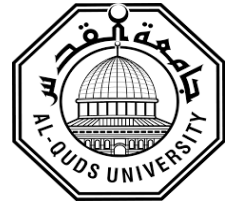


**Deanship of Graduate Studies
Al-Quds University**



**Self-Care Practices among Children with Type-1
Diabetes Mellitus in Gaza Strip, Palestine**

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M. Sc. Thesis

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Self-Care Practices among Children with Type-1 Diabetes Mellitus in Gaza Strip, Palestine

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Jerusalem – Palestine

1444 / 2022

Dedication

My mom and dad are part of my heart, you tightened this bracelet of my success, and you pushed me forward. And you deserve to be at the top of this dedication list.

To my support, my brothers Shadi and Muhammad and their wives, to the flowers of my life, my sisters Susan, and Amal and to the one the closest to my heart, Yahya.

To my family, friends, students, and everyone who wished me well. Thank you all for your support to complete the path.

To the captain of the ship who walked me from the beginning to the shore of success. To the distinguished Dr. Muhammad Al-Jerjawi and Dr. Samer Alnawajha, the supervisors of this letter, I dedicate it to them.

To the homeland of knowledge and learning, to my beloved country Palestine, to the pure soul of the martyrs, to the soul of my aunt Umm Hazem, for who I still remember her prayers for me while she was on her bed of illness, to my tender grandmother Umm Saleh, who had a sweet soul and beautiful supplications.

Shereen Rezeq Shaban Halasa

Declaration

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed:

A handwritten signature in blue ink, appearing to read 'Shereen', with a long horizontal flourish extending to the right.

Shereen Rezeq Shaban Halasa

20/11/2022

Acknowledgments

The Almighty said (And whoever gives thanks, thanks for himself) (Luqman: 12) .

And His Holy Messenger said: "He who does not thank people, does not thank God"

I praise Allah with blessed praise that fills the heavens and the earth for what He has honored me in completing this message, which I hope will obtain his.

Also, I would like to express my sincere thanks and great gratitude to: The virtuous Dr. Muhammad al-Jarjawi and Dr. Samer al-Nawajihah, may God protect them, for their kind generosity in supervising this dissertation until the completion of this study.

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Abstract

Self-Care Practices among Children with Type-1 Diabetes Mellitus is very important to improve child health outcome and decrease mortality rate. The purpose of this study was to assess the level of self-care management practices of children with type-1 diabetes mellitus in the Gaza Strip. A cross-sectional study designs. The sample of the study was convenient and consecutive, consisted of 251 children aged 10 to 18 who have DM1and are attending governmental and UNRWA primary healthcare centers in Gaza strip including jabalia martyrs PHCC, Rimal martyrs PHCC, Dier-Balah martyrs PHCC, Khan-Youns martyrs PHCC, and Rafah martyrs PHCC. The study has been conducted during the period from February 2022 to November 2022. For data collection, the researcher was used call phone questionnaire to assess the level of self-care management practices of children with type-1 diabetes mellitus in the Gaza Strip. A pilot study was conducted on 25 questionnaires, clarity and content validity of the questionnaire was examined by a group of experts, reliability was examined and alpha coefficient was range from 0.740 and 0.825. Different statistical procedures were done to achieve the study objectives and answer research questions. Ethical approval was obtained from Helsinki committee and consent form was attached to each questionnaire for respondent, as well as administrative approval for data collection was obtained from the ministry of health and UNRWA. The total mean score (in days) of self-care management practices of children with DM1is 3.88 days. Self-care management practice which got the highest mean score is “Testing blood glucose” with a mean 4.38, followed by “Medication practices” with a mean score 4.37. On the other hand, self-care management practice which got the lowest mean score is “Diet” with a mean 2.82. Factors associated significantly with performing self-care practices involve previous hospitalization, child family’s income, parents' education, and site of follow-up. Children have to be monitored in terms of their diet and exercise practices, especially at school and home, and health education activities should stress these two areas. Moreover, developing a protocol for self-care management practices for nurses and other healthcare providers to be followed by them when instructing children with type 1 DM.

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List of Abbreviations

5 A's	Assess, Advise, Agree, Assist and Arrange
AADE	American Association of Diabetes Education
ADA	American Diabetes Association
ADSM	Adherence to Diabetes Self-Management
ANOVA	One-way Analysis of Variance
CBR	Crude Birth Rate
CDC	Centers for Disease Control
CE	Conventional education
CGM	Continuous Glucose Monitors
CVR	Content Validity Ratio
DKA	Diabetic Ketoacidosis
DMT1	Diabetes Mellitus Type 1
DRQoL	diabetes-related quality of life
DSCI	Diabetes Self-care Inventory
FBS	Fasting Blood Sugar
GDP	Gross Domestic Product
HbA1C	Glycated Hemoglobin Test
HLA	Human Leukocyte Antigen
IDF	International Diabetes Federation
ISPAD	International Society for Pediatric and Adolescent Diabetes
ITP	Intervention Therapeutic Play
km²	Square kilometer
MoH	Ministry of Health
NGOs	Non-Governmental Organization
PCBS	Palestine Palestinian Central Bureau of Statistics
PEN	Perceptions, Enablers, Nurtures
PHC	Primary Health Care
PHCC	Primary Health Care Centers
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSG	Polysomnography
QoL	Quality of Life
R-DSCI	Revised Diabetes Self-care Inventory
SD	Standard Deviation
SDSCA	Summary of Diabetes Self-care Activities
SGLT-2	Sodium-Glucose Cotransporter-2
SPSS	Statistical Package for the Social Sciences
UNRWA	United Nations Relief and Works Agency for the Refugees
WB	West Bank
WHO	World Health Organization

Chapter One

Introduction

Diabetes Mellitus Type 1 (DMT1) affects more than a million children and teenagers under the age of 20 Globally, Diabetes Mellitus Type 1 (DMT1) is growing more prevalent (Esmaeili et al., 2022). It is the most common metabolic disease and one of the most common pediatric endocrine diseases, affecting roughly 78,000 children, with 70,000 new cases being detected per year (Djonou et al., 2019).

North Africa and the Middle East region are one of the regions in the globe with a high prevalence and incidence of DMT1, the number of DMT1 cases (0-19 years) is currently 149,400, and 20,800 children and teenagers (0-19 years) are diagnosed as DMT1 patients each year in the Middle East and North Africa region, according to the IDF's 9th report, which was released in 2019 Additionally, diabetes accounts for a significant portion of health spending in the area (Esmaeili et al., 2022). about 80% of diabetes mortality occurs in low- and middle-income countries, and the main cause of these deaths is insufficient glycemic control (Djonou et al., 2019). Type 1 diabetes affects 4,4% of Palestinians. The incidence rate for Palestinians was 210.7 per 100,000 people in 2020 (Abueideh et al., 2021).

The ability of children to routinely manage their own treatment is crucial to preventing and treating DMT1 problems, taking part in the disease's treatment this involvement is a crucial success factor in the management of DMT1, which necessitates drive, education, and adherence to a challenging and complex lifetime regimen, living with DMT1 is still challenging for a child and the entire family, even in nations where people have access to numerous daily insulin injections, glucose monitoring, structured diabetes education, and top-notch medical treatment, this is due to the possibility that acute consequences of

hypoglycemia, Diabetic Ketoacidosis DKA, and metabolic abnormalities could impair growth and trigger vascular (or circulatory) issues before they even fully develop (Kafil & El sayed, 2020).

The process of maintaining health and managing diseases through health-promoting behavior is known as self-care in chronic illnesses (Montali et al., 2022). Knowledge and skills, symptoms and bodily changes, psychological components including stress and anxiety, cultural and personal values, self-efficacy, access to treatment, and other people's support are just a few of the variables that can affect how well one takes care of oneself (Riegel et al., 2019). High levels of self-care can significantly influence health outcomes including disease stability, health, and well-being. Improved diabetes self-care, for instance, has been associated with better glucose control, fewer complications, and higher quality of life (Ausili et al., 2017; Caruso et al., 2019; Fabrizi et al., 2020).

The continual process of enabling the information, skill, and competence required to successfully manage the condition on one's own is referred to as diabetes self-management education. It has been demonstrated to improve patient outcomes and is a crucial part of care for all diabetics, the American Association of Diabetes Educators (AADE) has identified seven patient self-care behaviors as valid indicators of the effectiveness of diabetes education: being active, eating healthily, taking medications, monitoring, resolving issues, lowering risks, and healthy coping (Banerjee et al., 2020).

Around the world, the incidence of type 1 diabetes was 15 per 100 000 people, and the prevalence of type 1 diabetes was 9.5 per 10 000 persons (Mobasseri et al., 2020). Inadequate scientific backing for therapy, patient compliance, and awareness of new recommendations are among the main obstacles to managing children with type-1 diabetes

mellitus. As a result, several strategies for the self-management of diabetes mellitus in children have been suggested (Eva et al., 2018).

More importantly, the basic goal of diabetes management is to keep the child healthy, with good metabolic control and a good quality of life (QoL), management of diabetes Blood glucose monitoring, physical activity, food planning, and insulin frequency injection are all part of this complicated and rigorous regimen, Commitment to these activities, combined with the psychosocial ramifications and long-term problems of the disease, can result in stressful and challenging situations that affect children with DMT1 self-perceived health status, (QoL), and daily existence (Elissa et al., 2020).

Compliance of children with DMT1 to treatment guidelines helps the children achieve target glucose levels and reduces the risk of diabetic complications and mortality; however, diabetes self-care measures demand a high level of motivation and consistent efforts from the children (Polonsky & Henry, 2016). Adolescents and families that are well-versed in DM ideas are better able to make self-management decisions with the greatest degree of autonomy (Kise et al., 2017), targeted interventions from healthcare providers are needed to improve the health of children and adolescents (Elissa et al., 2020). Therefore, the main aim of this study is to assess the level of self-care management practices of diabetic children with type-1 diabetes mellitus in the Gaza Strip.

1.1 Problem statement

Lack of knowledge about self-care practices for children with DMT1 diabetes has serious adverse effects on the child's health and increases the chance of complications from the disease. In primary healthcare centers, the researcher Review of records that children with DMT1 do not make follow-up visits unless blood tests are required, which might lead to

the deterioration of their health status. this indicates that the self-care activities of children with DMT1 are not efficient and not optimal.

More importantly, in Palestine, there are just one previous study regarding the self-care management activities of children with type 1 diabetes. the lack of such research studies makes the problem not clear and not apparent to nurses, physicians, healthcare providers, and policymakers at higher levels, which in turn will hinder conducting health educational activities for children with type 1 diabetes and other interventional procedures to correct a lack of self-care activities.

1.2 Justification of the study

Diabetic child's participation and adherence to self-care management practices including medications, diet, exercise, and other beneficial activities help in decreasing the risk of complications as well as lead to improvement of the quality of life of the patients, hence lowering the risk of premature death; thus, diabetic child's knowledge of self-care management practices is the key to achieve therapeutic goals in their care.

The results of this study could have benefits in addressing the more serious problems in the self-care management practices of diabetic children in Palestine, an issue that might enhance the care provided to them and maximize their knowledge regarding their self-care practices. By improving and promoting self-care practices for children with type 1 diabetes, the study's findings will benefit both nursing and health educator. In addition to that, government and UNRWA clinics were included since the study sample included children from healthcare centers affiliated with the UNRWA and others affiliated with the government.

1.3 Main purpose of the study

The main purpose of the study is to assess the level of self-care management practices of children with type-1 diabetes mellitus in the Gaza Strip.

1.4 Specific objectives of the study

1. To assess diet, exercise, foot care, testing glucose level, medication, and body selfcare activities of children with DMT1 in the Gaza Strip.
2. To explore factors affecting self-care management practices of children with DMT1.
3. To identify the differences in self-care practices of children with DMT1 between government and UNRWA.

1.5 Questions of the study

1. What is the level of diet self-care activities of children with DMT1 in the Gaza Strip?
2. What is the level of exercise self-care activities of children with DMT1 in the Gaza Strip?
3. What is the level of foot self-care activities of children with DMT1 in the Gaza Strip?
4. What is the frequency of testing glucose of children with DMT1 in the Gaza Strip?
5. What is the level of self-care activities regarding medication for children with DMT1 in the Gaza Strip?
6. What is the level of body self-care as activities of children with DMT1 in the Gaza Strip?
7. What are the factors affecting self-care management practices of children with type-1 diabetes mellitus?
8. Is there a significant difference in self-care practices of children with DMT1 between government and UNRWA?

1.6 Operational definitions of terms

Child with type 1 DM

The researcher defined the child with DM1 as a child within the age group 10 to 18 years old who has been diagnosed with DM1 and living in the Gaza Strip and makes follow up either in UNRWA and/ or governmental primary healthcare centers.

