Understanding Diabetes Mellitus: An Occupational Therapists Perspective

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ABSTRACT

Diabetes is associated with rapid fluctuations in blood sugar levels. Hyperglycemia is a common consequence of relative or absolute insulin deficiency inherent in diabetes, and hypoglycemia is a common side effect of treatment with insulin and some antidiabetic drugs. Because the brain depends on a steady supply of glucose as its primary source of energy, changes in blood sugar levels have immediate effects on brain function. The adverse effects of acute hypoglycemia on cognitive function and mood are well established. Occupational therapists can change or adjust how clients perform their desired self-care tasks to facilitate the goal of managing this condition. Occupational therapy focuses on lifestyle changes, promotion of health, correction of physical and visual impairments, and maximization of self-sufficiency, all of which are directly and adversely affected by diabetes and its complications. Receive.

Keywords— Cognition, Diabetes mellitus, Mood, Occupational Therapist, Quality of Life, , etc

# INTRODUCTION

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Type 2 diabetes (T2DM), formerly known as maturity-onset diabetes, is a form of diabetes characterized by hyperglycemia, insulin resistance, and relative insulin deficiency in human body. Common symptoms may include increased thirst, frequent urination, and unexplained weight loss.



***Fig 1:*** *Universal symbol of Diabetes mellitus [1]*

Symptoms may also include increased hunger, feeling tired, and sores that do not heal [2]. Often symptoms come on slowly [3]. Long-term complications of high blood sugar include heart disease, stroke, diabetic retinopathy which can lead to blindness, kidney failure, and poor blood flow to the limbs which can lead to amputation.4]. Type 2 diabetes primarily occurs as a result of obesity and lack of exercise [4]. Some humans are greater genetically at danger than others[3]. Type 2diabetes makes up about 90% of cases of diabetes, with the other 10% due primarily to type 1diabetes and gestational diabetes [4].

In type 1 diabetes, autoimmune loss of insulin-producing beta cells in the pancreas results in lower levels of total insulin to control blood sugar. [9][10]. Diagnosis of diabetes is by blood tests such as fasting plasma glucose, oral glucose tolerance test, or glycated hemoglobin (A1C) [3]. Type 2 diabetes is largely preventable by staying a normal weight, exercising regularly, and eating properly [4]. Treatment involves exercise and dietary changes [4]. If blood sugar levels are not adequately lowered, the medication metformin is typically recommend [7], [8]. Many people may need insulin injections. In those on insulin, routinely checking blood sugar levels is advised; however, this may not be needed in those taking pills [9]. Bariatric surgery often improves diabetes in overweight people. The incidence of type 2 diabetes has increased significantly since the 1960s, paralleling obesity [13]. In 2015, about 392 million people were diagnosed with the disease, compared to about 30 million in 1985. Typically it begins in middle or older age [6] although rates of type 2 diabetes are increasing in young people. Type 2 diabetes is associated with a ten-year-shorter life expectancy [5]. Diabetes was one of the first diseases described [10]. The importance of insulin in this disease was established in the 1920s.

# DIABETES AND ITS IMPACT ON SOME IMPORTANT ASPECTS OF DIABETICS

***Diabetes*** is associated with rapid fluctuations in blood sugar levels.. Hyperglycemia is a frequent consequence of the relative or absolute insulin deficiency that is intrinsic to diabetes, and hypoglycemia is a common side effect of treatment with insulin and some antidiabetic medications [11]. Because the brain depends on a steady supply of glucose as its primary source of energy, changes in blood sugar levels have immediate effects on brain function. Adverse effects of acute hypoglycemia on cognition and mood are well known [12, 13].

