Self-Management Education

Self-Management Education:

A Patient-Focused Quality Improvement Strategy in Managing Diabetes

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PREFACE

Diabetes stands as one of the most pressing public health challenges of the 21st century, affecting millions of individuals globally and straining healthcare systems with its economic and social burdens. While medical advancements have improved treatment options, they alone are insufficient to address the complexities of managing this chronic condition. A paradigm shift toward empowering patients through self-management education has emerged as a transformative solution—one that prioritizes education, engagement, and empowerment to enhance health outcomes and quality of life.

This book aims to bridge critical gaps in diabetes care by providing a comprehensive framework for understanding, designing, and implementing self-management education programs. It emphasizes moving beyond traditional, provider-driven care models to adopt collaborative, patient-centered strategies that address the diverse needs of individuals living with diabetes.

Organized into six chapters, this book explores every dimension of self-management education. Beginning with an overview of the global burden of diabetes and the urgent need for patient-focused interventions, it progresses through theoretical foundations, key program components, and innovative delivery methods. The book also discusses the effectiveness and cost-effectiveness of these programs and addresses the challenges inherent in their implementation, particularly in resource-constrained and culturally diverse settings.

By synthesizing global perspectives, theoretical insights, and evidence-based research, this work offers actionable insights for healthcare professionals, educators, researchers, and policymakers. It underscores the transformative potential of self-management education in empowering patients to actively participate in their care, improving health outcomes, and reducing healthcare costs.

This book is more than an academic resource—it is a call to action. As you journey through its pages, may you find inspiration, knowledge, and practical

strategies to champion patient empowerment, enhance healthcare delivery, and contribute to the fight against diabetes.

CHAPTER ONE

THE GLOBAL DIABETES CRISIS AND THE CRITICAL NEED FOR SELF-MANAGEMENT EDUCATION

CHAPTER OVERVIEW

After reading this chapter, readers will:

- Understand the global shift in health paradigms from infectious diseases to non-communicable diseases (NCDs) and recognize the significant impact of urbanization, lifestyle changes, and demographic shifts on this transition.
- Appreciate the growing prevalence and economic burden of diabetes mellitus (DM) as a major NCD, including its classification, epidemiology, and associated risks.
- Gain insights into the fundamental principles of diabetes mellitus, encompassing its types (Type 1, Type 2, and Gestational DM), pathophysiology, and prevalence trends across different regions and income classifications.
- Recognize diabetes as a leading cause of mortality globally, understanding its impact on life expectancy, healthcare utilization, and economic costs.
- Explore the critical role of self-management education (SME) in diabetes care.

CHAPTER SUMMARY

This chapter explores the escalating global burden of non-communicable diseases (NCDs), with a particular focus on diabetes mellitus (DM), highlighting the urgent need for effective self-management education in diabetes care. As the global health landscape shifts from infectious diseases to chronic conditions, particularly in low- and middle-income countries, diabetes emerges as a major public health concern. The chapter begins by contextualizing the epidemiologic transition that has led to the rise of NCDs, driven by factors such as urbanization, lifestyle changes, and demographic shifts. It then delves into the specific challenges posed by diabetes, discussing its prevalence, impact on mortality, and the significant economic burden it imposes globally.

The chapter provides a comprehensive overview of diabetes, including its types—Type 1, Type 2, and gestational diabetes mellitus (GDM)—and their respective pathophysiologies, risk factors, and complications. The prevalence of diabetes is examined across different regions and income classifications, revealing stark disparities in both prevalence and healthcare expenditures.

Central to the chapter is the discussion on the role of self-management education in diabetes care. It emphasizes the evolution of chronic illness management from a traditional provider-patient dynamic to a more collaborative model, where individuals with diabetes play a crucial role in their own care. The chapter introduces key concepts such as self-care, self-management, and self-management support, illustrating how these interrelated strategies empower individuals to effectively manage their condition. The importance of integrating self-management education into broader diabetes care strategies is underscored as essential to improving health outcomes and reducing the global burden of diabetes.

KEY TERMS

Term	Definition
Non-Communicable Diseases (NCDs)	Chronic diseases not caused by infectious agents, such as diabetes, heart disease, and cancer
Global Health Burden	The overall impact of diseases and health conditions on populations worldwide
Diabetes Mellitus (DM)	A metabolic disorder characterized by high blood sugar levels over a prolonged period
Glycemic Control	The management of blood glucose levels within the target range
Self-Management Education	Structured programs designed to teach individuals the skills and knowledge needed to manage their condition effectively
Self-Care	Daily activities performed by individuals to manage their health, such as monitoring blood glucose, following a diet, and exercising
Self-Management Support	Assistance provided by healthcare systems, professionals, or peer groups to enable effective self-management practices
Prevalence of Diabetes	The proportion of individuals in a population who are living with diabetes at a specific point in time or over a defined period
Economic Burden of Diabetes	The financial costs associated with diabetes care, including direct medical costs and indirect costs such as lost productivity

