

# A Systematic Review of the Impact of Diabetes Resilience on Quality of Life

Hidayat Arifin, Kusananto Kusananto\*, Ika Yuni Widayawati

**Abstract---** *Patients who have regular treatments and who stick to the recommended diet for diabetes mellitus (DM) will cause a burnout in undergoing treatment. This will make their blood sugar level unstable and result in incomplete treatment. The present study aimed to analyze the diabetes resilience related to quality of life (QoL) using a systematic review. This study used the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) approach. The subject was extensively searched for in the Scopus, Science Direct and CINAHL databases. The search utilized the phrases "resilience," "resilient," "resiliency," "Quality of Life," and "diabetes mellitus." The search was conducted focused on the titles, abstracts and keywords. The inclusion criteria in the study literature were that the document type was an original article, that the source was a journal, that the article was written in English and that the full text was available. The age of the subject in the items was not specified to capture the resilience in type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM) as broadly as possible. The publication time limit was 2014 to 2019. We identified 270 articles where 15 were considered relevant for this systematic review. The results showed that the patients would have a better quality of life after entering a resilient condition while undergoing diabetes treatment. The present review study suggests that optimizing diabetes resilience will influence the quality of life of DM patients. Nurses and other health care professions should consider ways to improve resilience.*

**Keywords---** *Type 2 Diabetes Mellitus; Resilience; Quality of Life*

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## I. INTRODUCTION

Diabetes mellitus (DM) is a chronic disease characterized by elevated levels of blood glucose. This leads to other conditions affecting the heart, blood vessels, kidneys and nerves [1]. Diabetes mellitus is a leading cause of death and disability worldwide [2], [3]. The most common type of DM is Type 2 Diabetes Mellitus (T2DM) and this usually occurs in adults [4]. Excessive stress can trigger diabetes mellitus and worsen the patient's condition [5]. Patients with T2DM must undergo treatment, including physical activity, pharmacology and a diet that must be obeyed [6]. Patients continuously adhere to the treatment and diet will eventually experience a burnout. This will cause their blood sugar levels to become unstable and result in incomplete treatment [7]. Proper diabetes management can affect the patient's resilience and quality of life.

Resilience is defined as the development, ability or outcome of successful adaptation despite challenging or threatening conditions [8]. Victor and Stronge (2002) elaborated on this definition by distinguishing between the roles of the individual characteristics such as resources, weaknesses and abilities concerning the importance of there being goodness-of-fit between

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Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia.

Corresponding author:  
Dr. KusanantoKusananto, S. Kp., M. Kes.  
E-mail: [kusananto@fkip.unair.ac.id](mailto:kusananto@fkip.unair.ac.id)

the individual and the environment [9]. Patients with T2DM with a resilience disorder will have a negative adaptation response to treatment [7]. This can lead to a decrease in the ability to take care of themselves, such as the ability to seek treatment, do physical activity and improve their diet [10], [11].

Adult personal resilience has been explained by Taormina (2015) to include the following. 1) Determination, where building determination becomes the basis of someone becoming resilient. 2) The participants must have good endurance as it is intended for the participants to survive both pleasant and unpleasant situations. 3) Adaptability is defined as the capacity to be flexible and resourceful, and to cope with adverse environments in addition to adjust oneself to fit the changing conditions. Good adaptability will help the participants to become more resilient. 4) Recuperability is defined as the ability to recover, both physically and cognitively, from various types of harm, setbacks or difficulties to return and reestablish their previous condition. The participants can practice recuperability independently to achieve good quality of life [12]. Strengthening the level of resilience in T2DM patients will facilitate enthusiasm and the ability to treat themselves while improving their self-esteem [13]. Furthermore, to identify the features of the related variables, a comprehensive review of diabetes resilience should be performed. Thus this study aims to analyze the diabetes resilience on quality of life (QoL) through a systematic review study.

## II. METHODS

- Strategy for searching for relevant studies

Articles published in English were searched for on the Scopus (medical and nursing subject categories), ScienceDirect and CINAHL databases. The relevant literature was searched for from October 8<sup>th</sup> to December 15<sup>th</sup> 2019. The publication time was limited to 2015-2019. The search terms were “resilience,” “resilient,” “resiliency,” “Quality of Life,” and “diabetes mellitus.”