COGNITION is defined as integrated function of human mind that together results in thought and goal directed actions. It includes orientation attention memory higher level thinking abilities and meta processing abilities.People with type 2 diabetes are at risk of developing cognitive impairment. This may be the result of a synergistic interplay between diabetes-associated metabolic disturbances and, in part, structural and functional changes occurring within the central nervous system of the normal aging process. There were many researches carried out in proving the same & the most consistent finding was that verbal memory appears to be impaired in groups with Type 2 diabetes when compared with non-diabetic controls. Defined as memory tested by stimuli that are spoken or presented in another verbal format, verbal memory was significantly impaired in nine out of 15 studies in which it was tested [14].Although some studies have not demonstrated any cognitive impairment in people with Type 2 diabetes, no studies have found cognitive performance to be better in people with Type 2 diabetes compared with non-diabetic controls. Diabetes mellitus is a common condition in older people, affecting about 20% of persons older than 65 years. In cross-sectional studies(15),diabetes mellitus has been associated with various adverse health effects, including cognitive impairment.

MOOD is a sustained and pervasive emotion that, when extreme ,can colour one’s whole view of life. It is an affective state. Unlike feelings and emotions, moods are less specific or intense and less likely to be triggered or instantiated by a particular stimulus or event. Diabetes affects a person's mood and causes rapid and profound changes. Symptoms of hypoglycemia that may contribute to mood swings include confusion, hunger, difficulty coordinating and making decisions, aggression and irritability, changes in personality or behavior, and difficulty concentrating. Signs that indicate a person may have high blood sugar levels include: difficulty thinking clearly and quickly, feeling nervous, feeling tired or having low energy. Changes in blood sugar levels can affect a person's mood and mental state. These symptoms often disappear when blood sugar levels return to normal. Depression affects approximately 20–25% of patients with diabetes [16], with rates of major depressive disorder estimated at 12% and depressive symptoms at 15–35% [17]. The presence of depressive symptoms has been associated with poor quality of life in people with diabetes and has been shown to be associated with poor glycemic control and diabetic complications [18]. The relationship between glycemic control and depression is likely to be bidirectional, but the causal pathways are not fully understood. monitoring) are thought to be a potential factor in poor glycemic control, but depression may also affect stress pathways, so poor control cannot be fully explained. Cases may affect glycated hemoglobin (HbA1c) levels. Major depressive disorder and depressive symptoms are widely believed to be associated with poor glycemic control in type 2 diabetes mellitus (T2DM), but data from cross-sectional studies on this association are conflicting. Methodological approaches vary between studies [17]. Diabetes-related distress is an aspect of coping with chronic illness and refers to the emotional distress seen by both people with diabetes and their caregivers.

Quality of life is defined as “how an individual perceives their place in life in the context of the culture and values ​​in which they live and in relation to their goals.” and positive qualities of life. The context of QOL is diverse, including international development, public health, politics, and employment. It is important not to confuse the concept of quality of life with the new and growing area of ​​health-related quality of life (HRQOL). HRQOL assessment is effectively an assessment of quality of life and its relationship to health. Quality of life should not be confused with the concept of standard of living, which is primarily based on income. Health-related quality of life (HRQoL) is a multidimensional concept that includes domains related to physical, mental, emotional, and social functioning. It not only directly measures people's health, life expectancy and causes of death, but also focuses on the impact of health status on quality of life. A related HRQoL concept is well-being, which measures the positive aspects of a person's life, such as positive emotions and life satisfaction. The concept of health-related quality of life (HRQOL) and its determinants has evolved since the 1980s to include aspects of overall quality of life that clearly influence physical or mental health. (18,19). At the individual level, HRQOL includes perceptions of physical and mental health (energy levels, mood, etc.) and correlations between health risks and health status, functional status, social support, socioeconomic status, etc. It is included. At the community level, HRQOL encompasses community-level resources, conditions, policies, and practices that influence people's perceptions of their health and functional status. HRQOL questions have become an important part of public health surveillance and are widely accepted as valid indicators of unmet needs and outcomes of interventions. Self-reported health is also a stronger predictor of mortality and morbidity than many objective health measures [20,21]. HRQOL measurements make it possible to scientifically prove the impact of health on quality of life. Quality of life is a broad concept that is affected in complex ways by a person's physical health, mental state, independence, social relationships, and relationships with salient environmental features [22]. Diabetes mellitus is a classic chronic disease that severely limits the patient's activities. Managing this condition requires extensive education and behavior modification. Lifestyle changes must incorporate careful dietary planning, eventual use of medication and for all patients with type 2 diabetes, the use of insulin and home blood glucose monitoring techniques. Studies have shown variability in the QOL effects of and 2 diabetes. For example, Gafvels found that patients with diabetes mellitus more frequently lived alone and remained childless, participated in fewer social activities, and indicated less personal satisfaction than control patients [23]. Other studies have found that patients with diabetes mellitus have good QOL in comparison to those with some other chronic diseases and even to healthy populations [24]. Mayou et al [25] and Hanasted [26] reported that the majority of patients with type 1 and type 2 diabetes experienced high levels of well-being, contentment, and pleasure, but a minority reported that aspects of their lives were affected by both diabetes. I have found that I am being adversely affected. Treatment of diabetes appears to have multiple effects on quality of life. Jacobson et al found that patients with type 2 disease taking oral agents worried more about their condition than patients receiving insulin treatment orthose treated by diet modification alone, suggesting the possibility that this transitional period was one in which the reality of having an illness was felt most intensely by patients [26]. The same study also reported that insulin treatment for type 2 disease was associated with lower HRQOL satisfaction and greater disease impact.Mayu et al. Finds little difference in quality of life between patients treated with diet, oral medications and insulin therapy. [24].