TRANSITIONING HEALTH PARADIGMS

The global health landscape is undergoing a profound transformation, marked by a shift from infectious to non-communicable diseases (NCDs), particularly in low- and middle-income countries (GBD, 2019). This transition is largely driven by factors such as urbanization, lifestyle changes, and demographic shifts. Historically, infectious diseases were the leading cause of mortality worldwide (Sav et al., 2017). However, over the past few decades, NCDs, including cardiovascular diseases (such as heart attacks and strokes), cancers (such as lung and breast cancer), chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), and diabetes, have become the predominant cause of death, accounting for 71% of global deaths annually (WHO, 2023). The epidemiologic transition theory explains this shift: as societies develop economically, the burden of disease moves from infectious diseases to chronic conditions. This change is especially evident in regions like sub-Saharan Africa, where NCDs are emerging as significant public health challenges despite the persistent threat of infectious diseases (Global Burden of Disease, 2019).

Urbanization has led to lifestyle changes that increase the risk of NCDs, such as poor dietary habits and reduced physical activity. Globalization has further spread unhealthy lifestyles, affecting populations worldwide, while an aging population and socioeconomic disparities exacerbate the NCD burden (Global Burden of Disease, 2019, 2019). Low-income populations are disproportionately affected due to limited access to healthcare and higher exposure to risk factors like tobacco and poor nutrition. As life expectancy rises, the prevalence and economic impact of chronic diseases continue to grow, with projections indicating that by 2030, the global cost of managing these conditions could reach $47 trillion (Hacker, 2023). NCDs also contribute significantly to healthcare utilization, with approximately two-thirds of patient interactions involving chronic disease management (O'Halloran, Miller, & Britt, 2004).

Modifiable risk factors such as tobacco use, unhealthy diets, physical inactivity, and harmful alcohol consumption are major contributors to NCDs, alongside metabolic risk factors such as high blood pressure, obesity, and hyperglycemia (WHO, 2023). Environmental factors, especially air pollution, also play a substantial role. The socioeconomic impact is severe, as NCDs not only threaten public health but also hinder poverty reduction efforts, particularly in low-income countries where healthcare costs can be crippling (Hacker, 2023). Addressing NCDs is

crucial to achieving sustainable development goals, as these conditions increasingly dominate global health challenges.

DIABETES AS A MAJOR CHRONIC DISEASE OF PUBLIC HEALTH CONCERN

One of the key chronic diseases of public health concern is diabetes mellitus (DM), classified as a non-communicable disease (NCD). It has emerged as a leading cause of morbidity and mortality worldwide, ranking among the top 10 causes of death globally (Lin et al., 2020).

According to the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2019, diabetes was the eighth leading cause of death and disability combined, affecting nearly 460 million individuals across various countries and age groups in 2019 (GBD, 2019). The International Diabetes Federation (IDF) reported that by 2021, approximately 537 million adults aged 20–79 were living with diabetes, resulting in global health expenditures of US$966 billion. Projections indicate that this number will rise to 643 million by 2030 and 783 million by 2045, representing a 46% increase, while the global population is expected to grow by only 20% during the same period (IDF, 2021).

Diabetes not only poses a direct health threat, but also significantly burdens healthcare systems. Although diabetes itself is not a high-mortality condition, it is a major risk factor for other serious health issues, including cardiovascular disease, kidney failure, and infections, which can be fatal. The socioeconomic implications of diabetes are profound, as the costs associated with its treatment can lead to financial strain and increased poverty, particularly in low- and middle-income countries where healthcare access is often limited (Ong et al., 2023).

Understanding Diabetes Mellitus

Diabetes mellitus (DM), commonly known as diabetes, is a serious and long-term (or chronic) condition characterized by elevated blood glucose levels (Chan et al., 2021). This occurs when the body is either unable to produce sufficient insulin or cannot effectively use the insulin it produces. Insulin, a hormone produced by the pancreas, is essential for allowing glucose from the bloodstream to enter cells, where it is either converted into energy or stored. It also plays a crucial role in the metabolism of protein and fat (IDF, 2021).

When the body lacks insulin or its cells become resistant to it, blood glucose levels rise, resulting in hyperglycemia, the hallmark of diabetes. If left uncontrolled over time, this insulin deficiency can cause damage to multiple organs, leading to severe and potentially life-threatening complications such as cardiovascular disease (CVD), nerve damage (neuropathy), kidney damage (nephropathy), lower-limb amputation, and retinal damage that may cause vision loss or even blindness. However, with appropriate management, these complications can be delayed or even prevented (IDF, 2021).