- Study selection

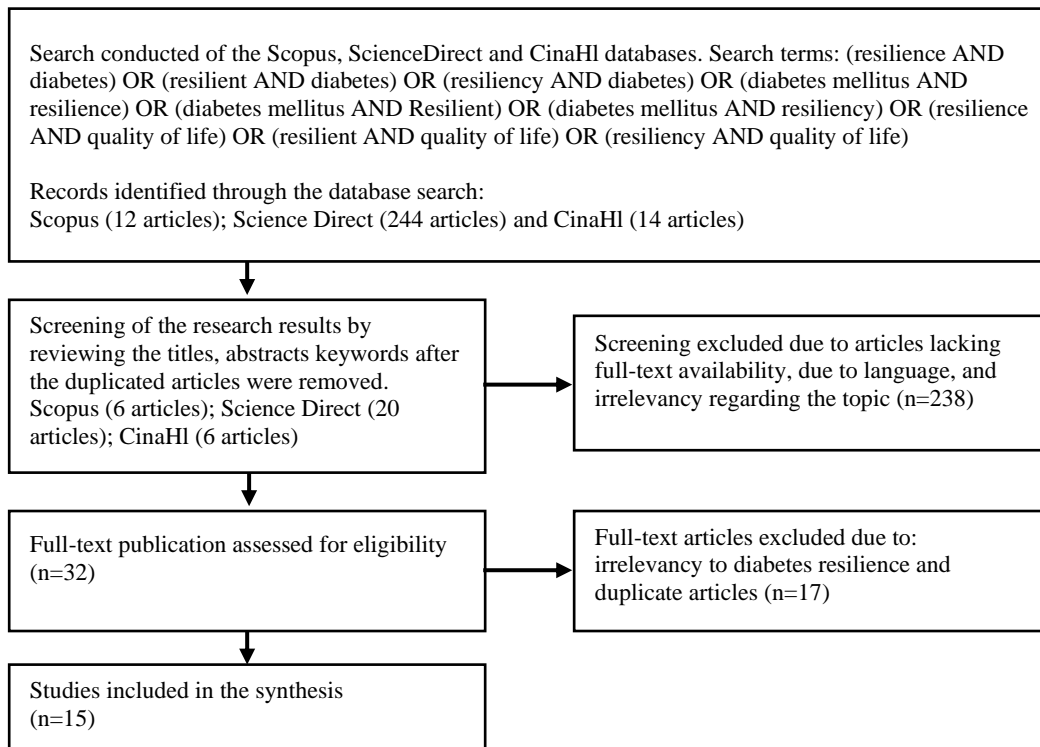


Figure 1 – Article selection process. Adapted from Moher 2009 [14]

All of the studies found were related to the diabetes resilience in patients with diabetes mellitus only. The search focused on the title, abstract and keywords. The inclusion criteria in relation to the study literature were as follows: (1) document type was an original article; (2) source was from journals; (3) articles were in English and (4) full text of the article was available. The age and study design of the subject in the items was not specified to capture the resilience in type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM). The publication time limit was 2014-2019 (Figure 1).

The researcher set the inclusion and exclusion criteria. The researcher consulted with experts in the field of nursing studies and with their supervisor to determine the final results of the articles that were obtained for the final analysis. A meeting between the researchers and investigators was sought to reduce and overcome the existing disagreements. The research process follows the Cochrane guidelines [15]. Finally, 15 articles were found and included in the final analysis. The specific flow diagram is shown in Fig 1 following the identification, screening, eligibility and inclusion stages. The table analysis can be seen in Table 2.

The ethical issues when preparing the manuscript of the systematic reviews were as follows: 1) avoiding redundant or duplicated articles; 2) avoiding plagiarism; 3) the transparency of the screening within the articles, the process of analysis and evaluation; 4) ensuring accuracy and 5) flagging suspected plagiarism or fraudulent research [16].

### III. RESULTS

- General features and study type

Based on the 15 articles that have been analyzed (Table 1), 10 studies (66.67%) focused on type 1 diabetes mellitus (T1DM) followed by studies focused on type 2 DM (T2DM). Furthermore, 7 (46.57) conducted studies on diabetes in adolescents and the remainder were focused on adults with diabetes mellitus. There were 6 (40%) cross-sectional articles.

Table 1. General characteristics of the selected studies (n=15)

Category	n	%
Year of publishing		
2014	1	6.67
2015	5	33.33
2016	1	6.67
2017	5	33.33
2018	3	20
Type of DM		
T1DM	10	66.67
T2DM	5	33.33
Participant Age		
Adolescents	7	46.67
Adults	8	53.33
Type of Study		
Cross-sectional	6	40
Quasi-experimental	1	6.67
RCT	2	13.33
Qualitative	3	20
Longitudinal	3	20

\*DM: Diabetes Mellitus: T1DM: Type 1 Diabetes Mellitus: T2DM: Type 2 Diabetes Mellitus: RCT: Randomized Controlled Trial

