

Cognator Factors and Barriers to Weight Control Among Overweight and Obese Patients with Type II Diabetes

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ABSTRACT

Objectives : Challenges in controlling body weight and hyperlipidemia pose significant problems for patients with Type 2 diabetes mellitus (T2DM). These issues may be influenced by various factors, including physiological and cognitive functions. This study aims to identify the relationship cognator factors, specifically self-concept and barriers to weight management in T2DM patients.

Methods: This cross-sectional study was conducted at Fatmawati Hospital, Jakarta, from May to June 2024. The study involved 72 individuals with T2DM, a body mass index (BMI) > 23 kg/m², who participated in a weight loss program and had no diabetic foot ulcers or amputations. The Health Belief Model Questionnaire, Illness Identity Questionnaire, and Health Hardiness Inventory (HHI) were used to assess self-concept, encompassing perception, self-evaluation, and self-resilience. Barriers to weight control, including motivational barriers, were evaluated using the Treatment Motivation and Readiness (TRE-MORE) test, while behavioral barriers were assessed using the Barriers to Healthy Eating (BHE) Scale.

Results: The findings indicated a significant relationship between self-evaluation and behavioral barriers in weight control ($\beta = 0.448$, $p = 0.001$), as well as between self-resilience and motivational barriers ($\beta = 0.296$, $p = 0.05$). However, no significant relationships were found between perception and motivational barriers ($\beta = -0.203$, $p = 0.245$), perception and behavioral barriers ($\beta = -0.245$, $p = 0.224$), self-evaluation and motivational barriers ($\beta = -0.151$, $p = 0.223$), or self-resilience and behavioral barriers ($\beta = -0.067$, $p = 0.663$).

Conclusions : Self-evaluation and self-resilience are important psychological aspects to consider in nursing interventions aimed at improving weight control in T2DM patients.

Keywords: self resilience; self evaluation; self concept; perception; type II diabetes mellitus; weight control.

INTRODUCTION

The majority (62%) T2DM patients are obese or overweight due to adiposopathic complications and various factors (Dhatariya et al., 2023). It's particularly challenging for T2DM patients because they will be at risk of complications and psychological disorders (American Diabetes Association Professional Practice Committee, 2022; PERKENI, 2021; Pareek et al., 2018; Guo et al., 2023; Kokoszka et al., 2022). To answer this challenge, the cognator factor in Roy's Adaptation Theory can help T2DM patients control their health status (Whittemore & Roy, 2002). This cognator factor consist of self-concept, which helps T2DM patient's adapt to changes in their body conditions (Made & Kristianto, 2018). However, there are limited studies explaining the relation of cognator factors to the barriers T2DM patients face in controlling body weight. Therefore, this study aims the relationship cognator factor specially self concept and barriers to weight control in T2DM patients.

METHODOLOGY

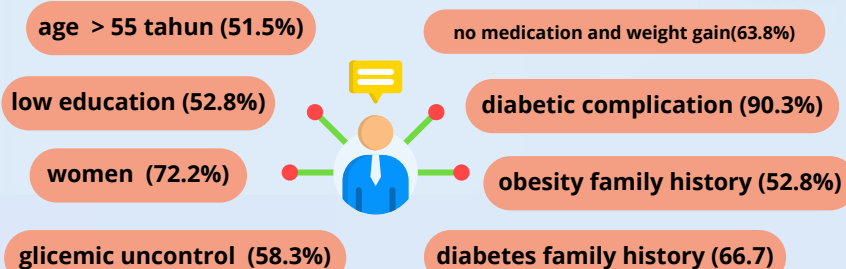
- cross-sectional study
- a diabetic center at Fatmawati Hospital
- 72 patients T2DM more than 1 year, Body Mass Index (BMI) > 23 kg/m², participated in a body weight loss program
- descriptive analysis and Structural Equation Models Partial Least square (SEMPLS)

Data collection :