Self-care practices

In the current study, the researcher defined a diabetic child's self-care management practices as the total score of a diabetic child's answers on the questionnaire, which reflect self-care activities, these activities include performing activities such as eating a healthy diet, exercise in a regular pattern, foot care, adherence to medication, and self-monitoring of blood glucose, body self-care, the higher score indicates better self-care management practices and vice versa for the lower scores.

Factor affecting self-care practices among diabetic children

In the current study, the researcher defined a factor affecting self-care practices among diabetic children as gender, father work, mother work, hospitalization as effect on self-care practice.

1.7 Context of the study

1.7.1 Demographic Context

The historical territory of Palestine is only around 27,027 km² in size. It was captured by Israel in 1948, and the two surviving areas, the West Bank (WB) and the Gaza Strip (GS), were geographically divided as a result of the 1967 war. The West Bank (WB) has an area of 5,842 km², and its inhabitant's number 3,053,183, or roughly 60% of all Palestinians. Nearly 2,047,969 people live in Palestine GS, which occupies about 40% of the country's

entire Palestinian population and has a total area of 365 km². GS has an excessively high population density of 5.610 people per km². (PCBS, 2020; MoH, 2020).

There are 16 governorates in Palestine, with 11 in the West Bank and 5 in the Gaza Strip (PCBS, 2020). The Crude Birth Rate (CBR) in the Palestinian territory was estimated to be about 29.9/1000 of the population in 2020, distributed as 27.5/1000 in the West Bank and 33.4/1000 in the Gaza Strip, while the Crude Death Rate (CDR) was about 3.7/1000 of the population, distributed as 3.4/1000 of the population in the Gaza Strip and 3.9/1000 in the West Bank (MoH, 2020).

1.7.2 Socio-economical context

Gross Domestic Product (GDP) at constant prices increased by 5% in Palestine during the 4th quarter 2021 compared to the previous quarter, therefore the Gross Domestic Product (GDP) increased by 7% in the year 2021 compared to the previous year. The unemployment rate among labour force participants in Palestine reached 26% in 2021. There is still a large disparity in the unemployment rate between the West Bank and Gaza Strip, as this rate reached 47% in Gaza Strip compared to 16% in the West Bank. On the gender level, the unemployment rate for females reached 43% compared to 22% for males in Palestine. This situation resulted from the Israeli occupation's unilateral actions, restrictions on Palestinian movement due to the Coronavirus, and the siege on the GS (PCBS, 2021).

1.7.3 Palestinian Health Care system

There are four primary sectors that make up the Palestinian health system: the government health sector (Palestinian MoH and Military Medical Services), the United Nations Relief and Works Agency for Refugees (UNRWA), non-governmental organizations NGOs, and the private sector. All levels of citizens receive health care services from these many

sectors, including primary, secondary, and tertiary care. The Palestinian Health Ministry places a strong priority on maintaining the continuity of the Palestinian healthcare system and delivering complete, high-quality healthcare to all Palestinians, according to the Palestinian Public Health Law, the Ministry of Health's primary roles and duties are to provide, supervise, and regulate health care in Palestine. The Ministry of Health is also in charge of planning health services in collaboration with many stakeholders, strengthening health promotion to enhance health status, developing human resources in the health sector, managing and disseminating health information, and other duties (MoH, 2020).

1.7.4 Primary Health Care Centers

The Palestinian healthcare system heavily relies on Primary Health Care Centers (PHCC). comprehensive primary health care is provided through a wide range distributed in most of the cities and villages in WB and GS. there are 491 governmental PHCCs in Palestine. In GS, there are 159 PHCCs, 52 for MoH, 22 for UNRWA, 80 for NGOs, and 5 for military medical services. PHCCs provide different health services including mother and child health services including mother and child health services, vaccination, reproductive health, health education, general medicine, dental care, and laboratory services (MoH,2021).

Chapter Two

Conceptual framework and Literature review

2.1 Conceptual framework

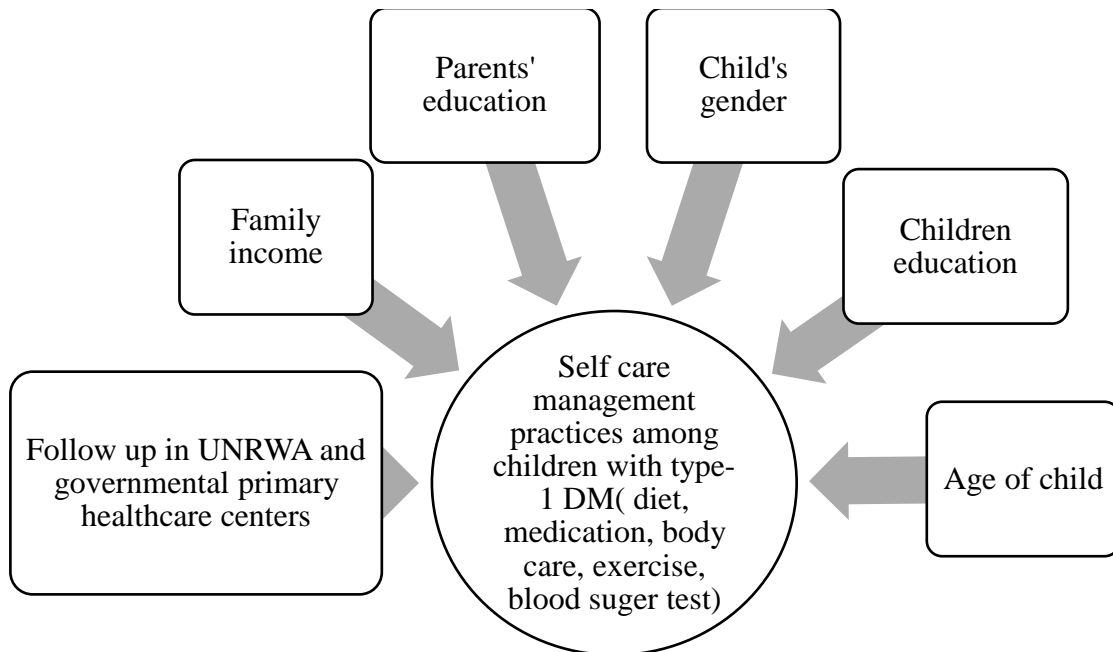


Figure (2.1): Conceptual Framework (Self- developed)

The figure illustrates the study of conceptual framework; in this study, there are several independent factors that are proposed to affect the dependent variable (Self-care management practices among children with DMT1). These independent variables involve parents' education, child gender, child age, family income, Follow up in UNRWA and government primary healthcare centers, etc.

2.2 Literature review

2.2.1 Background

This chapter discusses children with diabetes type 1 as a chronic disease that affects the lifestyle of the children. Therefore, it becomes extremely important that children with diabetes type 1 have knowledge about self-care practices for DM type 1, aiming to achieve a high quality of care as well as optimal outcomes for children and prevent complications that came from a deficit of knowledge.

In this literature review, the researcher describes the definition of diabetes mellitus type 1, its Etiology, Signs and symptoms, Diagnosis, treatment, prognoses and complications, the role of nurses in taking care of Children with Type 1 Diabetes, and Self-care management of Children with Type 1 Diabetes. Also, the researcher summarizes the main studies related to Self-Care Practices among Children with Type-1 Diabetes Mellitus.

So, the main objective of this literature review was to present studies related to Self-Care Practices among Children with Type-1 Diabetes Mellitus.

2.2.2 Diabetes mellitus type 1

T1DM is an endocrine condition in which pancreas cells stop producing insulin, usually as a result of autoimmune damage, this causes hyperglycemia and ketosis; hence insulin replacement is essential for therapy, the disease is most common during adolescence and early adulthood, although it can strike at any age (Syed, 2022)

Children's self-care for Type 1 Diabetic Mellitus is the cornerstone; teaching about correct diet, physical exercise, weight management, glucose monitoring, medication usage, adherence, and foot and eye care is crucial (Kaf1 &El sayed, 2020).

2.2.3 Etiology of Diabetes mellitus type 1 in the children

The immune-mediated impairment of beta cell function, which is impacted by both inherited and environmental factors, results in insulin dependence and hyperglycemia. In a person at risk, the human leukocyte antigen (HLA) haplotype contributes to 30% to 50% of the genetic risk (ADA, 2019). More than 50 new genes have been found through candidate gene and genome-wide association studies. It is believed that a "triggering" insult (e.g., the maternal and intrauterine environment, virus exposure, host microbiome, diet, and many other factors are thought to contribute to disease susceptibility) triggers the recruitment of antigen-presenting cells to deliver beta cell self-antigens to autoreactive T cells (Insel et al., 2015).

These T cells mediate beta-cell death and inflammation, which result in insulinopenia and clinical diabetes, due to self-tolerance failures. Preclinical phases of type 1 diabetes have recently been identified. Beta cell autoimmunity and normal glucose handling are the characteristics of stage 1, improper glucose handling and no overt symptoms are the characteristics of stage 2, and clinically obvious symptoms of insulinopenia are the characteristics of stage 3, It could take a long time to get through these stages (Insel et al., 2015). Even though pre-clinical staging is often not clinically significant, research focusing on therapeutics in the pre-clinical groups may prove to delay or prevent the onset of type 1 diabetes (ADA, 2019).

2.2.4 Signs and symptoms of Diabetes mellitus type 1 in the children.

The type 1 diabetic child who was diagnosed typically had a history of polyuria, polydipsia, and weight loss for a few days to several months. Dehydration, acidosis, lethargy, vomiting, and altered mental status could occur if the diagnosis is delayed. A

pediatric endocrinologist normally oversees follow-up care once every three months after diagnosis and the start of insulin therapy (Los et al., 2021).

Ketoacidosis children's symptoms include the smell of ketones, dehydration, stomach discomfort, Kussmaul breathing, vomiting, coma, and impaired mental status (Phelan et al., 2018).

2.2.5 Diagnosis of Diabetes mellitus type 1 in the children.

Home glucose monitoring is given special consideration to understand the patterns of glucose variability and how they relate to factors in life such as school, exercise, and physical pressures like illness and menstruation. Depending on the situation, the insulin dosage is adjusted with the child's and the family's input (Los et al., 2021).

Hemoglobin A1c is evaluated carefully during clinic visits as a measure of the average blood glucose levels over the previous two to three months. ADA recommends that hemoglobin A1c be less than 7.5%, although large population studies show that only 20% to 25% of adolescents and teens really comply with this requirement (Miller et al., 2015). Organizations in other developed countries with diabetes may advise lower Hemoglobin A1c values and have somewhat greater success in achieving these goals (McKnight et al., 2015).

Regular thyroid issue screenings are conducted, as well as celiac disease screenings, however, the frequency of the latter has not been defined. Depending on how long a person has had diabetes, regular monitoring for lipid problems, microalbuminuria, and retinopathy is advised. Additionally, crucial is the evaluation of psychosocial and mental health issues (ADA, 2019).

It is uncommon to diagnose type 1 diabetes by measuring islet cell antibodies. These antibodies, which are not particular indicators, are only present in roughly 5% of children.

Obtaining a baseline lipid profile is recommended. Additionally, because these children are prone to end-stage renal disease, urine albumin testing should begin around age 12 (Los et al., 2021).

2.2.6 Treatment of Diabetes mellitus type 1 in the children, Diabetes-related Living.

Therapy with exogenous insulin is necessary to stop hyperglycemia's potentially fatal side effects. The cornerstone of the care of DMT1 is insulin therapy utilizing both rapid- and long-acting insulin analogs. Multiple daily injections of insulin or subcutaneous insulin infusion using insulin pumps are two ways to give insulin subcutaneously. Effective management also requires the use of self-monitoring of blood glucose using upgraded glucose meters, continuous glucose monitors (CGM), and more recent insulin pumps with sensor-enhanced systems built in, effective disease management of DMT1 requires addressing the psychological elements of the condition. The management of DMT1 is rapidly changing (Subramanian et al., 2021).

Improved diabetes quality of life through education, assistance, and resources. On how to manage diabetes so that you can avoid or delay health complications by eating healthily, exercising, managing diabetes while you're unwell, achieving and keeping a healthy weight, managing stress and mental health, and other things that make Living with Diabetes Better (CDC, 2022).

While further non-insulin treatments such as the use of incretin medications, SGLT-2, and combination SGLT-1/2 inhibitors are being examined, newer insulins are now the subject of significant investigation. CGM technology and glucose prediction algorithms have made it possible to create artificial pancreas delivery systems. Alternatives to cellular replacement that can restore euglycemia include pancreas and islet cell transplantation, although these procedures are limited by the scarcity of suitable donors and the need for

protracted immunosuppression. One of the newest procedures being researched, islet cell encapsulation, may do away with the need for immunosuppression. Smart insulin delivery devices that can release insulin based on the amount of ambient glucose are also being tested (Subramanian et al., 2021).