- General features and study types

The results obtained by the researchers from the 15 articles analyzed shows that all of the articles show the final results where there is an improvement in the quality of life of patients with diabetes mellitus resilience. Improved quality of life was not only demonstrated by the adolescents with T1DM but also by the adults with T2DM. The results of the analysis also

found that patients who were resilient and who had a good quality of life also experienced improvements in their HbA1C/A1C glyceamic control in addition to decreased levels of depression and anxiety [17]. Less conflicts occur in these diabetes mellitus patients [18]. In addition, there was an improvement in the quality of life of T1DM/T2DM patients that was also indicated by a decrease in diabetes distress and increased knowledge, better controlled blood sugar levels and better controlled cholesterol levels [19].

Resilience can increase with an increase in self-esteem which can affect the intention to take medication, promote self-care and improve the overall activities of patients with DM [13]. Self-management [11] and lifestyle changes [20] can increase patient resilience so their quality of life will also improve.

The follow is based on a review of several articles that implement interventions to improve resilience and quality of life in people with diabetes mellitus. Interventions in adult patients with DM include diabetes self-management education [19], resilience, empowered active living with diabetes (REAL) [21], patient empowerment [22], psychosocial interactive [11] and motivation for lifestyle changes [20]. The adolescent interventions with diabetes mellitus include the Supporting Teen Problem Solving (STePS) [23] and Promoting Resilience In Stress Management (PRISM) [24].

#### **IV. DISCUSSION**

Quality of life is an individual's perception of their position when living in reference to the cultural context and values concerning their experience, expectations, standards and attention. This is a comprehensive concept that affects a person's physical health, psychological condition, social relationships and their relationship with their future desires in their environment [25], [26]. The domain of quality of life does not cover the physical field only. It also includes performance when playing a social role, emotional states, intellectual and cognitive functions and feeling healthy and life satisfaction [27], [28]. The aspects of quality of life, according to Post (2014), include physical, material, social, development and activity, and emotional well-being [25]. In addition, quality of life is influenced by several factors, namely gender, age, education, employment, marital status, income and relationships with others [29].

Previous studies have shown that quality of life is also influenced by the strength of someone when undergoing and accepting their condition [17]. In addition, quality of life is also determined by the length of the patient being able to survive in a good condition [30]. Resilience is the ability to overcome and rise from trauma, accompanied by a positive and optimistic attitude towards the future [31]. According to Rojas (2018), resilience is the ability to face challenges. Resilience can be seen when someone suffers from a problematic experience and knows how to deal with or adapt to it [32]. It can be concluded that resilience is an individual's ability to recover quickly when facing a problem that is difficult. They become easily adaptable and this makes the issue an experience that can develop in the future. More specifically, someone who is able to survive an incurable condition such as diabetes mellitus can survive other severe conditions and adapt well. Thus it can be said that the person is resilient when it comes to diabetes [1]. Diabetes resilience is defined as the achievement of one or more positive diabetes-based outcomes (i.e. high engagement with diabetes self- management behaviors, the self-perception of having a good quality of life (QoL) and being within the range of their target glyceamic results) despite the challenges related to living with type 2 diabetes [1].

In addition to personal resilience being internal, the literature indicates that it is multifaceted, and suggests that it refers to being determined to survive [33], being able to endure hardships [34], to adapt to changing conditions [35], or to recover from adversity to increase the quality of life [36]. Research shows that a decrease in depression, anxiety and pressure [17],

[18] and an increase in self-management [11], self-esteem [13] and lifestyle changes [20] can increase the level of resilience in people with diabetes mellitus and improve their quality of life. The research conducted by Wang (2017) shows that with excellent patient empowerment, DM patients can achieve the right resilience conditions so then their quality of life can improve [22].

## V. CONCLUSION

The systematic review conducted by the researchers focused on 15 articles based on specific inclusion criteria shows that patients with diabetes who have resilience can experience an increase in their quality of life. The condition of resilience is characterized by good determination, strong endurance, being able to adapt and being able to recuperate. This can improve their physical, material, social, developmental, activity-based and emotional well-being abilities. Future researchers are expected to make this systematic review study a reference when seeking to assess the increase in resilience of people with diabetes and how it improves their quality of life.

## CONFLICT OF INTEREST

No conflicts of interest have been declared.

