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Diabetes Management: Assessing Health Locus of Control

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Abstract – **The present investigation was done to assess how health locus of control effects management of type 2 diabetes. The sample of the present study comprised of 200 type 2 diabetic patients. They were selected from the Out Patient Department (OPD) of Jawaharlal Nehru Medical College, Aligarh Muslim University. The sample consisted of 84 male type 2 diabetic patients, and 116 female type 2 diabetic patients. The sample was further divided into controlled and uncontrolled diabetic patients on the basis of HbA1C levels. 18 item Multidimensional scale developed by K.A Wallston et al. (1978) was used to measure health locus of control. Findings of the study suggested that male diabetic patients scored higher on internal health locus of control, whereas female diabetic patients scored higher on chance health locus of control. Educated diabetic patients scored higher than uneducated diabetic patients on internal health locus of control. Further it was found that participants high on internal health locus of control better manage their diabetes and thus, suffer from less complications related to type 2 diabetes. It was concluded from the present study that health locus of control plays an important role in the effective management of type 2 diabetes.**

Keywords: **Diabetes, Health Locus of Control, Internal Health Locus of Control, Chance Health locus of Control, Powerful Others.**

I. Introduction

World Health Organization defined chronic diseases as diseases of long duration and generally slow progression. 60 % of all deaths in the world are due to chronic diseases (World Health Organization) such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes and 80 percent of chronic diseases deaths occur in low and middle income countries. The rapidly increasing burden of chronic diseases is a key determinant of global public health. In 2001, chronic diseases contributed to approximately 60% of the 56.5 million total reported deaths in the world and approximately 46% of the global burden of disease (World Health Organization). Diabetes mellitus is a chronic disease which has a great impact on health status (Health related quality of life) of the patients; it is an important cause of death, illness and disability across the world. Diabetes enhances the risk of developing blindness, lower limbs amputations, end-stage renal disease, coronary artery disease/cardio vascular disease, cerebrovascular disease or peripheral vascular disease thus in other words diabetes mellitus affects the health status (health related quality of life) of diabetic patients. Diabetes is a condition where the body is unable to regulate blood glucose levels, resulting in too much glucose in the blood, the body cells do not absorb the glucose, the glucose accumulate in the blood, leading to various diabetes related complications.

According to Wild *et al*. (2004) "The number of people with diabetes is increasing due to population growth, aging, and urbanization and increasing prevalence of obesity and physical inactivity." Wild *et al*. (2004) elaborated that the number of people with diabetes in the world is expected to approximately double between 2000 and 2030, the regions greatly affected by diabetes will be Middle Eastern Crescent, Sub- Saharan Africa, and India. They pointed out that the greatest absolute increase in the number of people suffering from diabetes will be in India. Wild et al. (2004) further noticed that the majority of people with diabetes in developing countries are greater than 64 years of age. By 2030, it is estimated that the number of people with diabetes > 64 years of age will be ≥ 82 million in developing countries and ≥ 48 million in developed countries.

Table I Top 10 Countries for Estimated Number of Adults With Diabetes, 2010 and 2030

Country/Territory Rank	2010(millions)	Country/Territory	2030 (millions)
1 India	50.8	India	87.0
2 China	43.2	China	62.6
3 U.S	26.8	U.S	36.0
4Russian Federation	9.6	Pakistan	13.8
5 Brazil	7.6	Brazil	12.7
6 Germany	7.5	Indonesia	12.0
7 Pakistan	7.1	Mexico	11.9.
8 Japan	7.1	Bangladesh	10.4
9 Indonesia	7.0	Russian Federation	10.3
10 Mexico	6.8	Egypt	8.6

(*IDF Diabetes Atlas, 4th edition.* International Diabetes Federation2009.)

The concept of locus of control was developed from Rotter's social learning theory (Rotter, 1966) and has been extended by Wallston et al. (1978)to include the multidimensional aspect of health-related behaviour (Wallston,Wallston & de Vellis 1978).Locus of control was found to be a dominating factor in determining person's behavior. The locus of control construct is a vital part of social learning theory (Rotter, 1954; Rotter, Chance & Phares, 1972). According to Folkman (1984) locus of control determines how a person will react to stressors like physical, emotional and social and it can serve as a way of coping for an individual in a crisis. In terms of social learning theory locus of control is a generalized expectancy pertaining to the connection between personal characteristics and or actions and experience outcome (Lefcourt 1991). Rotter (1954) developed the locus of control construct, containing an Internal-External rating scale. Locus of control refers to the extent to which individuals believes that they can control events that effect them. Individuals with a higher internal locus of control believe that events result largely from their own behaviour and action. Those with a high external locus of control believe that powerful others, fate, or chance mainly determine events. Those with a high internal locus of control have better control of their behaviour, than those with a high external locus of control; they are more likely to assume that their efforts will be successful.