Types of diabetes

Diabetes can be classified into several main types, each with distinct underlying causes and characteristics. The primary types include Type 1 diabetes, Type 2 diabetes, gestational diabetes mellitus (GDM), and other specific forms of diabetes. Detailed explanations of each type are provided below.

Type 1 diabetes

Type 1 diabetes is caused by an autoimmune process in which the body's immune system attacks the insulin-producing beta cells of the pancreas (Atkinson et al., 2014). As a result, the body produces very little or no insulin. The exact causes of this destructive process are not fully understood. However, a likely explanation involves a combination of genetic susceptibility, conferred by numerous genes, and an environmental trigger, such as a viral infection, that initiates the autoimmune reaction (Craig et al., 2014). The condition can develop at any age, but it most frequently occurs in children and young adults. In fact, type 1 diabetes is one of the most common chronic diseases in childhood (Atkinson et al., 2014).

People with type 1 diabetes require daily insulin injections to maintain their blood glucose levels within an appropriate range. Without insulin, survival would be impossible. However, with daily insulin treatment, regular blood glucose monitoring, education, and support, they can live healthy lives and delay or prevent many of the complications associated with diabetes (IDF, 2021).

Type 2 diabetes

Type 2 diabetes is the most common form of diabetes, accounting for over 90% of cases worldwide. It develops when the body's cells become resistant

to insulin, a condition known as insulin resistance (IDF, 2021). In the early stages, this resistance leads to hyperglycemia as the body compensates by producing more insulin. Over time, however, the pancreatic beta cells may fail to keep up with this demand, leading to inadequate insulin production (Magliano et al., 2019).

While type 2 diabetes may present symptoms similar to those of type 1 diabetes, they are generally less pronounced and often go unnoticed. As a result, the exact onset of the condition is difficult to pinpoint, leading to a long pre-diagnostic period (Magliano et al., 2021). It's estimated that one-third to one-half of individuals with type 2 diabetes remain undiagnosed. This delayed diagnosis can result in complications such as visual impairment, slow-healing lower-limb ulcers, heart disease, or stroke, which may ultimately lead to the discovery of the disease (Magliano et al., 2021). Although type 2 diabetes is more commonly associated with adults, it is also increasingly seen in older children, particularly in countries where childhood overweight and obesity are becoming more prevalent (Craig et al., 2014).

The causes of type 2 diabetes are not fully understood but are strongly associated with factors such as overweight and obesity, advancing age, ethnicity, and family history. Similar to type 1 diabetes, both genetic predisposition and environmental factors contribute to the risk (IDF, 2021).

Globally, the prevalence of type 2 diabetes is increasing in all regions, driven by population aging, economic development, and urbanization. These trends lead to more sedentary lifestyles and increased consumption of unhealthy foods, which are linked to obesity (IDF, 2021).

Gestational diabetes mellitus

Gestational diabetes mellitus (GDM) is a glucose intolerance disorder first detected during pregnancy, affecting approximately 7% of pregnancies (Immanuel et al., 2017; Thapa & Chitkara, 1990). It is characterized by hyperglycemia and is often associated with maternal risk factors such as overweight (Vääräsmäki, 2002). GDM screening typically involves assessing clinical risk factors and glucose tolerance testing in at-risk women (Buchanan & Xiang, 2005). The condition poses significant risks for both mother and fetus, including increased likelihood of cesarean delivery, birth trauma, and neonatal intensive care admission (Immanuel et al., 2017). Long-term consequences may include predisposition to metabolic syndrome, type 2 diabetes, and cardiovascular disease for both mother and

child (Reece, 2010). While GDM usually resolves after delivery, affected women remain at high risk for developing diabetes later in life (Buchanan & Xiang, 2005). Early recognition and aggressive treatment of GDM can significantly reduce associated risks (Reece, 2010).

Other types of diabetes

The recently published World Health Organization report on the classification of diabetes mellitus identifies several "other specific types" of diabetes, including monogenic diabetes and what was previously termed "secondary diabetes." Unlike type 1 and type 2 diabetes, which involve multiple genes and environmental factors, monogenic diabetes is caused by mutations in a single gene (WHO, 2019). Although rare - accounting for just 1.5-2% of all diabetes cases - monogenic diabetes is often misdiagnosed as either type 1 or type 2 diabetes, leading to underestimation of its prevalence (Hattersley et al., 2018). These forms of diabetes range from neonatal diabetes mellitus (sometimes called "monogenic diabetes of infancy") and maturity onset diabetes of the young (MODY) to rarer syndromic conditions associated with diabetes (Flannick et al., 2016). Despite their rarity, these monogenic forms offer valuable insights into the pathogenesis of diabetes as "human knockout models."