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## VII. APPENDIX

Table 2. Summary of the selected studies

Author	Type of DM	Design	Sample	Variables	Results
[17]	T1DM	Cross-sectional	471 respondents	Diabetes Mellitus; Strength; Depressive/anxiety; Family conflict; Resilience (General QoL, HbA1C)	Strength of the diabetes resilience outcome, quality of life, level of depression and anxiety, and conflict.
[37]	T1DM	Cross-sectional	260 respondents	Diabetes Resilience	Strength; Intrapersonal and interpersonal processes, strong psychometric, adaptive aspects and juvenile diabetes management.
[30]	T1DM	Cross-sectional	117 respondents	Diabetes-Related Self-Reported Affect; Observed Affect; Glycemic Control; Internalizing and Externalizing Problems; Quality of Life	Stress; Positive Affect; Positive Glycemic Control; Problems; Positive mood predicts an increase in glycemic control and a lessening of the externalization problems for 6 months.
[13]	T2DM	Cross-sectional	27 respondents	Self-esteem	A high level of self-esteem and resilience in individuals.
[19]	T2DM	Quasi-experimental	61 respondents	Diabetes self-management education (DSME); Diabetes knowledge; Positive adaptation to stress; Coping; Positive meaning; Negative effect; Quality of life; Perceived stress; Depressive symptoms; Physical activity; Self-monitoring of blood glucose; Obesity; Diabetes control	Increasing the knowledge of diabetes, positive meaning, High-Density Lipoprotein (HDL) cholesterol and fasting blood glucose control.
[11]	T2DM	Qualitative	14 participants	Resilience; Type-2 diabetes self-management	Psycho-social interactive resilience model. Self-management increases quality of life and it is influenced by life history.
[38]	T1DM	Cross-sectional	50 respondents	Personal resilience; Optimism; Self-esteem; Self-efficacy; Coping;	Low resilience is related to using coping strategies (more maladaptive) and poor outcomes.

Author	Type of DM	Design	Sample	Variables	Results
[21]	T1DM	Randomized controlled trial	81 respondents	Diabetes-related distress; QOL; Self-care; Glycemic Control The Resilient, Empowered; Active Living with Diabetes (REAL Diabetes); Glycemic control (HbA1c); Self-care; Diabetes-related quality of life; Diabetes distress; Depressive symptoms; Life satisfaction	Resilience is a promise to reduce the pressure and improve the outcomes. The REAL Diabetes intervention (motivational interviewing and diabetes self-management education) improved blood glucose control and diabetes-related QoL.
[22]	T2DM	Longitudinal	304 respondents	Demographic data; Clinical indicators; Self-management behaviors; Diabetes self-efficacy; Resilience; Social support; Patients empowerment	Resilience and patient empowerment decreases diabetes distress and increases quality of life.
[23]	T1DM	Randomized control trial	264 respondents	The Supporting Teens Problem Solving (STePS) Program intervention; Diabetes distress; Depressive symptoms; Resilience; Diabetes self-management; Glycemic control	Intervening before the signs of psychological distress start can prevent the development of Diabetes Distress and increase the quality of life.
[18]	T1DM	Longitudinal multisite study	239 respondents	Glycemic control (HbA1C); Demographic variables; Youth behavioral regulation; Adherence (frequency of blood glucose monitoring); Diabetes self-management; Level of parental support for diabetes autonomy; Level of youth mastery and responsibility for diabetes management; Diabetes-related family conflict	Testing their blood glucose more frequently, better self-management and less diabetes-related family conflicts were the indicators of health resilience and quality of life.
[20]	T2DM	Qualitative	30 participants	The motivation for a lifestyle change	The motivation for life changes following a diagnosis of type 2 diabetes and there is an increase in quality of life.
[24]	T1DM	Qualitative	15 participants	The Promoting Resilience in Stress Management (PRISM)	The Promoting Resilience in Stress Management (PRISM) intervention is feasible and well-accepted by both Adolescents and Young Adults (AYAs) and it is able to increase their quality of life.
[39]	T1DM	Longitudinal multisite study	239 respondents	Child quality of life; Parent depressive symptoms; Disease-specific parenting stress; Glycemic control (A1c)	Attention to child protective factors can enhance the understanding of the adjustment to type 1 diabetes and have implications on the interventions needed to increase quality of life.
[40]	T1DM	Cross-sectional	243 respondents	Emotion processing; Emotion expression; Negative diabetes emotion; Benefit finding; Fitting in with friends; Diabetes acceptance	The resilience factors appear to influence comfort and quality of life when adjusting to having diabetes in public either directly or indirectly.

*T1DM: Type 1 Diabetes Mellitus; T2DM: Type 2 Diabetes Mellitus; QoL: Quality of Life; HbA1C / A1c: Glycemic Control; REAL: The Resilient, Empowered, Active Living with Diabetes; PRISM: Promoting Resilience in Stress Management; AYAs: Adolescents and Young Adults; STePS: The Supporting Teens Problem Solving*