Researchers have defined health locus of control as the beliefs an individual has over the control of their health (Wallston, Greer, Pruyn, &Van Den Borne, 1990; Wallston, Stein & Smith, 1994. Health locus of control is the extent of an individual's perceived control over their health. Health Locus of control construct is viewed as multidimensional as opposed to locus of control (Wallston, 1991; Wallston, et al., 1994; Wallston et al., 1978. Both of the constructs contains internal and external dimensions but health locus of control is composed of internal, powerful others and chance factors. Studies over the past several years proved that an internal sense of personal control is related in positive ways to psychological and physical adaptation to illness as well as engagement in useful health behaviors (Affleck, Tennen, Pfeiffer, & Fifield, 1987; Shapiro, Schwarz, & Astin, 1996)

II. Objectives

1. To examine whether diabetic males differ from diabetic females with respect to three dimensions of health locus of control;

2. To examine whether educated diabetic patients differ from uneducated diabetic patients with respect to the three dimensions of health locus of control;

3. To examine whether insulin dependent diabetic patients differ from non-insulin dependent diabetic patients with respect to the three dimensions of health locus of control;
4. To examine whether diabetic patients with complications differ from diabetic patients without complications with respect to the three dimensions of health locus of control.

III. Methodology

The present study is designed to determine the effect of health locus of control on health status. The sample of the present study comprised of 200 type 2 diabetic patients. They were selected from the Out Patient Department (OPD) of Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, through convenient sampling method. The sample consisted of 84 male type 2 diabetic patients, and 116 female type 2 diabetic patients. The mean age of the patients was 52.85 years.

Table II Sample Characteristics

Age	Mean = 52.63 years	S.D = 9.45
Duration Of Diabetes	Mean = 6.79 years	S.D = 6.10
HbA1C	Mean = 7.47	S.D = 1.52
Gender	Males=84 (42%)	Females= 116 (58%)
Education level	Literate = 107 (53.5%)	Illiterate =97 (48.5%)
Complications of Diabetes	With diabetes complications= 73 (36.5%)	Without complications of diabetes =127 (63.5%)
Mode of Treatment	Insulin dependent =50 (25%)	Tablet takers =150 (75%)
Controlled and Uncontrolled Diabetes	Controlled Diabetics =88 (44%)	Uncontrolled Diabetics = 112 (56%)

N=200

Inclusion Criteria

- Diagnosis of type 2 diabetes with treatment initiated at least 1 year prior to the study.
- Patients aged more than 30 years
- Patients who were co-operative for the interview

Exclusion Criteria

- Patients less than 30 years of age
- Having any co-morbidities (it refers to any chronic disease not related to diabetes but patients having complications were not excluded)
- Pregnancy at the time of the survey
- Patients who were not co-operative for the interview

Tools

Demographic information about name, age, gender, education, marital status, HbA1C, mode of treatment, and diabetes complications were also taken along with the questionnaires.

Health Locus of Control Scale

The Multidimensional (MHLC) scale developed by K.A Wallston et al. (1978) consists of 18 items. The scale is composed of three-6 items subscales reflecting the degree to which individuals attribute health outcomes to internal control(6 items), and chance(6 items). Each subscale measures an individual's tendency to believe that health outcomes are related mainly to one's own behaviour (IHLC), Powerful others such as medical professionals or family (PHLC), or chance (CHLC). PHLC and/or CHLC are classified as "external" belief, and IHLC as "internal "belief (Wallston and Wallston 1978). Responses on items are taken on a 5-point rating scale ranging from strongly agree to (5) to strongly disagree (1). i.e. they have Cronbach alphas in the .60-.75 range and test-retest stability coefficients ranging from .60-.70).

All the items of MHLC subscales were arranged in a random order. Higher subscale scores indicated greater locus of control along that dimension. The internal consistency of the scale ranged between (0.67 to 0.77).

Procedure

Permission to conduct the research was taken from the concerned Hospital authority and participants. The data were collected by the researcher. Personal data sheet (PDS) and questionnaires namely Health Locus of Control scale, were administered on the patients. Each respondent took almost 15-20 minutes in answering all the questions. They were assured that their responses would be kept strictly confidential and would be used exclusively for research purpose.

Method of Data Analysis

Independent sample t-test was used to compare the differences of demographic variables. The analysis has been done by using Statistical Package for Social Sciences (SPSS) version 16.

IV. Results

It can be seen from table III that male and female diabetic patients differ significantly on internal health locus of control (t=3.25) and chance health locus of control (t=3.46) dimensions of health locus of control and found to be significant at .01 level of significance. Findings also revealed that male diabetic patients scored significantly high in terms of mean score on internal health locus of control than female diabetic patients. Similarly, female diabetic patients scored significantly higher on chance health locus of control dimension of health locus of control than male diabetic patients.