- Demographic :** gender, education level, age, diabetic and obesity family history
- Medical records :** BMI and HbA1c, complications, and medications.
- Self concept :** Health Belief Models for Perception assesment, Illness Identity for Self-evaluation assesment, Health Hardiness Inventory (HHI) for Self-resilience assesment
- Barriers to weight control :** TREatment MOTivation and Readiness (TRE-MORE) for motivational barrier and Healthy Eating Scale (BHE scale) for behaviour barriers

RESULT

T2DM Patients Characteristic



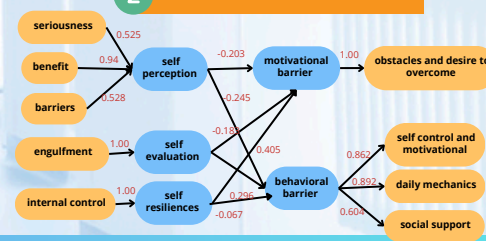
1 Measurement Model Assessment

Constructs	Indicators	Loading	AVE	CR	CA
Perception	Seriousness	0.525	0.481	0.719	1
	Benefit	0.942			
	Barriers	0.528			
Self evaluation	engulfment	1.000	1.000	1.000	1
	Internal control	1.000	1.000	1.000	0.75
Motivational barriers	Obstacles and desire to overcome	1.000	1.000	1.000	
	Self control and motivation	0.811	0.635	0.835	0.659
Behaviour barriers	Daily mechanics	0.892			
	Social support	0.604			

notes : CA = Cronbach's alpha, indicators had loading less than 0.5 was removed. *susceptibility, recommended health related as rejection, acceptance, avoidance, health value, external control, health competence, taking care of themselves and share problems, and current lifestyle

All variables had satisfactory loading more than 0.5, AVE value is ≥ 0.50 , Cronbach's alpha ≥ 0.6 , so the model had good convergent validity.

2 Measurement Model



represent laten variabels and it's indicator that is meet the criteria for good convergen validity.

SEMPLS

The hypotheses of this study were tested using PLS-SEM :

- perception and motivational barriers in body weight control
- perception and behaviour barriers in body weight control
- self evaluation and motivational barriers in body weight control
- self evaluation and behaviour barriers in body weight control
- self resilience and motivational barriers in body weight control
- self resilience and behaviour barriers in body weight control

3 Discriminant Validity (HTMT)

Construct	Self evaluation	Self Resilience	Motivational barriers	Behaviour barriers	Perception
Self Evaluation	-				
Self Resilience	0.237	-			
Motivational barriers	0.139	0.204	-		
Behaviour barriers	0.410	0.180	0.280	-	
Perception	0.5250	0.209	0.133	0.247	-

All laten variabels meet the criteria for good discriminant validity, less than 0.85, that was means no multicollinearity

4 Structural Model Assessment

Relationship	Path coefficient	t-value	Decision	f ²	effect small
Perception and motivational barriers	-0.203	0.245	No supported	0	0.041
Perception and behaviour barriers	-0.245	0.224	No supported	0	0.065
Self evaluation and motivational barriers	-0.151	0.233	No supported	0	0.023
Self evaluation and behaviour barriers	0.448	0.001	Supported	0.224	moderate
Self resilience and motivational barriers	0.296	0.05	Supported	0.089	Small
Self resilience and behaviour barriers	-0.067	0.663	No supported	0	0.005

The path coefficients and t-value for self evaluation and behaviour barriers either self resilience and motivational barriers were significant at 5% and 1% level. So, it indicated that these hypotheses are supported

self-concept description of T2DM patients



- negatif self perception (56.9%)
- positive self evaluation (61.1%)
- low self resiliances (52.8%)

Weight control description of T2DM patients

- behavioral barrier (44.4%)
- motivational barrier (51.4%)

CONCLUSION

Self-concept is related to barriers to weight control in T2DM patients with obesity or overweight. Comprehensive intervention is needed by T2DM patients to improve weight control. Nurses as educators and patient advocates can provide interventions that not only focus on cognitive aspects but also focus on psychological aspects

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