2.2.7 Prognosis and Complication of Diabetes mellitus type 1 in the children.

Type 1 diabetes is associated with significant mortality and morbidity rates, and life expectancy is reduced by 10 to 20 years for many people, The condition has several side effects, including hypoglycemia and diabetic ketoacidosis, care of diabetes in children may be quite upsetting, and sorrow is very common, Deaths are mostly caused by late diagnosis, particularly in youngsters, where consequences include (Cataracts, Retinopathy, Gastroparesis, Renal failure, Hypertensive, Premature Cardiovascular Disease, Peripheral Vascular Disease, Neuropathy, Increased Susceptibility to Infections, and DKA) (Los et al., 2021).

2.2.8 he Role of Nurses in Taking Care of Children with Type 1 Diabetes.

Physical and psychological problems typically develop when a diabetic is identified, leading to unsatisfactory care. In many healthcare settings, nurses are crucial in the early detection of diabetes, which leads to an early diagnosis and the beginning of treatment. They not only offer children and their families vital support as they cope with the diagnosis, but they also give special attention to managing difficult days and ongoing problems. By overcoming daily obstacles, nurses can considerably contribute to the management of this chronic illness (Dai BD et al., 2022).

The nurse should give the child age-appropriate instruction regarding insulin self-treatment. They are instructed on where and how to inject insulin, the angle of the injection, then receive education regarding physical activity, dietary habits, and

maintaining personal hygiene (Ismaili et al., 2018). To ensure proper care and safety in the classroom, school-aged children DMT1 require the school nurse's supervision as they manage their condition (Drakopoulou et al., 2022).

School nurses should ensure that children are physically and mentally comfortable, assist students with DMT1 in accepting their condition, and provide support. They should also educate students on how to assist in the event of hypoglycemia or hyperglycemia. Working effectively with the child, parents, and school nurse is an essential component of a successful treatment strategy (Stefanowicz et al., 2018).

2.2.9 Self-care management of Children with Type 1 Diabetes.

The uniqueness of diabetes mellitus among other health diseases is attributable to the fact that its treatment relies mostly on self-management. Consequently, diabetes education is essential for the management and treatment of diabetes (Kafal et al., 2020).

Diabetes Mellitus (DM), necessitates lifestyle adjustments from the child in order for them to practice self-care. According to this viewpoint, supported self-care is a method for enabling individuals to take control of their own health. firstly, Self-care could become a useful tool for this demographic with the help of the health team (Fragoso et al., 2019), the child really must be aware of both the hazards associated with the medical condition and how to treat it. Secondly, Empowerment enables the person to decide on lifestyle adjustments that will contribute to adequate control through adherence to the prescribed course of action. It goes beyond following expert recommendations, which restrict the subject's autonomy. There is the environment's effect, which permeates a child's existence and includes things like family, school, and friends (Fragoso et al., 2019).

2.2.10 Previous Studies related to Self-Care Practices among Children with Type-1 Diabetes Mellitus.

A quasi-experimental research design was used in pediatric clinics affiliated to Suez-Canal University Hospitals by Kafli et al. (2020) to evaluate the effect of an educational training program on self-care management of children with type 1 diabetes mellitus. The study included 100 children aged 6 to 18 years old who were diagnosed with type 1 diabetes mellitus (DMT1) and treated in outpatient pediatric clinics connected with Suez-Canal University Hospitals. The data was gathered using a standardized interview questionnaire (pre and post). After analyzing the baseline data, the children were given an educational training program. The demographic, medical history, knowledge, and reported practice questionnaires were used in the study. research findings reported that after the educational training program was implemented, there was a considerable improvement in the knowledge and reported practice of the examined children about self-care management compared to before the program was implemented. According to the study's findings, there was a substantial positive association between the studied variables.

Elissa et al. (2020) also conducted a cross-sectional descriptive study in the Occupied Territories, Palestine, to assess Self-Perceived Health Status and Sense of Coherence in Children with Type 1 Diabetes. The findings revealed that all children reported acceptable self-perceived health status and a low degree of sense of coherence. A strong feeling of coherence was connected with higher self-perceived health status and more optimum metabolic management in the diabetic group. Males with diabetes had better self-perceived health conditions than females.

Kazeminezhad et al. (2018) also conducted a randomized clinical study on type 1 diabetes children in Ilam to assess the effect of self-care education on glycosylated hemoglobin (HbA1c) levels and blood glucose management in diabetic teenagers in Ilam, Iran. children

were randomly allocated to either the experimental (n = 21) or control (n = 24) groups. The study found no significant change in FBS and HbA1c levels before the intervention between the control and experimental groups. When compared to the levels before the intervention, the difference between the experimental and control groups was substantial in the experimental group but inconsequential in the control group.

Kise et al. (2017) conduct study to look at the School Experiences for teenagers with Type 1 Diabetes, the results of the study revealed that their Common concerns identified by students with DMT1 and their parents included a lack of full-time school nurses, lack of teacher knowledge of diabetes, lack of access to diabetes tools, lack of freedom to perform diabetes self-care, lack of nutritional information in cafeterias, and lack of communication between parents and school personnel. Students who are unable to attend school daily may not be able to achieve their academic potential

Collet et al. (2018) conducted qualitative research between October and December 2016. Pre-adolescents seen in a hospital outpatient clinic and Family Health Units were interviewed using semi-structured interviews. The purpose of the study was to look at what pre-adolescents with type 1 diabetes needed in terms of self-care assistance for disease management. According to the findings of the study, there were nine pre-adolescents. To build self-efficacy, pre-adolescents must overcome disease denial, understand how to deal with feelings triggered by the need for lifestyle changes, receive support from their families and social networks, and have the self-awareness and self-perception required to feel secure in managing their diabetes.

Furthermore, Ali et al. (2014) an exploratory quasi-experimental study to assess specific knowledge of diabetes mellitus and self-care habits among children with type 1 diabetes mellitus. Moreover, the study showed that the intervention group's post-test diabetic

knowledge scores were 1.94 and 1.619 points higher than the control group's pre-test scores. The post-test score for self-care habits was 3.53, while the pre-test score was 2.73. The post-test score for the observational self-care behaviors checklist in insulin injection method was 3.45, while the pre-test score was 2.56. The post-test blood glucose level was 3.68, while the pre-test level was 2.84. The post-test urine test for glucose and/or ketones was 3.39, while the pre-test was 2.07. Furthermore, at P. value 0.05, for hygienic care was 1.89 in post-test and 1.54 in pre-test.

Odeh et al. (2022) compared the socio-demographic and metabolic characteristics of Jordanian and migrant/refugee children with DMT1. The research included 146 children with DMT1 (42 of whom were migrants or refugees, accounting for 28.8%). Jordanian and migrant/refugee children with DMT1 had poor metabolic control: average HbA1c was 8.9 1.99 percent (74 22 mmol/mol) and 9.0 1.93 percent (75 21 mmol/mol), respectively, P = 0.81. Recurrent hypoglycemia was more prevalent in DMT1-positive migrant children than in Jordanian children, with 33 (78.6%) and 56 (53.8%), respectively, p = 0.006. Although not statistically significant (p = 0.068), recurrent DKA attacks were more common in the migrant/refugee groups, 13 (31.0%) and 18 (17.3%), respectively, the Conclusion of the study is that DMT1 patients in Jordan, as well as refugees and migrants, have poor metabolic control. Those from a migrant/refugee origin, on the other hand, were more likely to have diabetes-related acute complications.

Parviainen et al. (2022) conducted a study to investigate if the existence of these postulated endotypes is supported by heterogeneity in demographic, clinical, autoimmune, and genetic variables of children and adolescents with newly diagnosed type 1 diabetes. The study discovered substantial age-related differences in most of the parameters examined. When compared to older children, children diagnosed at the age of 7 years had a larger incidence of affected first-degree relatives, stronger HLA-conferred disease susceptibility,

and a higher quantity of autoantibodies upon diagnosis, particularly insulin autoantibodies. Those diagnosed before the age of 13 had a significantly higher male preponderance, a higher frequency of glutamic acid decarboxylase autoantibodies, a longer duration of symptoms before diagnosis, and more severe metabolic decompensation, as evidenced by a higher frequency of diabetic ketoacidosis, among other things.

Furthermore, Attia et al. (2017) conducted a study to evaluate the effect of instructions on selected self-care practices among DMT1 children. Moreover, the study showed that the children's ages ranged from 6 to 14, with a female majority. Their readiness for self-care was strong, particularly for insulin injection, and none of the children could do any of the procedures adequately prior to the intervention. All procedures improved statistically significantly in the postintervention phase, with 76 percent for insulin injection by syringe, 82 percent for injection by pen, 77 percent for blood glucose testing, and 58 percent for foot care (P0.001). After the intervention, there was an average of 80% appropriate performance (P0.001). The applied intervention was the main independent statistically significant positive predictor of the child's performance score in multivariate analysis, with child age and exercise performance having a lesser but statistically significant impact. All the youngsters (100%) said they would suggest the program to other diabetics. The study concluded that After the intervention, children's self-care activity practice scores improved dramatically, and children's readiness had a key role in enhancing these scores. Parental involvement, particularly with very young children, is required, as is a greater emphasis on foot care. The intervention should be adopted in settings that care for children with DMT1, according to the study. Children with DMT1 had their feet cared for by their parents until they realized the need of caring for and inspecting their feet on a regular basis. More research is needed to see how the program affects glycemic control.

Alkaiyat et al. (2020) did a study to investigate the adherence to Type 1 Diabetes care and the factors that contribute to non-adherence among Palestinian Type 1 Diabetes children's. According to the findings, 66% of children's indicated considerable non-adherence to glucose testing, 89 percent reported non-adherence to dietary recommendations, 79 percent reported non-adherence to exercise, and 21% showed non-adherence to insulin administration on time. The adherence score was strongly associated to age ($r = 0.29$, $P < 0.05$), A1C ($r = 0.21$, $P < 0.05$), sex ($P < 0.05$), and children educational level ($P < 0.05$). children with Type 1 Diabetes have low treatment adherence, which is linked to age, sex, A1C, and children's educational level. The study concluded, designed education programs addressing the importance of adherence to diabetes management should be implemented among Type 1 Diabetes children. More diet and insulin administration monitoring measures are needed.

Momani et al. (2019) studied how teens with type 1 diabetes and their parents deal with the condition in the context of Jordanian culture. The findings of the study revealed that the experiences of teenagers and their parents living with diabetes strengthened their belief that diabetes was part of God's purpose for them. They thought that it was their obligation to embrace, manage, and integrate diabetes into their lives. In Diabetes Self-Care Management, mothers, family members, and others played crucial roles. Individual and system-level impediments to Diabetes Self-Care Management were recognized by adolescents and parents. Others' diagnosis of adolescents as diabetics is an example of an individual-level obstacle, whereas limited insurance coverage, including limited access to blood glucose testing strips, is an example of a system-level barrier.

Elsobky et al. (2022) conducted the study and the goal of this study was to see how a self-management program based on the 5 A's paradigm affected type 1 diabetes in school-aged children. According to the findings, 72.2 percent, 90.0 percent, 91.1 percent, 93.3 percent,

and 96.7 percent of young people lacked knowledge, engaged in inefficient self-care activities, had a negative attitude, and practiced incompetently, respectively. When a self-management program based on the 5A's model is executed, the differences between pre- and post-program implementation are statistically significant. Conclusions: Self-management and self-care models, particularly the 5A model, can help improve symptom control, reduce associated difficulties, improve nursing care, and improve patients' quality of life. Extending the duration of a self-management program based on the 5 A's model decreases negative attitudes and improves quality of life in children with type 1 diabetes, but requires follow-up.

The study was carried out by Hajinia et al. (2021), and the purpose was to evaluate how self-care instruction changed the self-management practices of children with DMT1. According to the statistics, the majority of the youngsters in the research were females (70.59 percent in intervention group and 55.88 percent in the control group). There was a notable difference in self-management scores between the two groups before and after intervention ($p < 0.001$), as well as in self-management scores after intervention between the two groups ($p < 0.001$). Based on the findings of the study, self-care education improves the self-management abilities of school-aged children with DMT1, which can result in reduced economic expenses, decreased disability and death rates, and longer lifespans.

Abolwafa et al. (2017) used a pretest-posttest design at the Minia University Hospital for Obstetrics and Pediatrics' diabetes outpatient clinic to evaluate how an educational program changed adolescent children's knowledge and reported type 1 diabetes behaviors. The study included 50 children with type 1 diabetes who were in their adolescent years. After assessing the baseline data, post/test I and II revealed a considerable improvement in adolescent knowledge and reported practices. According to the study's findings, teenage

children's knowledge and reported practices improved significantly after the program was introduced.