In addition, diabetes can develop as a result of other conditions, which are classified by the World Health Organization as follows (WHO, 2019):

1. **Diabetes due to diseases of the pancreas**: Conditions like pancreatitis, trauma, infection, pancreatic cancer, and pancreatectomy can lead to diabetes.
2. **Diabetes due to endocrine disorders**: Excessive hormone secretion, such as in Cushing's syndrome, can antagonize insulin and cause diabetes.
3. **Drug and chemical-induced diabetes**: Certain drugs and chemicals can impair insulin secretion or action, leading to diabetes.
4. **Infection-related diabetes**: Viral infections that cause beta-cell destruction can trigger diabetes.
5. **Uncommon specific forms of immune-mediated diabetes**: These include immunological disorders distinct from those causing type 1 diabetes.
6. **Other genetic syndromes associated with diabetes**: Conditions like Prader-Willi syndrome, Down syndrome, and Friedreich's ataxia are sometimes linked to diabetes.

Prevalence of Diabetes

of diabetes simply refers to the proportion of individuals in a given population who have diabetes at a specific point in time or over a defined period. It is usually expressed as a percentage of the total population and can be categorized into point prevalence, which measures the proportion of people with diabetes at a specific moment; period prevalence, which covers a specific time span, such as a year; and lifetime prevalence, which indicates the proportion of people who have ever been diagnosed with diabetes during their lifetime. Prevalence considers both new and existing cases, making it a key measure to assess the overall burden of diabetes in a population.

In 2021, more people with diabetes lived in urban areas (360.0 million) than in rural areas (176.6 million), with the prevalence in urban areas at 12.1% compared to 8.3% in rural areas. This gap is expected to widen as global urbanization continues, with the number of people with diabetes in urban areas projected to reach 596.5 million by 2045. The prevalence of diabetes in urban areas is also expected to rise to 13.9%, largely due to population aging (IDF, 2021). The International Diabetes Federation (IDF) projects a 16% growth in diabetes prevalence globally between 2021 and 2045. Middle-income countries are likely to experience the greatest percentage increase due to aging populations. About 94% of the overall increase in the number of people with diabetes by 2045 is expected to occur in low- and middle-income countries, where population growth is anticipated to be higher. Diabetes prevalence also shows an increasing trend with age, a pattern expected to persist in 2045. In 2021, the prevalence was lowest among adults aged 20–24 years (2.2%) and highest among those aged 75–79 years (24.0%), with a predicted rise to 24.7% in 2045. As the global population ages, a growing proportion of those with diabetes will be over the age of 60 (IDF, 2021).

In 2021, the estimated prevalence of diabetes in women aged 20–79 years was slightly lower than in men (10.2% vs. 10.8%), with 17.7 million more men than women living with diabetes. The countries with the largest numbers of adults aged 20–79 years with diabetes in 2021 were China, India, and Pakistan, and these countries are expected to maintain this ranking in 2045 (IDF, 2021).

It is important to note that countries with the highest number of people with diabetes do not necessarily have the highest prevalence rates. In 2021, the highest comparative prevalence rates were observed in Pakistan (30.8%), French Polynesia (25.2%), and Kuwait (24.9%). These countries are

projected to continue leading in comparative prevalence by 2045, with Pakistan reaching 33.6%, Kuwait 29.8%, and French Polynesia 28.2% (IDF, 2021).

Tables 1 and 2 present data on the prevalence of diabetes among adults aged 20-79 years in 2021 and projected figures for 2045, with Table 1.1 categorizing the data by World Bank income classification and Table 1.2 by global regions.

Table 1.1: Number of adults (20-79 years) living with diabetes in 2021 and projections for 2045

World Bank income classification	2021		2045	
	Number of people living with diabetes (in million)	Prevalence of diabetes (%)	Number of people living with diabetes (in million)	Prevalence of diabetes (%)
High-income-countries	103.9	11.1	117.7	12.45
Middle-income-countries	414	10.8	623.3	13.1
Low-income-countries	18.7	5.5	42.2	6.1
Global	**536.6**	**10.5**	**783.2**	**12.2**

Source: International Diabetes Federation (IDF) Diabetes Atlas 2021

Table 2: Prevalence of diabetes in adults (20-79 years) by region in 2021 and projections for 2045

Region	2021		2045	
	Number of people living with diabetes (in million)	Prevalence of diabetes (%)	Number of people living with diabetes (in million)	Prevalence of diabetes (%)
Middle East and North Africa	72.7	16.2	135.7	19.3
North America and Carebbian	50.5	14	62.8	15.2
South-East Asia	90.2	8.7	151.5	11.3
Western Pacific	205.6	11.9	260.2	14.4

South and Central America	32.5	9.5	48.9	11.9
Europe	61.4	9.2	69.2	10.4
Africa	23.6	4.5	54.9	5.2
Global	536.6	10.5	783.2	12.2

Source: International Diabetes Federation (IDF) Diabetes Atlas 2021

The information in the two tables highlights that high-income countries currently have the highest diabetes prevalence, while the Middle East and North Africa region has the highest regional burden. Conversely, low-income countries and the African region have the lowest diabetes prevalence. However, regions such as South-East Asia and the Western Pacific are expected to experience substantial increases in prevalence over the next few decades. Also, middle-income countries are projected to have the highest percentage increase in diabetes prevalence of 2,1% by 2045.

