Locus of Control Among Patients With Type 2 Diabetes Mellitus: A Cross-Sectional Study of Internal And External Control Beliefs

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Structured Abstract

Background

Diabetes mellitus type 2 (T2DM) is a chronic disease requiring a lifelong approach to managing the disease and adhering to treatment. Various behavioral and psychological factors such as locus of control are thought to be factors influencing the individual patient's perception of who is responsible for his or her health and diabetes-management behavior. The current study aimed to examine the distribution of internal and external LOC in T2DM patients.

Participants and Procedure

Design: Quantitative descriptive cross-sectional research design. Sample: 40 adults with T2DM were purposively sampled from New Life Hospital, Amritsar Punjab. Inclusion: The adult's age should be above 18 years who are diagnosed as T2DM and who gave written consent. Tools: "Demographic information pro forma and Rotter's locus of control scale (1966) Data analysis: Descriptive statistics such as frequency, percentage, mean and standard deviation were computed.

Results

Twenty three of the participants (57.5 %) were classified as having an external LOC and seventeen (42.5%) as having an internal LOC. The total score for the general locus of control scale was M = 13.73 (SD = 3.60) which was within the external orientation range of the scale. The externally oriented subjects scored a mean of M = 16.20 (SD = 2.05) while internally oriented subjects scored a mean of M = 10.35 (SD = 1.12)".

Conclusions

External locus of control was the dominant scale in this sample of patients with T2DM. These results emphasise the possible importance of psychological screening and of patient-centred interventions to develop an increase in personal control and self-management. Further studies in larger samples with more health-psychological variables should follow. Keywords: chronic illness; diabetes management; health behaviour; personal agency; psychological adjustment.

Introduction

Type 2 diabetes mellitus (T2DM) is the most common form of chronic metabolic disease worldwide and a major public health issue owing to its high prevalence and chronic complications (International Diabetes Federation, 2021; World Health Organization, 2023; American Diabetes Association, 2024). The psychological adjustment to life with a chronic disease is not restricted to medical treatment, and is dependent upon the individuals' effort to change and maintain health-related behaviours (adherence to medication, food regulation, physical activity, blood glucose level monitoring). "Locus of control is another example of a psychological construct sometimes associated with people with a chronic illness. Rotter (1966) defined locus of control as a generalized expectancy for the degree to which personal or situational outcomes are determined by factors under the control of the individual. The construct has also been applied specifically to health-related responsibility and control beliefs (Wallston & Wallston, 1982). People with an internal locus of control believe that outcomes are a result of their own behaviors, while those with an external locus of control believe the outcome is due to other factors (e.g., fate, the environment, powerful others). Amongst those with a health condition, this may relate to how they view the causes of illness, responsibility for health outcomes and their response to treatment.

Multiple theoretical frameworks support the inclusion of perceived control and health behavior. Rotter's Social Learning Theory supports behavioral engagement being related to outcome expectancies for control over results, while Bandura's Self-Efficacy Theory emphasizes perceived competence in beginning and maintaining health behaviors (Bandura, 1997). Self-Regulation Theory identifies self-monitoring, behavioral response, and active managing of health conditions as key aspects of health behaviors (Leventhal et al., 2003). Moreover, the Health

Belief Model and Theory of Planned Behavior include perceived control and other health-related beliefs in health decisions and prevention behaviors (Rosenstock, 1974; Ajzen, 1991).

Anecdotal evidence has suggested a relationship between internal control beliefs and greater self-management of chronic diseases. Trento et al. (2008) demonstrated increases in internal control beliefs concurrent with improved diabetes self-management following intervention. Zhu et al. (2022) found health-locus-of-control education to be associated with improved internal control orientation, self-management behaviors and glycemic status in T2DM individuals. Other reports have observed positive relationships between internal control beliefs and behaviour including dietary adherence, medication compliance, blood glucose monitoring and other self-care measures.

However, the use of stronger external control beliefs has been found to be related to lower levels of self-management behaviours in some research. People who believe that their health is primarily outside of their control are more likely to 'hand over' responsibility to their doctor or medication or believe their destiny or the situation is in control of their health. Fatmawati et al (2023) found that external health locus of control was negatively associated with self-care behaviors in people with T2DM. Furthermore, Al-Nawafa and Hamdan-Mansour (2015) documented self-efficacy, psychological adjustment and health locus of control among diabetes mellitus patients.