Ali et al. (2014) used a quasi-experimental design to assess specific knowledge of diabetes mellitus and self-care practices among children with type 1 diabetes mellitus, accompanied by an observational self-care practices checklist by researchers. A health education program was developed and administered in the targeted clinics based on Orem self-care theory. According to the study's findings, the intervention group's mean diabetic knowledge scores were higher at post-test than pre-test 1.94 & 1.619 respectively. The post-test score for self-care habits was 3.53, while the pre-test score was 2.73. The post-test score for the observational self-care behaviors checklist in insulin injection method was 3.45, while the pre-test score was 2.56. The post-test blood glucose level was 3.68, while the pre-test level was 2.84. The post-test urine test for glucose and/or ketones was 3.39, while the pre-test was 2.07. Furthermore, at P. value 0.05, for hygienic care was 1.89 in post-test and 1.54 in pre-test.

Fragoso et al. (2019) performed study to determine how teenagers managed their own care for diabetes mellitus by a descriptive study using a predominately qualitative methodology that was conducted in Fortaleza, Ceará State, Brazil, in a hospital that serves as a referral for patients with diabetes mellitus. The study involved semi-structured interviews with 14 teenagers with diabetes mellitus, ranging in age from 12 to 18 years old. According to the study's findings, following analysis, the following three categories of themes emerged: the first is about patients who have shown self-care adherence; the second is about the difficulties of having diabetes as an adolescent; and the third is about the actions of healthcare providers and the patients' relatives for the self-care management of adolescents. The study's findings this study, which involved working with diabetic teenagers, has

shown the value of supported self-care as a tool that can be developed by both professionals and family members to promote treatment compliance.

Rafeezadeh et al. (2019) conducted a study to look at how type 1 diabetes in children affected their adherence to self-care routines after playing an instructional video game for diabetic self-management by 68 children with type 1 diabetes who were hospitalized to the Akbar Children Hospital in Mashhad, Iran, between the ages of 8 and 12, the subjects of this two-group randomized clinical experiment in 2018. The research groups were homogenous in terms of their demographic traits, according to the study's findings. According to the findings of an independent t-test, there was no discernible change in the mean self-care ratings prior to the intervention between the intervention (77.510.1) and control groups (78.77.4) ($P=0.57$). Nevertheless, following the intervention, the mean self-care score in the intervention group (82.97.8) was substantially greater than that in the control group (77.37.7) ($P=0.57$). The results were likewise supported by intra-group comparisons. The study concluded that Children's self-care scores might be greatly improved by the instructional video game's design and Future research should contrast online and offline video games since Internet-based video games can be easily modified and updated.

A study was conducted by Ortiz La Banca et al. in (2022) to evaluate the content validity of data in two checklists pertaining to injection techniques used by children. Eleven healthcare professionals (72 percent nurses or doctors, professional experience 19.4 10.1 years, 45 percent endocrinology specialists, and 18 percent pediatricians) took part in the evaluation. Items with the phrase homogeneity were deemed unacceptable by experts. Items pertaining to the skin fold and the needle insertion angle did not exceed the CVR critical value. The final version of the syringe injection checklist had 22 items with a CVR

of 0.91, and the final version of the pen injection checklist had 18 items with a CVR of 0.87.

Cha et al. (2022) did a study to investigate how children and parents work together to control DMT1 and to investigate how the support of their parents helps the children become more autonomous in their self-management. The study demonstrated that children's understanding of illness management and motivation for self-care were critical for their transition towards independence through semi-structured interviews with children with DMT1 and their parents (N=41). Based on these two variables, the study classified children's collaboration into four categories: dependent, resistive, eager, and independent, as well as parents' methods for encouraging their children' independence. The study offered design recommendations for technology that would facilitate collaborative care by facilitating children's transition to self-managing sickness.

In a study published in (2021), Ji et al. investigated the relationships between sleep characteristics and the control of DMT1 in children, adolescents, and emerging young people. The authors searched publications in PubMed, Web of Science, and Scopus from 2000 through August 2020 while adhering to PRISMA criteria. Observational studies and clinical trials that looked at sleep and diabetes management among people with DMT1 (up to 25 years old) were chosen for review based on inclusion and exclusion criteria. 24 articles met the review criteria as a result of the study. Most studies did not note any variations in how well people with and without DMT1 slept on their own accord. However, a number of studies utilizing objective sleep measures (actigraphy and PSG) revealed that those with DMT1 had shorter sleep durations and poorer sleep quality. Short and extended sleep duration, poor sleep quality, sleep disturbances, and irregular sleep were linked to higher A1C levels and unfavorable DMT1 self-care behaviors, especially in adolescent

males, young men, and those from immigrant homes. The relationships between sleep and later A1C levels were mediated by self-care practices.

In a 2019 study, Nakamura et al. developed the revised diabetes self-care inventory (R-DSCI) for children and teenagers. The study also created the diabetes self-care model based on the R-DSCI, HbA1c, age, and duration of diabetes. Based on a qualitative secondary survey of the self-care framework for teenagers and a review of diabetic self-care instruments, the original DSCI's items for planning meals and administering insulin were adjusted, and new items for negotiating with parents and others were added. Aged 9 to 18, with a mean HbA1c of 7.9 percent, were the 122 children and teenagers with type 1 diabetes who took part in the validity testing. There were 41 components in the DSCI version for R-final. Eight factors that accounted for 40.9 percent of the variation were discovered using the varimax technique, and the 41 items' Cronbach's alpha was 0.79. The diabetes self-care model showed a negative direct effect of "diabetic self-care practice" on HbA1c ($P = 0.004$) and a negative indirect effect of "support and perception of living with diabetes" on HbA1c ($P = 0.002$; estimated effect = 0.21). Additionally, "independent self-care behavior" was directly impacted by age ($P = 0.001$). The R-DSCI could be helpful to clinicians and researchers in assessing children's and teenagers' capacity for self-management.

In a study published in (2021), La Banca et al. compared the effectiveness of a therapeutic play intervention (ITP) and conventional education (CE) on children with DM1's ability to appropriately conduct the method for injecting insulin. Children with DM1 (7–12 years old) were enrolled and randomly assigned to ITP or CE at two diabetes clinics in Brazil. For the intervention delivery and data collection, registered nurses underwent protocol training. The education given to the ITP group included a narrative about a DM1 youngster who self-injects insulin at school, while the CE group just got normal clinic-

based instruction. Children were videotaped administering insulin injections to a doll before the intervention, and again after the intervention. Using verified checklists, the study team went over the recordings and evaluated the injection technique. Children's self-injection behaviors were reported by parents at baseline and after 30 days. Children were 9.6 1.3 years old, had DMT1 for 3.6 2.3 years, and had a HbA1c of 9.1 2.0 percent. Twenty percent of ITP and fifty percent of SE children utilized syringes for injections rather than pens. At the outset, 80% of people in both groups knew how to self-inject; the majority had been taught by a parent or other relative. Both groups had poor injection technique scores, but the ITP group's postintervention scores dramatically improved. After 30 days, neither group's self-injection routines changed.

To fill any gaps in Saudi Arabia's type 1 diabetic mellitus (DMT1) student care and support systems, Abdullah Al Khalifah, et al. (2021) conducted a study. From August to December 2019, researchers in Saudi Arabia conducted a cross-sectional study on a national scale, focusing on instructors and parents of students with DMT1. 632 parents and 983 teachers participated in the study's survey collection. All 13 regions of Saudi Arabia sent responses, with the bulk coming from governmental schools. The findings revealed that 172 students (27.3 percent) lacked access to help at school for blood glucose measurement, 178 students (28.3 percent) went without treatment for hypoglycemia, 374 students (59.6 percent) took their insulin dose for breakfast at home, and 40 students (6.4 percent) skipped taking insulin. 73 students reported school admission refusal in total (11.7 percent). Students with no access to assistance to treat their hypoglycemia or administer insulin at school performed worse academically and had higher hemoglobin A1c levels.

Aguiar et al. (2021) did a study to pinpoint the major difficulties that children with type 1 diabetes mellitus encounter and to outline their coping mechanisms. used a qualitative study that involved a semi-structured interview with children between the ages of 8 and 11

who had been diagnosed with type 1 diabetes and received treatment at an outpatient clinic of a university hospital in the Brazilian state of Rio de Janeiro. According to thematic analysis, the results have been evaluated and grouped. the study's findings There have been five children present. The reports came about because of organizing the qualitative data and deriving meaning from remarks made by children and teenagers. This approach resulted in the category "Living with diabetes," which has two subcategories: "Challenges to disease coping" and "Family participation and support in the disease process”.

In a study by Montali et al., (2022) the disease experience of teenagers and young adults with DMT1 was investigated, with a particular emphasis on the factors that facilitated and impeded their disease self-care. In the investigation, a qualitative description approach is applied. The data were collected via semi-structured interviews, and inductive analysis was performed using semantic topic analysis. The study's findings show that patients see their therapy as a lifelong journey that starts with a dreadful diagnosis and goes on until the first crisis is resolved by integrating the condition at the identity level and learning more. Technology and social context serve as both impediments and enablers of self-care.

2.2.11 Factors Affecting Self-Care management in children with Type I Diabetes mellitus

According to the PEN-3 cultural model, a study was carried out in (2018) by Shahbazi et al. to discover factors influencing self-care performance in teenagers with DMT1. Initial in-depth interviews with 26 participants were done, and a group discussion with 13 participants was held. The analysis of the qualitative study and focus group data was driven by the assessment domains of the PEN-3 model (key influences on health behaviors and impact of behavior on health). According to the study's findings, the factors associated with favorable PEN were most frequently awareness of self-care practices, attitude toward the illness, the influence of spirituality on self-care, accessibility to necessary medical

resources, and maternal support. The low self-efficacy, limited training, high cost of blood glucose test strips, lack of educational therapeutic curricula based on spirituality, disregarding the role of spirituality in treatment and self-care, conflict between parents and children were all examples of the negative PEN. the children and parents' attitude toward reasons for becoming ill (why me) was also included.

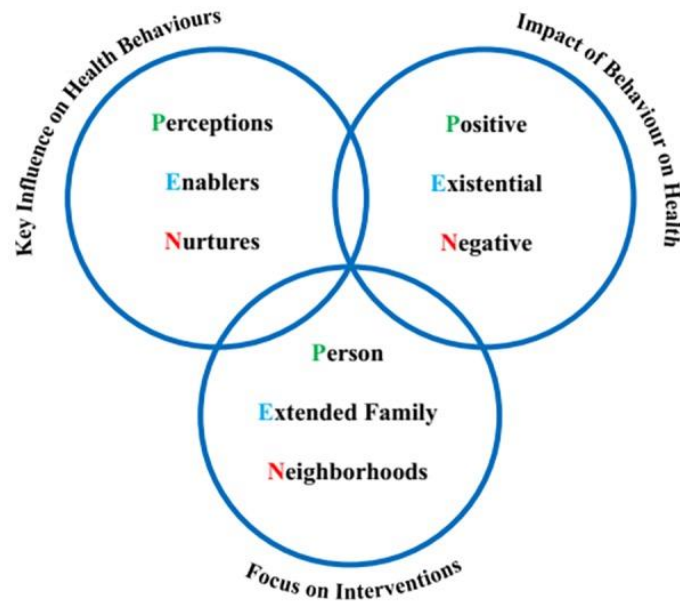


Figure (2.2): PEN-3cultural model

The PEN-3 cultural model adapted from Collins O. Airhihenbuwa, the founder of the model

In order to highlight the significance of attachment in the early child-caregiver interaction, a study was conducted in (2021) by Turin & Radobuljac, Attachment may be viewed as an indicator of the quality of the relationship and is essential for stress and emotional regulation. By outlining some of the scant research done on the relationship between attachment and the etiopathogenesis or management of DMT1, it serves as a template for all subsequent relationships in one's life. To prevent acute and chronic problems, DMT1 therapy necessitates a lifelong therapeutic regimen. Metabolic control has been linked to psychological variables such as family functioning, developmental adjustment, autonomy,

mental health issues, and other variables in addition to psychological stress. Psychological elements need to be understood as dynamic bi- or multidirectional systems that are impacted by the typical developmental transitions of childhood and adolescence rather than as a single directional causality-based concept.

a study conducted in (2022) by Tong et al. to investigate parental caregivers of children with DMT1M's perceptions of common problems was done in (2022). Parental caregivers of children with DMT1M participated in semi-structured interviews that lasted 45–60 minutes. 20 DMT1M caregiver parents, aged 30-53, including 7 fathers and 13 mothers, as well as their children, whose mean age was 10.62.45 years, were all interviewed. Content analysis identified five major themes and thirteen subthemes, including challenges in daily management, family function change, and persistent psychological stress (catastrophic emotions, emotional distress, and altered self-efficacy) (technical challenges, emotional regulation, parent-child conflict and transition of care autonomy from parent to child), Financial load (treatment costs and changed family finances), as well as a lack of social support (social activity limitations and insufficient support system). The study came to the conclusion that psychological reactions can be harmful to parental caregivers and children with DMT1M during the emotional upheaval that occurs during initial diagnosis, the psychological strains of long-term caregiving, and the conflict that arises from the transition from parent to child responsibility.