Undiagnosed Diabetes

Early diagnosis of diabetes is essential for preventing or delaying complications, avoiding premature death, and enhancing quality of life. However, late diagnosis remains a significant concern. Individuals diagnosed later are more likely to experience complications, leading to increased healthcare utilization and placing additional strain on already burdened health systems (Dall et al., 2013).

In 2021, nearly half (44.7%; 239.7 million) of adults aged 20–79 living with diabetes were unaware of their condition. Globally, 87.5% of undiagnosed diabetes cases occur in low- and middle-income countries, with the highest proportion (50.5%) in low-income countries. Even in high-income countries, nearly a third (28.8%) of people with diabetes remain undiagnosed (IDF, 2021).

These low diagnosis rates often stem from limited healthcare access and constrained health system capacity (Manne-Goehler et al., 2019). Therefore, cost-effective screening strategies using validated diabetes risk scores, combined with diagnostic tests, are urgently needed. Such measures would help identify cases earlier and expand access to preventive counseling, diagnosis, and clinical care.

Diabetes-Related Deaths

Diabetes-related mortality is a significant public health concern, with diabetes being a leading cause of death worldwide. The International Diabetes Federation reported that in 2021, diabetes accounted for approximately 6.7 million deaths, representing 12.2% of all deaths globally (IDF, 2021). This highlights the substantial mortality burden associated with diabetes. In the United States, diabetes is the seventh leading cause of death (Li et al., 2019). Individuals with diabetes have a twofold increased risk of cardiovascular mortality and a 10% higher all-cause mortality rate compared to those without diabetes. Diabetes significantly increases the risk of cardiovascular disease. A study found that individuals with diabetes had an adjusted incidence rate of 17.6 deaths per 1000 person-years due to cardiovascular causes, compared to 14.2 for those without diabetes (Raghavan et al., 2019). This indicates that diabetes is a critical risk factor for cardiovascular-related mortality. The life expectancy of individuals with diabetes is generally about 7.5 years shorter than that of non-diabetic individuals. The impact on life expectancy is more pronounced for those diagnosed at a younger age. In 2019, it was reported that 26.6% of total deaths were among individuals with diabetes, with approximately 40,000 excess deaths attributed to diabetes compared to the general population (Heald et al., 2022). This suggests a significant mortality gap that persists despite advances in diabetes management.

In 2021, the International Diabetes Federation (IDF) Diabetes Atlas reported that a significant proportion of adults globally died from diabetes before the age of 60, highlighting the severity of the disease as a leading cause of early mortality. For example, in regions such as Africa, over 70% of diabetes-related deaths occurred before 60, and in South-East Asia, nearly 60%. Even in regions with lower figures, such as Europe and North America, diabetes still contributed to substantial premature mortality (Figure 1.1). This data underscores the critical global impact of diabetes as one of the major drivers of early death worldwide.

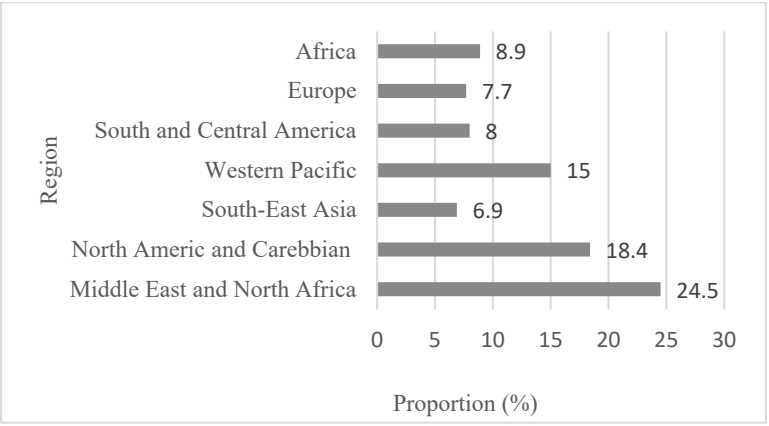

Figure 1.1: Proportion of adults who died from diabetes before the age of 60 years in 2021.