Although the concept of locus of control has been applied to the management of chronic diseases, few studies have explored these beliefs among Indian patients with T2DM, especially in the social and cultural environment of Punjab. The role of family, decision making processes, healthcare professionals and belief systems related to fate and destiny may all play a part. Cultural patterns of individualism and collectivism may shape perceptions of personal responsibility and social influence (Hofstede, 2001; Triandis, 1995).

This knowledge, i.e. if people consider themselves to be active in the management of their disease and therefore in control of external factors or considered themselves to be dependent on them, might thus be useful for psychological treatment and educating the patient. Especially in chronic diseases in which long-term management relies to a certain extent on patient compliance.

Thus, the present study was conducted to observe the distribution of internal and external LOC in T2DM patients, especially looking at which version of the variable was common in the sample.

Hypothesis

External Locus of Control in Patients of T2DM Will be higher than Internal Locus of Control.

Participants and Procedure

Research Design

A descriptive, cross-sectional, comparative research design was adopted to determine the distribution of internal and external locus of control among patients of T2DM. “Participants An available sample of 40 adult patients of T2DM from Amritsar Punjab was approached for participating in the study.

Sample Purposive sampling technique was used to select the sample.

The sample included adults who were diagnosed with T2DM and had given their consent to participate in the research work. The inclusion criteria are as follows:

1. Diabetic for at least 6 months;
2. Diagnosed for T2DM;
3. Age above 18years;
4. Willing to participate in the study.

The participants were approached individually in the outpatient department”.

Measures

1. **Participant Information Form:** The participant's basic sociodemographic and health-related information was collected with the help of Participant Information Form, prepared for the purpose of the study.
2. **Rotter's Locus of Control Scale (Rotter, 1966):** The concept of internal and external locus of control was measured by “Rotter's Locus of Control Scale. The scale comprises of 29 forced-choice items, of which 23 are scored, and 6 are filler items.

The possible scores vary between 0-23, with higher scores indicating a stronger extrinsic locus of control.

For the present study, 0-11 scores on the scale were categorized as internal locus of control while 12-23 scores on the scale were categorized as external locus of control. Procedure Institutional permission was taken prior to starting data collection. Outpatients in the outpatient department who were diagnosed with T2DM were individually approached and informed about the purpose and procedure of the study. They were assured that their participation was voluntary, and confidentiality and anonymity would be maintained.
Written informed consent was taken from the participants before data collection.
The data were collected individually with the help of Participant Information Form and Rotter's Locus of Control Scale in the outpatient department of the hospital. The data were coded and entered in the computer and were analyzed using statistical packages, namely Jamovi version 2.6, and R version 4.4.1". Descriptive data, such as frequencies, percentages, means, and standard deviations, was calculated to elucidate the distribution of locus of control among patients.

Results

The distribution of respondents according to the internal and external locus of control is presented in Table 1.

"Locus of control orientation	n	%
Internal	17	42.5
External	23	57.5
Total	40	100.0"

Table 1. Distribution of Internal and External Locus of Control (N = 40)
Majority of participants "(57.5%, n = 23) were identified as having an external locus of control while the remaining 42.5% (n = 17) were identified as having an internal locus of control. External locus of control was therefore the majority orientation in the sample.

Overall Locus of Control Scores

Table 2 presents the overall descriptive statistics for locus of control scores.

Statistic	Value
N	40
Mean	13.73
Standard deviation	3.60

Table 2. Overall Descriptive Statistics of Locus of Control Scores (N=40) The mean score was 13.73 (SD=3.60)". According to the scoring system used in this study, the mean score is in the external locus of control level, again suggesting an overall tendency toward external control belief.

Descriptive Scores by Classification

Table 3. Descriptive Scores by Locus of Control Classification

Classification	n	M	SD
External locus of control	23	16.20	2.05
Internal locus of control	17	10.35	1.12

The mean for internal locus of control was 10.35 (SD = 1.12) and the mean for external locus of control was 16.20 (SD = 2.05) when participants were classified as having an external or internal locus of control. These descriptive scores are presented in Table 3. As can be seen from the above the descriptive results show external locus of control was more common in the sample.