In a group of Sub-Saharan African DMT1 patients, Djonou et al., (2019) study sought to describe the prevalence of glycemic control and associated factors. 95 adolescents between the ages of 6 and 19 are children. The average HbA1c was 9.2 2.5%, and glycemic management was inadequate in 67.4% of individuals. On univariate analysis, there was a relationship between the patients' study level ($p = 0.03$), healthy eating practices ($p 0.001$), diabetes duration ($p 0.001$), and degree of glycemic control. on multivariate analysis,

children with diabetes who had been diagnosed for more than two years had better control than those who had received a diagnosis more recently.

Bekele et al., (2022) was conducted a study to ascertain the diabetes-related quality of life (DRQoL) and the variables affecting quality of life in Indian children and adolescents with DMT1M. The Pediatric Quality of Life Inventory 3.2 Diabetes Module was used to evaluate 379 randomly chosen children and adolescents with DMT1M. The clinical variables and sociodemographic factors' effects on the mean DRQoL scores were evaluated. For children aged 5 to 12 and for those aged 13 to 18, the overall score of the PedsQL Diabetes Module self-report was found to be 83.7711.11 and 80.2713.52, respectively. Mothers of the patients receiving instruction ($= 0.300$, $p 0.001$) and patients who attended educational sessions ($= -0.134$, $p 0.013$). The study came to the conclusion that Ethiopian children and adolescents with DMT1M did not have a high enough quality of life score. It was discovered that DRQoL was influenced by the patients' educational status, their mothers' educational status, their fathers' occupation, the type of person who administered their insulin, their attendance at diabetes health education, and their mean fasting blood sugar.

Verma et al. (2020) conduct research to determine the effect of lockdown on glycemic control in DMT1M children. by A standardized questionnaire was given to DMT1M participants in a cross-sectional study who were followed up within 15 days after confinement. During the lockdown period, information was gathered on hypoglycemia and hyperglycemic events, diabetic ketoacidosis (DKA), missed insulin doses, routine glucose monitoring, dietary compliance, physical activity, and hospitalization. The prelockout phase readings and the lockdown period values for average blood glucose and HbA1C were compared. 52 individuals reported episodes of hyperglycemia (36.5%) and

hypoglycemia (15.3%). 26.9% of people missed their insulin dose, 36.5% didn't regularly test their blood sugar, and 17.4% didn't follow their diet while in lockdown. In the lockdown phase, the average blood sugar level was 276.9 64.7 mg/dl as opposed to 212.3 57.9 mg/dl in the PR lockdown phase. The mean HbA1c value during the lockout (10 + 1.5%), which was significantly higher than the value prior to the lockdown (8.8 + 1.3%), was statistically significant (p 0.05).

2.2.11.1 Diet

The important point is that taking into account people with diabetes' ability to implement changes, nutrition regimens should be flexible and tailored to match their unique needs. Giving someone a one-size-fits-all diet plan is not the greatest way to impart education; a team approach is preferred. Highlighted is the recommendation of a diabetes self-management education program that includes guidance and training on nutrition treatment from a Registered Dietitian Nutritionist (Gray& Threlkeld 2019).

Dietary treatment goals for diabetics have shifted and are now more adjustable and patient-centered. The American Diabetes Association's (ADA) 2019 goals include the following:

1. To promote and support healthy eating habits, emphasizing a variety of nutrient-dense meals in reasonable serving sizes, in order to improve overall health, achieve and maintain body weight goals, and achieve individual glycemic, blood pressure, and cholesterol goals, as well as delay or avoid the consequences of diabetes.
2. To fulfill each individual's distinct nutritional needs based on their cultural and personal preferences, health literacy, food access, willingness and capacity to adapt behavior, and resistance to change.
3. To maintain the delight of eating by conveying nonjudgmental signals regarding food preferences (ADA, 2019).

2.2.11.2 Exercise

Exercise is recognized as an essential and integral component of diabetes management, and it is useful for diabetes control while at the same time reducing insulin demand. It also lowers the risk of dangerous late complications, such as cardiovascular diseases and arterial hypertension. Physical activity is especially important for children with type 1 diabetes because it supports the child's normal development and the beneficial effects of therapies (Czenczek-Lewandowska et al., 2018).

According to WHO standards, children with diabetes should engage in moderate to vigorous physical exercise for a least of 60 minutes each day, just like healthy children between the ages of 5 and 17 do. Any activity over this average will have additional positive effects on health. Additionally, it is advised that children engage in intense movement at least three days a week (WHO, 2018). The International Society for Pediatric and Adolescent Diabetes' most recent recommendations, which were released in 2018, state that children (aged 5 to 11) and adolescents (aged 12 to 17) should engage in physical activity for a minimum of 60 minutes per day, including vigorous activity for a minimum of 20 minutes, and they should limit sedentary time each day (Adolfsson et al., 2018).

Similarly, the 2018 Diabetes Poland (Polish Diabetes Association) recommendations state that daily physical activity, or at least 2-3 days per week, is required to achieve the best possible diabetes control. The appropriate activity should be preceded by 5-10 minutes of an introduction warm-up for the best results, and it should be followed by soothing activities, such as stretching or relaxing exercises (Polskie et al., 2018).

2.2.11.3 Insulin treatment and testing blood glucose

Due to their need for insulin to survive due to type 1 diabetes, children and adolescents should have access to enough regular and NPH insulin. Through the Life for a Child program, International Society for Pediatric and Adolescent Diabetes (ISPAD) and the

International Diabetes Federation (IDF) are pushing uniform insulin labeling and making insulin accessible to all children and adolescents with diabetes (Danne et al., 2018).

Long-acting insulins and the hybrid closed-loop system for controlled insulin delivery are recent advancements in this area. Patients with DMT1 can benefit from primary islet transplantation as a treatment option. This approach is hindered by issues including the scarcity of islets, the significant islet cell death, and the subpar vascular engraftment of islets after transplantation. As a result, significant efforts are being made to increase the effectiveness of islet transplantation by utilizing the positive effects of stem cells (Pathak et al., 2019).

The cornerstone of intensive diabetes management is frequent blood glucose monitoring, which lowers hemoglobin A1c (A1c) values, reduces the incidence of both hypo- and hyperglycemia, and lowers the risk of long-term complications like microvascular disease, neuropathy, and neurocognitive deficits. Improved glycemic control, as measured by A1c, is associated with lower incidences of diabetic ketoacidosis and severe hypoglycemia (Marks & Wolfsdorf, 2020).

Blood glucose levels should be monitored up to 6-10 times per day, and blood or urine ketone levels should be monitored in children with type 1 diabetes in the presence of prolonged/severe hyperglycemia or acute illness children, the majority of children with type 1 diabetes should be treated with intensive insulin regimens using multiple daily injections of prandial insulin and basal insulin or continuous subcutaneous insulin infusion, the A1C should be measured every 3 months (Chiang et al., 2018).

insulin treatment must begin as soon as possible after diagnosis (typically within 6 hours if ketonuria is present), in order to prevent metabolic decompensation and diabetic ketoacidosis, to achieve the best metabolic control, insulin therapy must be tailored to each

child, The doses of insulin should be adjusted to the circadian variation depending on the daily pattern of blood glucose, regardless of the form of insulin therapy. it is necessary to administer insulin using insulin syringes (or other injectable tools) calibrated to the specific insulin concentration being used, twelfth, Parents, caregivers, and medical professionals still have a responsibility to regularly check injection sites and ensure that users are using proper technique and skills. It is the duty of health care professionals to guide parents, other caregivers, and young patients on how to safely and successfully modify insulin therapy. Regular review, reevaluation, and reinforcement are required for this training (Danne et al., 2018).

2.2.11.4 Foot care

Neuropathy rarely occurs in prepubertal children or after only 1–2 years of diabetes, A comprehensive foot exam, including inspection, palpation of dorsalis pedis and posterior tibial pulses, assessment of the patellar and Achilles reflexes, and determination of proprioception, vibration, and monofilament sensation, should be performed annually along with assessment of symptoms of neuropathic pain (Chiang et al., 2018). The search study reported a 7% prevalence of diabetic peripheral neuropathy with poorer glucose control, older age, longer diabetes duration, smoking, increased diastolic blood pressure, obesity, increased LDL cholesterol and triglycerides, and lower HDL cholesterol as risk factors (Jaiswal et al., 2017).

Performing a comprehensive foot evaluation at least annually to identify risk factors for ulcers and amputations, all patients with diabetes should have their feet inspected at every visit, provide general preventive foot self-care education to all patients with diabetes, the use of specialized therapeutic footwear is recommended for high risk patients with diabetes including those with severe neuropathy, foot deformities, or history of amputation (ADA, 2018).

2.2.12 Summary

This chapter provided the readers with a literature review of the studies that have been done about diabetes type 1, etiology, signs and symptoms, diagnosis, treatment, prognosis and complication, the role of nurses in taking care of children, self-care management, factor affecting self-care management Also, the studies highlighted the domains in this study included diet, exercise, medication, and insulin testing, foot care.

Chapter Three

Methodology

In this chapter different items were explained: study design, study setting, study population, sample and sampling technique, inclusion and exclusion criteria, procedures of data collection, Study instrument, ethical consideration, pilot study, validity of the instrument, statistical management, data security and management, and findings dissemination plan.

3.1 Study design

The researcher used descriptive, cross-sectional design in this study. This type of design is useful for describing variables of the study as they naturally occur without interference from the researcher. Cross-sectional studies are generally carried out on a population at a point of time or over a short period. Also, it examines the association between variables; and characterized as economic, quick and managed easily (Polit and Beck, 2017).

3.2 Study Setting

The present study was conducted in the Gaza Strip at UNRWA and governmental primary healthcare (PHC) centers in Jabalia, Rimal, Dier-Balah, Khan-Younis, and Rafah.

3.3 Study population

The population of the present study involved children who have type-1 diabetes mellitus who make follow up in UNRWA and governmental healthcare centers, the total number of them is 720 according to UNRWA (UNRWA Gaza, 2022) and the ministry of health (Ministry of Health, 2022).

3.4 Sample and sampling technique

Sample of the study was calculated using Stephen Thompson formula ($\alpha=0.05$, C.I. 95.0%, $N=720$). The following formula was used to calculate the sample:

$$n = \frac{N \times p(1-p)}{\left[N - 1 \times \left(d^2 \div z^2 \right) + p(1-p) \right]}$$

$$n = \frac{720 \times 0.50(1 - 0.50)}{720 - 1 \times \left(\frac{0.0025}{3.84} \right) + 0.50(1 - 0.50)} = 251$$

The calculated sample size is 251 children aged 10 -18 years old. The researcher used a convenient sampling method to recruit study participants from primary healthcare centers (UNRWA and governmental) in Gaza strip. Regarding sample from each governorate, quota sampling method was used, in which 50 participants were selected from each governorate (25 UNRWA and 25 governmental). Regarding participants from each PHC clinic, convenient sampling method was used to select participants, because there was difficulty to apply randomization on children within PHC centers.

3.5 Inclusion criteria

Male and female children aged 10 -18 years old, and who have type-1 diabetes mellitus were included in the current study.

3.6 Exclusion criteria

Children with mental health issues and disabilities were excluded because they might have difficulty answering questionnaire questions and carrying out self-care activities in their daily lives.

3.7 Procedures of Data Collection

The process of data collection included: 1) Ethical approval was obtained from the authorized persons and directors of research, 2) Conducting visits to primary health care centers to obtain lists of participants' names and parents phone numbers to fill out the questionnaire by phone, due to the inability to have all participants available at the same time due to their presence in school hours at the exact times work of primary care centers, as well as to reduce the hardship for participants, 3) Application of inclusion and exclusion criteria based on the proposed study, 4) Conducting pilot study to test reliability of tool, 5) Participants were recruited to participate in the study after their voluntary consent from their parents 6) Assuring the participants' ethical considerations by anonymity, 7) Questionnaire filling was to the selected participants itself by telethon call, and 8) Data were collected in a period of 45 days, the researcher collected the data according to the five governorate, two clinics from each governorate. One is governmental and the other is UNRWA, 50 children from each governorate distributed for two clinics so the total were 251 children.