Source: International Diabetes Federation (IDF) Diabetes Atlas 2021

Economic Impact of Diabetes

Diabetes imposes a substantial economic burden globally, affecting countries, health systems, individuals with diabetes, and their families. Direct costs refer to health expenditures attributable to diabetes, whether borne out of pocket by individuals or covered by private or public payers, including governments (Peters et al., 2017). From 2007 to 2021, global health expenditure due to diabetes surged from USD 232 billion to USD 966 billion for adults aged 20–79 years, marking a 316% increase over 15 years (IDF, 2021). Projections indicate that these costs will escalate further, reaching USD 1.03 trillion by 2030 and USD 1.05 trillion by 2045, according to the International Diabetes Federation.

In 2021, global diabetes-related health expenditures made up 11.5% of total healthcare spending worldwide, demonstrating the widespread financial strain this disease places on healthcare systems (IDF, 2021). High-income countries allocated 1.16% of their GDP to diabetes care, while middle-income and low-income countries spent 1.08% and 0.51%, respectively. The North America and Caribbean Region had the highest diabetes-related health expenditure, reaching USD 415 billion, accounting for 42.9% of the global total. Other significant expenditures include the Western Pacific Region at USD 241.3 billion (25.0%) and the European Region at USD 189 billion (19.6%). In contrast, regions like South and Central America, the

Middle East and North Africa, Africa, and South East Asia, despite representing 40.8% of global diabetes cases, collectively accounted for only 12.5% of global diabetes-related spending. Per capita spending also showed stark differences, with the North America and Caribbean Region leading at USD 8,209, followed by the European Region at USD 3,086 and the South and Central America Region at USD 2,190. On the other hand, per capita expenditures were much lower in the Middle East and North Africa (USD 465), Africa (USD 547), and South East Asia (USD 112) regions. The proportion of total healthcare spending dedicated to diabetes varied by region, with the South and Central America Region allocating the highest percentage at 18.4%, and the European Region the lowest at 8.6%. As a percentage of GDP, diabetes-related expenditure was most significant in the South and Central America Region (1.71%) and the North America and Caribbean Region (1.69%) (IDF, 2021).

These statistics highlight diabetes as a significant global economic challenge, with substantial variation in expenditure across regions and income levels. The economic burden remains considerable worldwide, underscoring the need for more efficient diabetes management and prevention strategies.

MODELS OF CARE AND THE NEED FOR SELF-MANAGEMENT EDUCATION

In recent decades, disease management is shifting significantly. Traditional curative and medically-centered approaches to patient care are increasingly replaced by preventive and participatory models, where patients play a critical role in managing their care (WHO, 2023). The term ‘curative model,’ along with similar concepts such as ‘cure-oriented medicine’—widely referenced in professional and public discourse—focuses solely on curing and treating acute health issues, with healthcare professionals as the primary authorities (Fox, 1997). This model is grounded in the belief that health professionals know best, often leading to a prescriptive style of patient education (Funnell and Anderson, 2004).

Over time, the curative model extended to chronic disease management, emphasizing patient obligation and adherence under the assumption that patients should follow healthcare providers' recommendations and that the benefits of compliance outweigh any impacts on their quality of life (Gonder-Frederick et al., 2002). Education within this context is aimed at promoting compliance or adherence through motivational techniques that encourage behavioral change (Funnell and Anderson, 2004). Nonetheless,

available evidence demonstrates that diabetes self-management is poorly explained by simplistic, compliance-based or curative models (Tol et al., 2012; Lorig and Holman, 2003), even though these models remain dominant in some settings. Effective diabetes management, however, relies on a complex set of self-regulation behaviors beyond mere compliance (Gonder-Frederick et al., 2002).

According to the literature, neither the curative model nor the compliance-based model is effective for diabetes care (Tol et al., 2012; Lorig and Holman, 2003). An alternative approach—centered on patient empowerment—acknowledges that patients control and are responsible for their daily diabetes self-management (Tol et al., 2012) This model, based on the three key principles of chronic illness care—choices, control, and consequences—better aligns with the realities of diabetes management (Funnell and Anderson, 2004). Daily choices made by individuals with diabetes have a greater impact on their health outcomes than prescribed recommendations alone. Once outside their doctors' offices, patients have the autonomy to decide which recommendations to follow, and ultimately bear the consequences of these choices. This self-management approach allows patients to integrate diabetes care in ways best suited to their unique life circumstances (Funnell et al., 2007).

Management of diabetes is, thus, evolving from the traditional provider-patient dynamic to a model where individuals with diabetes play a central role in guiding their care in collaboration with healthcare providers (Kumah et al., 2021a; Lorig and Holman, 2003). The field of self-management focuses on identifying and developing patient-centric strategies to address these challenges (Kumah et al., 2021b). A generic skill set has proven effective in enabling individuals to manage their illnesses and improve health outcomes. There's growing recognition that better health outcomes and reduced risks depend not only on healthcare professionals' actions but also on the individual's efforts. Supporting self-care is, therefore, a crucial element of any strategy to combat the growing burden of chronic diseases, such as diabetes (Lorig and Holman, 2003).