# DIABETES MELLITUS & OCCUPATIONAL THERAPY

In recent time’s major portion of population diagnosed with Diabetes mellitus. Diabetes mellitus is associated with adverse health effects leads to physical, psychological and emotional problems. An occupational therapist can play very important role in management of Type-2 diabetes mellitus and can effectively educate and train persons at risk for or who currently have diabetes to modify current habits and change routines and develop new ones habbits to promote a healthier lifestyle and minimize disease Progression.

Occupational therapy can and does provid in a wide range of settings, such as a client’s home, an outpatient clinic, or a hospital. It can also be delivered through programs focused on health and prevention, or on the medical management and rehabilitation of complications arising from diabetes. , which may be available in more professional settings. Services can be delivered individually or in groups and, depending on the topic, may include oral lessons, demonstrations, hands-on experiences, group activities, and role-plays. Occupational therapists are professionals who analyze the abilities and patterns people need to perform their daily activities (occupations). They effectively educate and train people at risk for diabetes or those currently living with diabetes to change their current habits and routines, promote a healthier lifestyle, and slow the progression of the disease. You can create a new one to minimize. Occupational therapists can help clients develop simple, specific, measurable, and achievable self-management goals that align with the 7 Behaviors recommended by the **American Association of Diabetes Educators (AADE)**. These AADE 7TM self-care behaviors are:

 (1) Healthy eating,

(2) Being active,

(3) Monitoring,

(4) Taking medications,

(5) Problem solving,

(6) Healthy coping, and

(7) Reducing risks [27].

Behaviors like healthy eating are self-explanatory, but others are more engaging. For example, monitoring includes not only blood sugar readings, but also blood pressure, weight, foot health, and “step count” tracking to ensure the person is getting enough physical activity. In addition, risk reduction includes a variety of behaviors including, but not limited to, smoking cessation. foot self-checks; maintaining a personal health record; and regular eye, foot, and dental examinations so clients can keep track of and attend diligently appointments with their diabetes health team. According to AADE’s disabilities position statement, occupational therapy practitioners are viewed as part of the diabetes self-care team [28]. Occupational therapy practitioners are knowledgeable about the impact of medical conditions on an individual’s day-to-day and long-term functioning. Through a holistic approach, we address the physical, cognitive, psychosocial, and sensory aspects inherent in carrying out everyday life. Occupational therapists work collaboratively with clients to prioritize what they want and need to achieve. This is important for diseases that require 24/7 self-management. Occupational therapists can change or adjust how clients perform their desired self-care tasks to facilitate the goal of managing this condition. Occupational therapy focuses on lifestyle changes, health promotion, correction of physical and visual impairments, and maximizing self-sufficiency, all of which are directly and adversely affected by diabetes and its complications. Occupational therapists focus on helping clients manage their diabetes rather than getting them under control so they can participate in their daily lives.

**Fig 2:** Diagnosis of type-2 Diabetes mellitus [29]

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