3.8 Study instrument and scoring system

A call phone questionnaire adopted from AlJohani et al. (2016), which is about the summary of Diabetes Self-Care Activities (SDSCA), was used for data collection. A phone call with the child was used to collect data. This tool was translated into the Arabic language by the author. The tool has four parts including 1) demographic factors of participants such as children's age, gender, education, income, etc.; 2) clinical data about the child such as weight, height, HgA1c, hospitalization, etc.; 3) self-care activities including 4 items for diet, 2 items for exercise, 5 items for foot care, 2 items for testing blood sugar, 3 items for medications, 3 items for body care; and 4) care during symptoms of high and low blood sugar. This tool was selected because it is reliable and valid to be

used.

For each item in self-care activities, a score of zero was given for "never done", and a score of 7 was given for "seven days". The lowest possible score for each item is zero, while the highest possible score is 7. For the total score of each domain, the mean score was calculated, as the lowest possible score for each sub-domain is zero, while the highest possible score is 7.

In addition, for the total score of self-care activities (diet, exercise, medication, testing blood sugar, etc.), the lowest possible score is zero, while the highest possible score is 7.

Regarding scoring of two items related to care during symptoms of high and low blood sugar, a score of zero was given if the participant does not have the ability to manage symptoms of high or low blood sugar, while a score of 1 was given if the participant has the ability to manage symptom of high or low blood sugar.

3.9 Ethical considerations

The researcher was committed to all required ethical considerations for this study. Ethical approval was taken through permission from the Helsinki Committee (Annex 8). Approval from UNRWA (Annex 10). Approval from the ministry of health in the Gaza strip was also obtained (Annex 9). Moreover, consent forms were obtained from the parents of the children before conducting data collection. The study participants were notified about that there will be no risks to be included in this study. Participants in the study were anonymous as well.

3.10 Pilot study

Pilot study for 25 children was done before the actual collection of data; this is to provide feedback about the study instrument and to ensure the reliability of instrument and 25 children included in the study.

3.11 Validity of the instrument

The questionnaire was sent to experts to provide their opinions about the adequacy of the tool and the validity of the questionnaire. The majority of experts' suggestions were made in the questionnaire (Annex 7).

3.12 Reliability of the instrument

Techniques of measuring variables were reliable to show the degree of stability and consistency of the questionnaire. As it gives the same results each time the factor is measured, it was reliable. This method is used to measure the reliability of the questionnaire between each field and the mean of the whole fields of the questionnaire. As shown in table 3.1 the results are in the range from 0.740 and 0.825. This range is considered good; the result ensures the reliability of the questionnaire, meaning that the instrument is reliable to measure the objectives of the study, meaning that the questions with its scale are reliable enough to measure the purpose of the study.

Table (3.1): Cronbach's Alpha for reliability for all domains

Domain	Number of items	Cronbach's coefficient alpha
Diet	4	0.740
Exercise	2	0.788
Foot care within the last 7 days	5	0.773
Medication Practices	3	0.743
Testing blood glucose	2	0.825
Body Self-Care	3	0.821

3.13 Statistical management

The researcher used Statistical Package for Social Sciences (SPSS) version 24 to conduct analysis of data. The statistical tests that were used include both 1) descriptive statistics such as frequencies, means, and standard deviations, and 2) inferential statistics, such as independent sample t-test, one-way ANOVA, Chi-square test, and Pearson correlation test.

3.14 Data security and management

All data were treated confidentially, and findings were anonymized to ensure that no participant can be identified in any reports from the study. After initial capture on a password protected laptop, data were stored on One Drive in a folder accessible only to the research team (the researcher and supervisors). The data were accessed by the research team only before being destroyed on completion of the study by the end of October 2022.

Chapter Four

Results

4.1 Introduction

This chapter illustrates the results of statistical analysis of the data, including descriptive analysis that presents the demographic characteristics of the study sample and answers to the study questions. The researcher used simple statistics including frequencies, means and percentages, also independent sample *t* test, Pearson correlation test, and One-way ANOVA were used.

In this chapter, frequencies, means, SD, and mean percentages were used to describe the level participants' self-care practices of diabetes mellitus. One-way ANOVA was used to investigate the differences in the level of participants' self-care practices with regard to categorical (more 2 categories) independent variables such as education and duration of disease. Independent sample test was used to investigate the differences in the level of participants' participants' self-care practices with regard to categorical (only 2 categories) independent variables such as gender. Pearson correlation test was used to investigate the relationship between two numerical variables such as age and self-care practices.

4.2 Sample Distribution according to the Participants' Demographic Factors

Table (4.1): Frequency Distribution of the Sociodemographic Variables of the Sample (n = 251)

Variables	Number	Percentage (%)
Gender		
Male	129	51.4
Female	122	48.6
Child age	Mean \pm SD 13.49 \pm 2.76	
Family income in Shekel	Mean \pm SD 1434.34 \pm 1170.55	
Child education		
Primary	88	35.1
Below secondary	80	31.8
Secondary	83	33.1
Father education		
Illiterate	8	3.2
Below secondary	36	14.3
Secondary	93	37.1
University and more	114	45.4
Mother education		
Below secondary	17	6.8
Secondary	111	44.2
University and more	123	49.0

According to the table, more than half (51.4%) of participants are males, while 48.6% of them are females. Regarding education of children, those who have primary school constitute 35.1% of the study sample, those who have elementary school constitute 31.9%, while those who have secondary school constitute 33.1% of the study sample. The mean score of children's ages was 13.49 years, and the mean score of their family income was 1434 Shekel.

Furthermore, 45.4% of children fathers have a university education or more, while 37.1% have secondary school. In addition, 49.0% of children mothers have a university education or more, while 44.2% have secondary school.

Table (4.2): Sample distribution according to the working status of family and PHC centers (n= 251)

Variables	Number	Percentage (%)
Father's work		
Working	226	90.0
Not working	25	10.0
Mother's work		
Working	40	15.9
Not working	211	84.1
PHC		
UNRWA	126	50.2
Governmental	125	49.8

The table (4.2) shows that, the fathers of majority (90.0%) of children are working, while 10.0% are not. In addition, the mothers of 84.1% of children are not working, while 15.9% are working. Moreover, 50.2% of participants in the present study are from UNRWA primary healthcare centers, while 49.8% are from governmental ones.

Table (4.3): Sample Distribution according to the participants' clinical information (n= 251)

Variables	Number	Percentage (%)
Duration of diseases		
Below 1 year	17	6.8
1-5 years	120	47.8
5.1-10 years	75	29.9
> 10 years	39	15.5
Other disease		
No	251	100.0
Hospitalization		
No	120	47.8
Yes	131	52.2

The table (4.3) shows that, 47.8% of children in the present study have been diagnosed with diabetes mellitus for 1-5 years, 29.9% of them have been diagnosed with a disease for 5.1-10 years, while 15.5% have been diagnosed since more than 10 years. In addition, more than half (52.2%) of diabetic children in the present study have history of previous

hospitalization, while 47.8% of them do not. Furthermore, all of children in the present study do not have other chronic disease.

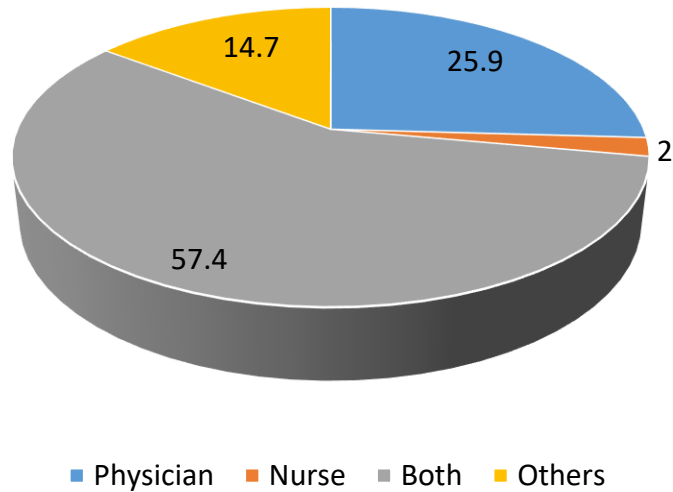


Figure (4.1): Healthcare providers giving information to children

The figure (4) shows healthcare providers who provided information to children regarding diabetes mellitus. More than half (57.4%) of children received information about the diseases from the physician and nurses, 25.9% received information by physicians only, while only 14.7% received information by others.

4.3 Self-care management practices among diabetic children

Table (4.4): Self-care management practices among diabetic children regarding diet and exercise (n=251)

Diet practices	Max mean (%)	Min	Mean	SD
Follow healthful eating plan	7 (100.0)	0 (0.0)	3.69	2.13
Eaten fruits and vegetables	7 (100.0)	0 (0.0)	3.48	2.10
Eaten high-fat foods such as red meat or full-fat dairy products	7 (100.0)	0 (0.0)	2.29	1.70
Space carbohydrates evenly	7 (100.0)	0 (0.0)	1.80	1.71
Total mean	7 (100.0)	0 (0.0)	2.82	1.33
Exercise				
Participate in at least 30 minutes of physical activity	7 (100.0)	0 (0.0)	4.52	2.33
Participate in specific exercise session such as swimming and walking	7 (100.0)	0 (0.0)	2.09	2.39
Total mean	7 (100.0)	0 (0.0)	3.31	1.99

The table (4.4) shows the mean score and SD of self-care management practices among diabetic children regarding diet and exercise. The minimum mean score for each practice is 0 days, while the maximum score is 7 days. Regarding diet practice, the mean score of commitment with healthful eating plan is 3.69 days, while it is 3.48 days for eating fruits and vegetables. In addition, the mean score of eating high-fat foods such as red meat or full-fat dairy products is 2.29 days, while the mean score of spacing carbohydrates evenly is 1.80 days.

Regarding exercise practices, the mean score of participants' practices toward participation in at least 30 minutes of physical activity is 4.52 days, while the mean score of participation in specific exercise session such as swimming and walking is 2.09 days.

Table (4.5): Foot Care Practices among Diabetic children's (n=251)

Foot care within the last 7 days	Max. Score	Min. Score	Mean	SD
Check feet	7 (100.0)	0 (0.0)	2.70	2.98
Inspect the inside of shoes	7 (100.0)	0 (0.0)	3.28	3.00
Wash feet	7 (100.0)	0 (0.0)	6.95	.34
Cover foot	7 (100.0)	0 (0.0)	3.92	2.91
Dry between your toes after washing	7 (100.0)	0 (0.0)	3.91	3.14
Total	7 (100.0)	0 (0.0)	4.15	1.77

The table (4.5) shows that the mean of days in which the patients wash feet is 6.95 days out of 7, the mean score of covering foot is 3.92 days, while the mean score of drying between toes after washing is 3.91 days and it is 3.28 days for inspecting the inside of shoes The total mean of days of conducting foot care practices is 4.15 days.

Table (4.6): Medication Practices and Testing blood glucose among Diabetic children's (n=251)

Domain	Max mean (%)	Min	Mean	SD
Medication practices				
Days taken any medication in the past seven days	7 (100.0)	0 (0.0)	2.06	2.91
Take recommended insulin injections	7 (100.0)	0 (0.0)	6.71	0.93
Times they inject insulin per day	7 (100.0)	0 (0.0)	4.33	4.46
Total	7 (100.0)	0 (0.0)	4.37	1.82
Testing blood glucose				
Health care provider recommended to check your blood sugar	7 (100.0)	0 (0.0)	4.47	1.64
Average days of testing blood sugar daily	7 (100.0)	0 (0.0)	4.28	1.81
Total	7 (100.0)	0 (0.0)	4.38	1.31

The table (4.6) shows that the mean of days in which the patients take recommended diabetes medication is 6.71 days out of 7, the mean score of times they inject insulin per day is 4.33 days. The total mean of days of following medication practices is 4.37 days. Regarding self-care management of testing blood glucose practices, the mean of days in which health care provider recommended to check blood sugar is 4.47 days out of 7 and the average days of testing blood sugar in terms of times recommended by health care provider is 4.28 days. The total mean of days of testing blood glucose is 4.38 days.

Table (4.7): Body Self-Care among Diabetic children's (n=251)

Domain	Max mean (%)	Min	Mean	SD
Committed to dental care after every meal	7 (100.0)	0 (0.0)	4.61	2.41
Committed to taking care of genitals by showering every day	7 (100.0)	0 (0.0)	6.00	1.49
Committed to taking care of toenails	7 (100.0)	0 (0.0)	2.13	2.00
Total mean	7 (100.0)	0 (0.0)	4.25	1.28

The table (4.7) shows body self-care among diabetic patients. The mean score of participants' commitments to taking care of dental care every day is 4.61 days, while the mean score of commitment to taking care of genitals by showering every day is 6 days, and the mean score of commitment to taking care of toenails is 2.13 days.