A 2010 report from the US Department of Health and Human Services included self-management as one of four goals in a strategic framework aimed at improving the health status of individuals with multiple chronic conditions. Similarly, the 2012 Institute of Medicine report, "Living Well with Chronic Illness: A Call for Public Health Action," highlighted self-management as one of several models for interventions, emphasizing that these programs instill personal responsibility and equip patients with tools

to manage their chronic conditions. The report underscored the importance of a population health perspective in developing strategies, interventions, and policies to combat chronic illness (Institute of Medicine, 2012). Community-based self-management programs are a key component of this population-based approach, addressing the broader public health challenge posed by chronic conditions both in the United States and globally (Harris and Wallace, 2012).

Furthermore, the Institute of Medicine's report, "Priority Concerns for National Action: Transforming Health Care Quality," identified self-management as a critical area of concern for enhancing healthcare quality within the U.S healthcare system (Committee on Identifying Priority areas for Quality Improvement, 2003). The report emphasized self-management as an essential tool for chronic illness management. Similarly, a report by the World Health Organization (WHO) strongly advocates for implementing self-management strategies to empower patients with chronic illnesses to manage their health.

Moreover, a Robert Wood Johnson Foundation report titled "Essential Elements of Self-Management Interventions" identified by Lorig and Holman outlined five core self-management skills that can be tailored to individual patients to improve healthcare quality: decision-making, problem-solving, resource utilization, forming a patient-provider partnership, and adopting actions to manage health and related conditions (Lorig and Holman, 2003). The concept of self-management conveys a message of control, empowerment, and confidence for individuals with chronic illness.

Self-Care, Self-Management, and Self-Management Support

Understanding the field of self-management education in diabetes care involves grasping three key concepts: self-care, self-management, and self-management support. Each of these concepts plays a vital role in empowering individuals with diabetes to effectively manage their condition.

Self-care

Self-care encompasses intentional practices aimed at maintaining physical, emotional, and mental well-being. Defined by the WHO as "the activities individuals, families, and communities undertake to enhance health, prevent disease, manage illness, and promote recovery" (WHO, 1983), and elaborated by the UK Department of Health as actions individuals take for

themselves and their families to maintain good health across physical, mental, and social dimensions. Self-care reflects skills and knowledge rooted in everyday experience. It underscores a partnership between health service users, carers, and professionals (NHS Scotland, 2005), although some definitions propose excluding direct professional involvement (Eales and Stewart, 2001).

Self-care spans a wide spectrum, from choosing to do nothing in a given circumstance (Ahmad and Joshi, 2023; Haugh et al., 1991) to managing chronic conditions autonomously (NHS Scotland, 2005). It encompasses various behaviors and actions among healthy individuals, those at risk, symptomatic individuals, diagnosed patients, and those undergoing treatment. Key aspects include self-diagnosis, self-management, self-medication, and self-monitoring, illustrating its comprehensive nature in health management (Ahmad and Joshi, 2023; Kumah, 2017).

For individuals with chronic conditions such as diabetes, self-care is crucial for managing their overall health and preventing complications. The American Diabetes Association (ADA) underscores the need for monitoring carbohydrate intake, maintaining a healthy weight, and reducing cholesterol, saturated fat, and sodium intake as part of effective diabetes treatment (ADA, 2020). Moreover, self-care extends beyond glycemic control, encompassing practices that address obesity, dietary changes, and physical exercise, which are particularly important for managing Type 2 diabetes mellitus.

Key components of self-care in diabetes management include regular blood glucose monitoring to inform treatment decisions, maintaining a balanced diet with carbohydrate counting and portion control, and engaging in physical activity to improve insulin sensitivity and overall health (Ahmad and Joshi, 2023). Medication adherence is crucial, requiring patients to understand their regimen. Foot care is essential to prevent complications, while stress management techniques, such as relaxation exercises, help maintain stable glucose levels. Additionally, smoking cessation and moderating alcohol intake are important for minimizing diabetes-related risks. Collaboration with healthcare professionals, like dietitians, can further personalize care (Ahmad and Joshi, 2023). Details of these components of self-care in diabetes management are provided in Table 1.3.

Engaging in effective self-care practices can significantly impact the progression and development of diabetes, leading to the prevention or delay of complications such as neuropathy, retinopathy, nephropathy, and

cardiovascular disease (Opoku et al., 2023). Additionally, proper self-care enhances the quality of life by promoting better physical and mental well-being, enabling individuals to lead more active and fulfilling lives. Moreover, self-care empowers patients by giving them control over their health, thereby boosting their confidence in managing their condition (Kumah, 2017).