Discussion

This study explored the extent of the presence of internal and external locus of control in T2DM. It was found that most of the participants in the present study showed an external locus of control as opposed to internal: “57.5% as oppose to 42.5%. While the mean of overall locus of control was within the externally oriented scale (13.73, SD 3.60). The finding of the predominance of external locus of control beliefs is an important one because it has implications for the psychological management of the condition. Careful management of diabetes involves systematic and ongoing self-care. Therefore, medication compliance, diet control, physical activity, and blood glucose level checking all involve the individual understanding that they are more or less in control of outcomes.

Studies regarding locus of control and its influence on psychological management and self-care show some degree of consistency with this notion (Haskas et al., 2019). Fatmawati et al (2023) reported that the external health locus of control was negatively associated with self-care behavior of patients with T2DM. Kusnanto et al (2018) examined the association between locus of control and self-care behavior of diabetes patients and found similar findings. However, positive associations between internal and certain types of external locus of control and health-promoting self-care behavior have been observed in other studies (Trento et al, 2008; Zhu et al, 2022). This knowledge about previous work adds useful insights into the discussion about the main finding of the present work.

While the result of predominantly external control beliefs and its implications for psychological management are most clearly highlighted, the finding of 42.5%” of the present work showing an internal locus of control should not be overlooked. These patients are more likely to hold to the view that their own efforts and actions are crucial to health. However, the use of cross-sectional design prevents us from making the assumption about the causal influence of these three factors.

A sociocultural discussion should be also included in the discussion; as family involvement and reliance on health care may not only be found as sources of support but also as external locus of control influences, which may leads to lower perception of personal control. It may lead the clinical mission to provide appropriate support without the intention of eliminating external locus of control beliefs.

Overall, the present study provides useful implications that are likely to be in line with the assumptions of Rotter's Social Learning Theory. People are more likely to be more motivated and driven to behavioral engagement with the perception that the outcomes are outside their control. This information can be very useful for health psychology to help clinicians to understand and address psychological needs in managing chronic illness.

The result of the present study should however be discussed in view of its limitations such as the sampling method. The use of a fairly small sample (N = 40), purposive sampling method from one hospital in Amritsar prevents the generalization of the findings. The cross-sectional method also restricts the causal conclusion that has been formed about the notion of internal and external locus of control. Furthermore, only one concept has been used without the assessment of other related concepts such as medication adherence, self-efficacy, outcome efficacy, health status, glycohaemoglobin level and quality of life (Bhopal, 2007). This makes the conclusion limited to the concept of locus of control.

For future research, larger and more inclusive samples are recommended. Related factors such as perceived medication adherence, compliance, and quality of life should be investigated in relation to people with T2DM and their locus of control. Longitudinal and intervention-based research is also strongly suggested in order to examine the causality and investigate the effectiveness of behavioral and psychological intervention.

Conclusions

As a whole, the results revealed that a significant proportion of the sample of 40 patients with T2DM has an external orientation (57.5%) and a significant number of patients showed an internal orientation (42.5%). The mean total score indicated an overall orientation toward external control beliefs. These findings provided insight into the management of chronic illness, in the sense that an assessment of control beliefs might be useful for health care professionals to identify patients at risk and to begin a psychoeducation programme, motivational counselling, and training interventions to build personal agency and active participation.

In terms of implications, external control beliefs should not necessarily be viewed as a disadvantage. Psychological interventions to build the treatment control beliefs should establish a healthy sense of control in patients in which they are confident of treatment providers (doctors, nurses, dieticians) and view themselves as responsible for drug regimens, lifestyle, self monitoring, and so on.

Further research is required on a larger sample, using a longitudinal design and including other psychological variables, such as self-efficacy, coping, health-related quality of life and treatment adherence.

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Authors' Contributions
Dr. Mehak Arora: Study conceptualization and design; development of the research theme and objectives; supervision of the research process; statistical analysis; interpretation of findings; literature review and synthesis; manuscript preparation, critical revision, and final approval of the manuscript.
Jaisnoor Kaur: Data collection; assistance with the literature review; assistance with organization and compilation of research material; review of the manuscript and approval of the final version.
Ethics Statement
The study was approved by the Institutional Ethics Committee, Guru Nanak Dev University, Amritsar, Punjab. Written consent was obtained from all study participants before subjecting them to the study.
Informed Consent
Consent. Written informed consent was obtained from all the participants. The participants were encouraged to participate voluntarily and are informed that their responses will remain confidential and anonymous. No compensation was paid to participants for their participation in the study.
Consent to Publish
Consent to Publish declaration: not applicable.
Conflict of Interest
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