Table (4.8): Summary of child self-care management practices

Self-care management practices	Mean ±SD
Diet	2.82± 1.33
Exercise	3.31± 1.99
Foot care within the last 7 days	4.15± 1.77
Medication Practices	4.37± 1.82
Testing blood glucose	4.38± 1.31
Body Self-Care	4.25± 1.28
Total	3.88± 0.78

The table (4.8) showed the mean score (in days) and SD of children self-care management practices regarding their diseases. The total mean score of self-care management practices of diabetes mellitus is 3.88 days (range 0-7 days). Self-care management practice which got the highest mean score is “Testing blood glucose” with a mean 4.38, followed by “Medication practices” with a mean score 4.37. On the other hand, self-care management practice which got the highest mean score is “Diet” with a mean 2.82.

4.4 Factors associated with self-care management practices among diabetic children

Table (4.9): mean differences in the level of self-care management practices with regard to children's' demographic and clinical factors

Self- care practice	N	Mean differences	SD	t statistics	p value ¹
Gender					
Male	129	3.95	0.78	1.489 (249)	0.138
Female	122	3.80	0.77		
Father's work					
Working	226	3.87	0.79	-0.193 (249)	0.847
Not working	25	3.91	0.75		
Mother's work					
Working	40	4.08	0.80	1.747 (249)	0.082
Not working	211	3.84	0.77		
Hospitalization					
Yes	120	3.99	0.71	2.169 (249)	0.031
No	131	3.78	0.83		

¹Independent sample *t* test

The table (4.9) shows that there is no significant difference in the level of patients' diabetic self-care practices with regard to their gender ($p > 0.05$). In addition, there is no significant difference in the level of patients' diabetic self-care practices with regard to father's work and mother's work ($p > 0.05$). Furthermore, there is a significant difference in the level of patients' diabetic self-care practices with regard to their previous hospitalization ($p < 0.05$). Previously hospitalized children have significantly higher mean score of self-care practices than children who did not.

Table (4.10): mean differences in the level of self-care management practices with regard to children's' demographic and clinical factors

Self- care practice	N	Mean differences	SD	t statistics	p value ¹
Received information about disease					
Yes	43	3.96	0.73	0.737 (249)	0.462
No	208	3.86	0.79		
PHC type					
UNRWA	125	3.93	0.80	-1.029 (249)	0.305
Governmental	126	3.83	0.76		

¹Independent sample *t* test

The table (4.10) shows that there is no significant difference in the level of patients' diabetic self-care practices with regard to the type of primary healthcare center they make follow up ($p>0.05$). Moreover, there is no significant difference in the level of patients' diabetic self-care practices with regard to the status of information received about disease ($p>0.05$).

Table (4.11): Correlation between Patients' Age and their Self-Care Management

	Self-care Management Domain	
	<i>r</i>	p value ¹
Child age	0.016	0.797
Child family's income	0.163	0.010

¹Pearson Correlation

The table (4.11) shows that there is a significant positive correlation between patients' family income and their self-care management practices of diabetes diet ($p<0.05$); with increase in the patients' family income; self-care management practices significantly increases. In addition, there is no significant positive correlation between patients' age and their self-care management practices of diabetes diet ($p>0.05$).

Table (4.12): Mean differences in the level of children self-care practices with regard to their educational levels

Variable	N	Mean differences	SD	F (df)	P value ¹
Child education					
primary	88	3.91	0.81	0.627 (2, 248)	0.535
Below secondary	80	3.80	0.73		
Secondary	83	3.92	0.79		
Father's education					
Illiterate	8	3.56	0.54	3.550 (3, 247)	0.015
Below secondary	36	3.59	0.52		
Secondary	93	3.83	0.75		
University and higher	114	4.02	0.85		
Mother's education					
Illiterate	17	3.62	0.68	3.134 (2, 248)	0.045
Below secondary	111	3.79	0.71		
Secondary	123	4.00	0.83		
University and higher	52	3.44	2.37		
Healthcare provider giving information					
Physician	65	3.77	0.86	0.603 (3, 247)	0.613
Nurse	5	3.78	0.39		
Both	144	3.91	0.76		
Others	37	3.95	0.75		
Duration of diseases					
Below 1 year	17	3.93	1.08	0.495 (3, 247)	0.686
1-5 years	120	3.84	0.72		
5.1-10 years	75	3.86	0.81		
> 10 years	39	4.01	0.77		

¹One way ANOVA

The table (4.12) shows that there is no significant difference in the level of patients' diabetic self-care practices with regard to their education ($p > 0.05$). Furthermore, there is no significant difference in the level of patients' diabetic self-care practices with regard information received from healthcare providers ($p > 0.05$). Moreover, there is no significant difference in the level of patients' diabetic self-care practices with regard to duration of diseases ($p > 0.05$).

On the other hand, there is a significant difference in the level of patients' diabetic self-care practices with regard father's education ($p < 0.05$). Post hoc Tukey test showed that the difference was observed between university and secondary school in favor to children who have fathers with university degree. Meaning that, children who have fathers with university degree have the highest mean score of self-care practices.

Moreover, there is a significant difference in the level of patients' diabetic self-care practices with regard mother's education ($p < 0.05$). Post hoc LSD test showed that the difference was observed between university and secondary school in favor to children who have mothers with secondary school. Meaning that, children who have mothers with secondary school have the highest mean score of self-care practices.

Table (4.13): Mean differences in the level of self-care management practices with regard to healthcare centers

Self-care practice	N	Mean differences	SD	t statistics	p value ¹
Diet practices					
UNRWA	126	2.84	1.43	0.292 (249)	0.771
Governmental	125	2.79	1.23		
Exercise practices					
UNRWA	126	3.36	2.00	0.418 (249)	0.677
Governmental	125	3.26	1.98		
Footcare practices					
UNRWA	126	4.14	1.91	-0.076 (249)	0.939
Governmental	125	4.16	1.62		
Medication practices					
UNRWA	126	4.33	1.11	-0.277 (249)	0.782
Governmental	125	4.40	2.34		
Testing blood sugar practices					
UNRWA	126	4.77	1.53	4.991 (249)	0.000
Governmental	125	3.98	.89		
Body care practices					
UNRWA	126	4.08	1.05	-2.021 (249)	0.044
Governmental	125	4.41	1.46		

¹Independent sample *t* test

The table (4.13) shows that there is no significant difference in the mean score of children diet practices with regard to their healthcare centers ($p>0.05$). In addition, there is no significant difference in the mean score of patients' exercise practices with regard to their healthcare centers ($p>0.05$). Furthermore, there is no significant difference in the mean score of children foot care and medication practices with regard to their healthcare centers ($p>0.05$).

On the other hand, there is a significant difference in the mean score of patients' testing blood sugar practices with regard to their healthcare centers ($p<0.05$). Patients who make follow up in UNRWA PHC centers have significantly higher mean score than patients who make follow up in governmental PHC centers. Moreover, there is a significant difference in the mean score of patients' body care practices with regard to their healthcare centers ($p<0.05$). Children who make follow up in governmental PHC centers have significantly higher mean score than patients who make follow up in UNRWA PHC centers.

Table (4.14): Association between ability to manage symptoms in emergency situations and PHC of follow up

Ability to manage complications	UNRWA	Gov.	Total	χ^2	p-value
Able to manage symptoms of low blood sugar	103 (53.1)	91 (46.9)	187 (100.0)	2.861	0.091
Does not have ability to manage	23 (40.4)	34 (59.6)	64 (100.0)		
Able to manage symptoms of high blood sugar	101 (54.0)	86 (46.0)	187 (100.0)	4.262	0.039
Does not have ability to manage	25 (39.1)	39 (60.9)	64 (100.0)		

Chi-square test

The table (4.14) shows that more than half (53.1%) of participants who have the ability to manage symptoms of low blood sugar have their follow-up in UNRWA PHC centers, while 46.9% of them have their follow-up in governmental PHC centers. Moreover, 59.6%

of participants who do not have the ability to manage symptoms of low blood sugar have their follow-up at governmental PHC centers, while 40.4% of those who do not have the ability to manage these symptoms have their follow-up at UNRWA. There is no significant association between the site of medical follow up and ability to manage symptoms of low blood sugar level ($p>0.05$).

Furthermore, more than half (54.0%) of participants who have the ability to manage symptoms of high blood sugar have their follow-up in UNRWA PHC centers, while 46.0% of them have their follow-up in governmental PHC centers. Moreover, 60.9% of participants who do not have the ability to manage symptoms of high blood sugar have their follow-up at governmental PHC centers, while 39.1% of those who do not have the ability to manage these symptoms have their follow-up at UNRWA. There is a significant association between the site of medical follow up and ability to manage symptoms of high blood sugar level ($p<0.05$). Meaning that, ability to manage symptoms of high blood sugar level is more significantly among participants who make follow up in UNRWA PHC centers.

Chapter Five

Discussion of Results

5.1 Introduction

Up to the researcher knowledge, this is the first study to assess Self-Care Practices among children with type 1 Diabetic mellitus in Gaza strip, Palestine. The management of type 1 diabetes includes a combination of insulin medications, dietary modifications and exercise, foot care, body self-care, and factor affecting self-care practices among diabetic children, children ability to manage their blood sugar in emergency situation that all should be balanced and frequently evaluated with feedback from blood glucose monitoring to achieve glycemic control.

This chapter covers the study and findings from the data analysis in Chapter five. It also analyzes the consequences for action and research suggestions. The goal of this study is to evaluate self-care practices among children with type 1 diabetes in the Gaza Strip, Palestine.

First discussed are the results of the study from answers to research questions, second, the current study results are compared to the previous studies, also the personal opinion of the researcher is illustrated based on experience in this field.

5.2 Self-care management practices among diabetic children's

The current result regarding Self-care management practices among diabetic children showed in table 8 the mean score (in days) and SD of children's self-care management practices regarding their diseases. The total mean score of self-care management practices of diabetes mellitus is 3.88 days (range 0-7 days). Self-care management practice with the highest mean score is “Testing blood glucose” with a mean of 4.38, followed by “Medication practices” with a mean score of 4.37. On the other hand, the self-care

management practice with the lowest mean score is “Diet” with a mean of 2.82. this result agrees with that of Alkaiyat et al. (2020) who reported that 66% of patients reported significant non-adherence to glucose testing, 89% reported non-adherence to diet recommendations, 79% reported non-adherence to exercise, and 21% reported non-adherence to administering insulin on time.

5.3 Self-care management practices among diabetic children's regarding diet and exercise

The table 4 shows the mean score and SD of self-care management practices among diabetic patients regarding diet and exercise. The minimum mean score for each practice is 0 days, while the maximum score is 7 days. Regarding diet practice, the mean score of commitment with healthful eating plan is 3.69 days, while it is 3.48 days for eating fruits and vegetables. In addition, the mean score of eating high-fat foods such as red meat or full-fat dairy products is 2.29 days, while the mean score of spacing carbohydrates evenly is 1.80 days.

Regarding exercise practices, the mean score of participants' practices toward participation in at least 30 minutes of physical activity is 4.52 days, while the mean score of participation in specific exercise session such as swimming and walking is 2.09 days.

The result agree with the study done by Casano et al. (2021) the study performed to assess adherence to treatment in patients from 2 to 16 years-old with type 1 diabetes mellitus in Andalusia and Spain, the result of study that The prevalence of total poor adherence to diabetes self-management was 52.7% (218 participants), whereas the overall prevalence of good adherence to diabetes self-management was 47.3% (196 individuals) among the participants (0.47, 0.57). Insulin administration, food management, hypoglycemia management, blood glucose testing, and exercise regulation all had higher rates of poor

adherence than average: 56.8% (235 participants), 68.4% (283 participants), 42% (174 participants), 54.8% (227 participants), and 50.5% (209 participants). Moreover, the adolescents with a shorter duration of time since diagnosis of DMT1 had more adherent to overall diabetes self-management than those who had a longer duration of time since diagnosis (AOR=0.1, 95% CI:0.02–0.2, P=0.001).

The researcher's opinion of the results self-care management practices among diabetic children's regarding diet and exercise got the lowest mean score for many reasons, the financial status affects the availability of a healthy diet for a child with DM type1, another reason is that there is no nutritionist available in UNRWA primary health care centers as well as the Ministry of Health, which makes nutritional education lack ideality, There are no free gyms for children with type 1 diabetes, Poor communication between caregivers and the child with diabetes, as in most visits, parents go to get treatment instead of them.

5.4 Foot care practices among diabetic children's

The table (5) shows that the mean of days in which the patients wash feet is 6.95 days out of 7, the mean score of covering foot is 3.92 days, while the mean score of drying between toes after washing is 3.91 days and it is 3.28 days for inspecting the inside of shoes The total mean of days of conducting foot care practices is 4.15 days.