Table 1. 3: Key components of self-care in diabetes management

Component	Description
Blood Glucose Monitoring	Regular monitoring allows patients to understand how their diet, physical activity, medications, and other factors impact blood glucose levels. This data is essential for making informed decisions about treatment adjustments.
Healthy Eating	A balanced diet is foundational in managing diabetes. Carbohydrate counting, portion control, and choosing foods with a low glycemic index help maintain stable blood glucose levels. Collaboration with a dietitian can further personalize dietary management.
Physical Activity	Exercise improves insulin sensitivity and lowers blood glucose levels. It also benefits cardiovascular health, weight management, and mental well-being.
Medication Adherence	Following prescribed medication regimens is vital for controlling blood glucose levels. Patients need to understand their medications, including dosage, timing, and potential side effects.
Foot Care	Diabetes increases the risk of foot complications due to poor circulation and nerve damage. Daily foot inspections, proper hygiene, and appropriate footwear are critical preventive measures.
Stress Management	Stress can negatively affect blood glucose levels. Techniques such as relaxation exercises, meditation, and adequate sleep can help manage stress and support better diabetes control.
Smoking Cessation and Limiting Alcohol Intake	Smoking and excessive alcohol consumption exacerbate diabetes complications. Quitting smoking and moderating alcohol intake are important steps in overall management.

Based on the American Association of Diabetes Educators, 2009 and Ahmad and Joshi, 2023

Self-management

The concept of self-management was introduced by Creer in the mid-1960s to emphasize the active involvement of patients in their own treatment (Koch et al. 2004). The primary goal of self-management is to reduce the impact of chronic diseases on physical health and daily functioning while helping individuals cope with the psychological challenges of their illness (Lorig and Holman 1993). Self-management is characterized as a collaborative process between the patient and healthcare practitioner (Lorig 1993), with most self-management activities occurring between scheduled healthcare appointments. These activities include managing symptoms, treating the condition, coping with the physical and psychosocial consequences of living with a chronic illness, and making necessary lifestyle adjustments (Glasgow et al. 2003). Patients undertake at-home management tasks and strategies in collaboration with and under the guidance of their physicians and other healthcare providers (Clark et al. 1991). Consequently, self-management is not merely an option but an essential and inevitable component of primary care (Glasgow et al. 2003).

Self-management support

Self-management support is a patient-centered, collaborative approach to care that promotes patient activation, education, and empowerment (Goldstein, 2004). It expands the role of healthcare professionals beyond simply delivering information and traditional patient education, to helping patients build confidence and make choices that lead to improved self-management and better health outcomes (Coleman & Newton, 2005; Kumah et al., 2018). This approach is a key feature of the Chronic Care Model, which emphasizes the importance of having an informed, activated patient to ensure productive interactions with healthcare providers (Glasgow et al., 2002).

Self-management support includes patient education, along with the collaborative use of various behavioral-change techniques to foster lifestyle changes, adopt health-promoting behaviors, and develop skills across a range of chronic conditions (Farrell et al., 2004). For example, patients are trained in problem-solving, goal-setting, and the use of evidence-based standardized interventions for chronic conditions such as diabetes (Coster et al., 2000; Balas et al., 2004), heart failure (Ara, 2004), hypertension (Khan et al., 2005), and angina (McGillion et al., 2004).

Collaborative care planning is a crucial way individual providers can support self-management. Such plans not only focus on the medical management of the condition but also facilitate role management, negotiation of behavior changes required by the chronic disease, and management of the emotional impact of living with a chronic illness (Fuller et al., 2004). Self-management support may be delivered through standardized, programmatic interventions that typically target how the person with the chronic condition perceives and represents their illness. These programs often include a range of cognitive-behavioral interventions aimed at improving self-efficacy beliefs, health behaviors, health status, and reducing the number of unplanned hospitalizations (Dongbo et al., 2003; Kumah et al., 2021c).

The primary aim of self-management support programs is to prepare patients to engage with medical management, maintain life roles, and manage negative emotions such as fear and depression. By offering patients the opportunity to acquire the necessary knowledge, skills, and confidence (self-efficacy) to deal with disease-related challenges, these programs seek to improve the overall quality of chronic disease management (Goldberg et al., 2003, 2004).

Interrelationship and complementarity

Self-care provides the essential practices that form the basis for managing diabetes daily. Self-management takes these practices and integrates them into a structured approach that involves ongoing monitoring, adjustment, and collaboration with healthcare providers. Self-management support ensures that patients receive the necessary guidance, education, and encouragement to maintain and enhance their self-care and self-management efforts, leading to sustained health and well-being. Together, these three concepts create a comprehensive approach to diabetes management, empowering individuals to take charge of their health while receiving essential support from healthcare professionals.

Benefits of Self-Management Education and Support Interventions

Self-management education (SME) and support interventions provide critical benefits that enhance the health and well-being of individuals, communities, healthcare systems, and countries, extending to global health at large. These benefits underscore the importance of SME programs into