	2.52**
	R= 0.61			R= 0.79		
	R ² =0.37			R ² =0.63		
	F(5,194) = 35.16**			F(5,194) = 104.32**		

The results of multiple regression analysis show that self efficacy and perceived control have independently accounted for large amount of variance in the scores of diabetes self care behavior. These 2 independent variables have also been found to explain significantly large amount of variance in the scores on the measure of confidence in diabetes self care. Thus the hypothesis that self efficacy and health locus of control aspects/dimension significantly proved in the management and self health care of type 2 diabetic patients.

DISCUSSION:

Diabetes-specific self care behavior and adherence to diabetes regimen are crucial for management and controlling diabetes and preventing its serious chronic complications. Diabetes education and knowledge has been shown to be good predictors of adherence to the diabetes regimen (Hurley & Shea, 1992). Individuals having type 2 diabetes do not incorporate the lifestyle change needed to carry out self care behavior over time. This is evident in the poor adherence rate and self-care behavior reported for individuals with diabetes (Evans et al., 1999; Kamiya et al., 1995). Therefore, the main objectives of the current study were to examine the relationships of socio-cognitive variables such as self efficacy and perceived control to diabetes self care

and management behaviors' of people with type 2 diabetes. Moreover, the study explored the individual and combined roles of these constructs in explaining diabetes related self care behavior.

Self efficacy and perceived control were expected to all positively relate to self care behavior of people with type 2 diabetes. Findings of the present study with few exceptions clearly delineated that these two variables were significantly and positively related to diabetes self care behavior. Multivariate analysis of variance show that individual with high self efficacy and high perceived control reported higher level of engagements in their diabetes self care behavior.

Results of Multiple Regression analysis revealed significant role of self efficacy in predicting diabetes self care behavior. This is consistent with previous finding research that has repeatedly found self efficacy to be one of the strongest psychological variables related to health behavior (Aljaseem, et al., 2001; Bernal, et al., 2000; Hurley & Shea, 1992, William & Bond, 2002). The results of the present study indicate that various aspects of self efficacy account a large amount of variance in diabetes self care behavior in type 2 diabetes mellitus patients. Diabetes related self efficacy has been found to be good predictors of adherence to the diabetes regimen in past research (kavanagh, Gooley & Wilson, 1993). Greater self efficacy is related to adhering to exercise programs (Brawley & Rodgers, 1993, Haukkala, Utela, Vartiainen, Mcalister., Knekt, 2000), safer sex behavior (Dilorio, Dudley, Soet, Watkin & Maibach, 2000; Fishbein et al., 2001). Further, previous researchers have also found that high rate of self efficacy enhances adherence to diabetes control regimens (Glasglow et al., 1989). Recent research also indicate that an increase in diabetes self efficacy over time was related to an improvement in glycemia control and interventions that enhanced self efficacy may also results in improved glycemia control. The present results collaborate earlier researchers finding regarding the important role self efficacy plays in successful health behavior change. This finding may be crucial for health care professionals and diabetes educators to determine an approach for assessing individuals with diabetes not only with initiating self care behavior, but also maintain the behavioral change.

Some Researches in this area have inconsistently supported the role of internal locus of control in health behaviors and have more consistently demonstrated the link between self efficacy and health behaviors (Stuart, Borland, & McMurray, 1994). In the present study, however self care behavior are significantly related to the dimension of locus of control and its showed that perceived control as significant predictors of diabetes self care behavior. Researches in this field have clearly demonstrated that a greater perceived control is associated with better outcome and the use of self management and health promoting behaviors. (Drossaert et al., 2003, Skinner & Hampson, 2001; Searle et al., 2007)

Present finding of the study establish the presence of relationship between perceived control and patients self care. Rotters (1966) social learning theory shows locus of control as a generalized expectancy that are applicable in situations in which an individual had enough experience in a particular behavior or task to develop specific expectancies. Locus of control is therefore applicable in more novel and general situations. Results of the study shows the different dimensions of locus of control as significantly associated with diabetes self health care behavior. Previous studies in this field demonstrated that perceived control is associated with

better adjustment to diabetes (Jacobson et al., 1990), better adherence to self care regimens (Jacobson et al., 1986) and better metabolic control. (Surgenor, Horn, Hudson, Lunt & Tennent, 2000). These findings have clearly demonstrated that perceived control play vital role in diabetes self care behavior and positive health outcomes. Present study was based on predominantly on theory of Rotter's Locus of control theory (1966), Bandura's Social Learning theory (1986) and revised Social learning theory of Wallston (1992) and not on empirical evidences. Present finding provides strong support to theoretically based theory of locus of control, self efficacy and diabetes self care behavior.

CONCLUSION:

Diabetes mellitus is one of the largest epidemics in human history and major threats to human health in the 21st century (Zimmet et al., 2001, 2003). It affects not only the adult but now a day's children's are also affected by diabetes in early age. In India, there are estimated 77 million people above the age of 18 years are suffering from diabetes (type 2) and nearly 25 million are pre-diabetics (at a higher risk of developing diabetes in near future). More than 50% of people are unaware of their diabetic status which leads to health complications if not detected and treated early (World Health Organization Report, 2024). Psychological researches in this field try to attempt to predict and improve diabetes self care and management is becoming increasingly important to optimize patient glycemia control to delay or prevent long term implication. The motive of this research is to investigate how the dimension of self efficacy and perceived control help in management and self care health of type 2 diabetes patients.

Type 2 diabetes is primarily a self manage disease as treatment depends on heavily on self care and self managements skills. Diabetes required lifelong adherence to demanding and often complex self care regimens as well as major lifestyle changes. Type 2 diabetes patients require actively participate in their own health care behavior like daily exercise, balance diet on regular interval of time, meditation, yoga, physical activity, blood glucose monitoring, psychosocial coping, risk factor reductions and problem solving self care skills.

Instead of all the vital role of health care providers, the responsibility for diabetes management largely rest on the patients. Researches demonstrated that enhancement of active participation and self care to be the key elements responsible for the management and improvement of health care of diabetic patients. Thus, a major goal of behavioral and psychological research on diabetes is to search effective ways to identify and cope with situations that challenge their diabetes health care and management of it. A greater understanding of these issues is likely more important for health care professionals to offer their services and individual care to support and sustain people involvement in self health care.

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