Table III Showing Difference Between The Mean Scores of Male and Female Diabetic Patients on Different Dimensions of Health Locus of Control. Male (N=94) Female (N=106)

Dimensions of Health Locus of Control	Males		Females		
	Mean	SD	Mean	SD	t
WI	25.35	3.32	23.68	3.83	3.25**
WC	20.53	2.43	21.73	2.47	3.46**
WP	23.92	1.91	23.91	2.26	0.03

P<0.05*, p<0.01**

Table IV Showing The Difference Between The Mean Scores Of Educated and Uneducated Diabetic Patients on Health Locus Of Control. Uneducated (N=97) Educated (N=103)

Dimensions of Health Locus of Control	Uneducated		Educated		
	Mean	SD	Mean	SD	t
WI	23.53	3.99	25.34	3.15	3.57**
WC	21.62	2.35	20.73	2.61	2.53*
WP	23.92	2.03	23.91	2.17	0.05

P<0.05*, p<0.01**

Results of table IV show that there was significant difference found between educated and uneducated diabetic patients on two dimensions of health locus of control that is, internal health locus of control (t=3.57) found to be significant at .01 level of significance and chance health locus of control (t=2.53) significant at .05 level of significance. Findings also revealed that on internal health locus of control, literate patients scored significantly higher in terms of mean score than illiterate patients. Similarly, uneducated patients scored significantly higher on chance health locus of control in terms of mean score than literate diabetic patients.

Findings of the above table V shows that there was no significant difference found between insulin and tablet taking diabetic patients on all the dimensions of health locus of control i.e. Internal health locus of Control, Chance health locus of control and Powerful others health locus of control.

Table V Showing Difference Between The Mean Scores of Insulin and Tablet Taking Diabetic Patients on Health Locus of Control. Insulin Dependent (N=50) Tablet Takers (N=150)

Dimensions of Health Locus of Control	Insulin Dependent		Tablet Takers		t
	Mean	SD	Mean	SD	
WI	23.90	3.82	24.66	3.63	1.26
WC	21.26	2.94	21.14	2.37	0.29
WP	24.42	2.13	23.75	2.07	1.95

P<0.05*, p<0.01**

Table VI Showing Difference Between The Mean Scores of Patients with Complications of Diabetes and Patients Without Complications of Diabetes on Health Locus of Control.

Dimensions of Health Locus of Control	With Complications		Without Complications		t
	Mean	SD	Mean	SD	
WI	23.76	4.36	24.87	3.19	2.05*
WC	21.28	2.61	21.10	2.47	0.49
WP	23.82	1.92	23.97	2.20	0.49

Patients With Complications Of Diabetes (N=73) Patients Without Complications of Diabetes (N=127)
P<0.05*, p<0.01**

Results of table VI showed that there was significant difference found between patients who are suffering with diabetic complications and patients who do not have diabetes complications on internal health locus of control (t=2.05) significant at .05 level of significance. Findings also revealed that patients without diabetes complications scored significantly higher in terms of mean score on internal health locus of control than those patients who are suffering with diabetic complications.

V. Discussion and Conclusion

Male diabetics scored higher on internal health locus of control than females and female diabetic patients scored higher on chance health locus of control than male diabetic patients. Morowatisharifabad et al. (2010) also found that male diabetics demonstrated more internal locus of control, whereas females displayed evidence of chance locus of control. But Aalto and Uutela (1997) did not find any difference in locus of control by gender. In this study most of the diabetic women were housewives and in cultures like India, women tend to have more familial orientation and so they rely more on their husbands and family members that could be the reason women were more externally oriented in this study.

Educated diabetic patients scored higher than uneducated diabetic patients on internal health locus of control. In a study done by Morowatisharifabad et al. (2010) they also found that internal locus of control is increased as educational level rises and chance locus of control decreases as educational level rises. In this study we also found that on chance health locus of control uneducated diabetic patients scored higher than educated diabetic patients. No difference was found on any dimension of health locus of control on mode of treatment i.e. insulin dependent and tablet takers. Significant difference was found on internal health locus of control, dimension of health locus of control with patients without complications scoring higher than patients with complications.

According to Aalto, Uutela and Aro (1997) greater distress was related to multiple diabetic complications, lower availability and adequacy of general social support, more criticizing diabetes-related support, lower internal diabetes locus of control, higher chance, significant others and professionals diabetes locus of control, lower perceived net benefits of regimen adherence, higher perceived threat of complications and poorer perceived health. Stenstrom et al. (1998) found that diabetic patients with strong beliefs

that their own behaviour is responsible for the course of the disease and weak beliefs in chance and luck were metabolically better regulated than participants who exhibited other health locus of control patterns. This implies that participants high on internal health locus of control better manage their diabetes and thus, they have less or no complications of diabetes.

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