The result agrees with the study done by Attia et al. (2017), which showed that self-care was high, especially for insulin injection, and none of the children had adequate performance in any of the procedures before the intervention. In the post-intervention phase, there were statistically significant improvements in all procedures, reaching 76% for insulin injection by syringe, 82 for injection by pen, 77% for blood glucose testing, and 58% for feet care.

The researcher's opinion of the results is that the Given that children at this age may be more interested in learning a more technical procedure that fulfills their curiosity than simply having their feet and footwear checked, which they perceive as an unnecessarily laborious process, this comparatively low percentage may be explained. It might also be because several aspects of foot care, such as selecting the right footwear and treating cuts, scratches, and skin irritation, were supposed to be replicated. Therefore, parental involvement in this work may need to increase until the youngster understands its significance.

5.5 Medication Practices and Testing blood glucose among Diabetic children's

The table (6) shows that the mean of days in which the patients wash feet is 6.95 days out of 7, the mean score of covering foot is 3.92 days, while the mean score of drying between toes after washing is 3.91 days and it is 3.28 days for inspecting the inside of shoes The total mean of days of conducting foot care practices is 4.15 days.

The result agrees with the results of study performed by Noorani et al. (2016), which showed that sixty-eight percent of patients had good adherence to insulin while adherence to the blood glucose monitoring regimen was 48 % to diet, control was 28 %.

The researcher's opinion of the results are that the insulin test strips, as well as insulin pens and treatment, are given free of charge in the clinics of the UNRWA as well as the clinics of the Palestinian Ministry of Health, although in most cases the strips are not sufficient, so parents of diabetic children go to obtain them through the associations that help diabetic patients, and there are two associations, the Saint Helens Association and the Haifa Association.

5.6 Children ability to manage their blood sugar in emergency situation

The table 7 shows that, 77.3% of children in the present study do not have the ability to manage symptoms of low blood sugar, while 22.7% of them do. In addition, 74.5% of children in the present study do not have the ability to manage symptoms of high blood sugar, while 22.7% of them do.

The findings are consistent with those of a study conducted by Geneti et al. (2022); in that study, the prevalence of total poor adherence to diabetes self-management was 52.7% (218 participants), while the overall prevalence of good adherence to diabetes self-management was 47.3% (196 participants) (0.47, 0.57). In these areas, poor adherence to insulin administration, dietary management, hypoglycemia management, blood glucose testing, and exercise regulation were higher than average: 56.8% (235 participants), 68.4% (283 participants), 42% (174 participants), 54.8% (227 participants), and 50.5% (209 participants), respectively.

The researcher's opinion of the results is that the lack of knowledge regarding the physiology of type 1 diabetes and how to deal in emergency situations and lack of knowledge about the symptoms of high and low sugar.

5.7 Factors associated with self-care management practices among diabetic children

The table 9 shows that there is no significant difference in the level of patients' diabetic self-care practices with regard to their gender ($p > 0.05$). In addition, there is no significant difference in the level of patients' diabetic self-care practices with regard to father's work and mother's work ($p > 0.05$). Furthermore, there is a significant difference in the level of patients' diabetic self-care practices with regard to their previous hospitalization ($p < 0.05$). Previously hospitalized children have significantly higher mean score of self-care practices than children who did not.

The result disagrees with the results of study performed by Geneti et al. (2022), the result of study the ADSM was significantly associated with age, time since diagnosis, knowledge about DMT1, self-efficacy, and social support. The report from this study concluded that participants with age between 10 and 14 were 80% more adherent to diabetes self-management than those with age between 15 and 18. Moreover, there is no significant relationship between the gender of the participants and the level of ADSM among adolescents with DMT1.

The researcher's opinion that the gender may not affect the extent of adherence to health care for a child with diabetes, as both sexes depend on their influence on the supportive surrounding environment and on their health center, as well as the child's awareness of the risks and consequences of diabetes, while the researcher belief that when exposed to complications of diabetes, children become more in order not to repeat this matter again, and this justifies a higher commitment for those who have a history of hospitalization resulting from diabetes complications.

Chapter Six

Conclusion and Recommendations

6.1 Conclusion of the Study

Results of the present study showed that, the mean score of days of performing self-care management practices of children with DM1 is (3.88 days), in which children did not perform self-care practices in half of days. Diet and exercise practices got the lowest score of children self-care management practices, while testing blood glucose got the highest score. Factors associated with self-care management practices of children with DM1 involve previous hospitalization, family income, father's education, mother's education, and site of follow up (PHC center).

6.2 Recommendations

Based on the study finding, the researcher would provide recommendations as outlined below. Decision makers, health managers, nursing supervisors, nursing leaders, professionals and researchers need to consider these recommendations and intensively work to address them.

1. Health education for children with DM1 should be done continuously in different primary healthcare centers.
2. Developing self-care management practices protocol for nurses and other healthcare providers to be followed by them during instructing children with type 1 DM.
3. Health education should be done also for families of children to facilitate monitoring by family at home.
4. Conducting training program for nurses and other healthcare providers at ministry of health and UNRWA regarding self-care practices for type 1 DM.
5. Future research should be done to address further barriers of performing self-care practices among children with type 1 DM.

6.3 Limitations of study

The present study adopted convenient sampling method which limit generalization of study results. Moreover, the present study adopted cross-sectional design. Adopting comparative design like case control might provide more results and details about the effect of self-care practices on improvement of wellness and health status of children.

References

- Abdullah Al Khalifah, R., AbdelNabi, R. E., Al Sarraj, H. Z., Ali Al-Agsam, M., Alanazi, S. M., & Aldraiweesh, N. A. (2021). School practice and preparedness in caring for children with type 1 diabetes: A Saudi nationwide cross-sectional study. *Pediatric Diabetes*, 22(2), 221-232.
- Abolwafa, N. F., Ahmed, S. M., & Aly, S. A. (2017). Effect of educational program on improving knowledge and practice for adolescences with type 1 diabetes. *International journal of advanced nursing studies*, 6(1), 36-44.
- Abueideh, Y., Fadila, I., Sweedan, J., & Qassem, M. (2021). Epidemiological features and experience of type 1 diabetic patients in Nablus and Ramallah, West Bank: a mixed methodology study.
- Adolfsson P, Riddell MC, Taplin CE, et al. ISPAD Clinical Practice Consensus Guidelines (2018): Exercise in children and ado-lescents with diabetes. *Pediatr Diabetes* (2018); 19: 205-226. doi: 10.1111/pedi.12755
- Aguiar, G. B., Machado, M. E. D., Silva, L. F. D., Aguiar, R. C. B. D., & Christoffel, M. M. (2021). Children with type 1 diabetes mellitus: the experience of disease. *Revista da Escola de Enfermagem da USP*, 55.
- Airhihenbuwa CO, Webster JD. Culture and African contexts of HIV/AIDS prevention, care and support. *SAHARA J.* (2004);1(1):4–13. doi: 10.1080/17290376.2004.9724822.
- Ali, A. J. I., Sayej, S., & Fashafsheh, I. H. (2014). Evaluating Self-Care Practices of Children with Type 1. Diabetes Mellitus in Northern West Bank: A controlled. Randomized Study Utilizing Orem-Self Care Theory. *Journal of Education and Practice*, 5(11), 53-63.
- Alkaiyat, A., Hilo, L., Braik, T., Sayeh, W., & Alem, I. (2020). Adherence to the management of type i diabetes among Palestinian patients in Nablus city: a cross-sectional study. *Palestinian Medical and Pharmaceutical Journal (Pal. Med. Pharm. J.)*, 5(2), 125-132.
- American Diabetes Association. (2018). 10. Microvascular complications and foot care: standards of medical care in diabetes— (2018). *Diabetes care*, 41(Supplement_1), S105-S118.

- American Diabetes Association. (2019). 13. Children and adolescents: standards of medical care in diabetes—(2019). *Diabetes care*, 42(Supplement_1), S148-S164.
- Attia, A. A. M., & Hassan, E. A. F. (2017). Effect of instructions on selected self-care practices among type-1 diabetic children. *Egyptian Nursing Journal*, 14(2), 179.
- Ausili, D., Bulgheroni, M., Ballatore, P., Specchia, C., Ajdini, A., Bezze, S., ... & Genovese, S. (2017). Self-care, quality of life and clinical outcomes of type 2 diabetes patients: an observational cross-sectional study. *Acta diabetologica*, 54(11), 1001-1008.
- Banerjee, M., Chakraborty, S., & Pal, R. (2020). Diabetes self-management amid COVID-19 pandemic. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(4), 351-354.
- Bekele, B. T., Demie, T. G., & Worku, F. (2022). Determinants of quality of Life in Children and Adolescents with Type-I Diabetes Mellitus: A cross-sectional study.
- Caruso, R., Rebora, P., Dellafiore, F., Fabrizi, D., Riegel, B., Ausili, D., & Di Mauro, S. (2019). Clinical and socio-demographic determinants of inadequate self-care in adults with type 1 diabetes mellitus: the leading role of self-care confidence. *Acta Diabetologica*, 56(2), 151-161.
- Casano, M. A., Montejo, M. D. M. A., Gea, I. L., Hinojosa, J. M. J., Mata, M. Á. S., Macias, F., ... & Siguero, J. P. L. (2021). Study of the quality of life and adherence to treatment in patients from 2 to 16 years-old with type 1 diabetes mellitus in Andalusia, Spain. *Anales de Pediatría (English Edition)*, 94(2), 75-81.
- Chiang, J. L., Maahs, D. M., Garvey, K. C., Hood, K. K., Laffel, L. M., Weinzimer, S. A., ... & Schatz, D. (2018). Type 1 diabetes in children and adolescents: a position statement by the American Diabetes Association. *Diabetes care*, 41(9), 2026-2044.
- Collet, N., Batista, A. F. D. M. B., Nóbrega, V. M. D., Souza, M. H. D. N., & Fernandes, L. T. B. (2018). Self-care support for the management of type 1 diabetes during the transition from childhood to adolescence. *Revista da Escola de Enfermagem da USP*, 52.
- Czenczek-Lewandowska, E., Grzegorzczak, J., & Mazur, A. (2018). Physical activity in children and adolescents with type 1 diabetes and contemporary methods of its assessment. *Pediatric Endocrinology Diabetes and Metabolism*, 24(4), 179-184.

- Dai BD, H., BD, Q. C., Huang, H., BD, K. W., & Yang, X. (2022). The role of nurses in taking care of children with type 1 diabetes. *Alternative therapies in health and medicine*, 28(1), 107-113.
- Danne, T., Phillip, M., Buckingham, B. A., Jarosz-Chobot, P., Saboo, B., Urakami, T., ... & Codner, E. (2018). ISPAD Clinical Practice Consensus Guidelines 2018: Insulin treatment in children and adolescents with diabetes. *Pediatric diabetes*, 19, 115-135.
- Djonou, C., Tankeu, A. T., Dehayem, M. Y., Tcheutchoua, D. N., Mbanaya, J. C., & Sobngwi, E. (2019). Glycemic control and correlates in a group of sub Saharan type 1 diabetes adolescents. *BMC research notes*, 12(1), 1-5.
- Drakopoulou, M., Begni, P., Mantoudi, A., Mantzorou, M., Gerogianni, G., Adamakidou, T., ... & Apostolara, P. (2022, July). Care and Safety of Schoolchildren with Type 1 Diabetes Mellitus: Parental Perceptions of the School Nurse Role. In *Healthcare* (Vol. 10, No. 7, p. 1228). Multidisciplinary Digital Publishing Institute.
- Elissa, K., Bratt, E. L., Axelsson, Å. B., Khatib, S., & Sparud-Lundin, C. (2020). Self-Perceived Health Status and Sense of Coherence in Children with Type 1 Diabetes in the West Bank, Palestine. *Journal of Transcultural Nursing*, 31(2), 153-161.
- Elsobky, F. A., Darweesh, H. A. M., Alzahrani, S. H. A., & Bassam, S. E. A. (2022). The Impact of a Self-Management Program Based on the 5 A's Model on Type 1 Diabetes in School-Aged Children. *Annals of Nutrition and Metabolism*.
- Esmaeili, S., Moghaddam, S. S., Namazi, N., Bandarian, F., Esfahani, Z., Peimani, M., ... & Farzadfar, F. (2022). Burden of type 1 diabetes mellitus in the North Africa and Middle East Region, 1990–2019; findings from the global burden of disease study. *Diabetes Research and Clinical Practice*, 188, 109912.
- Eva, J. J., Kassab, Y. W., Neoh, C. F., Ming, L. C., Wong, Y. Y., Abdul Hameed, M., ... & Sarker, M. M. R. (2018). Self-care and self-management among adolescent T2DM patients: a review. *Frontiers in endocrinology*, 9, 489.
- Fabrizi, D., Rebora, P., Luciani, M., Di Mauro, S., Valsecchi, M. G., & Ausili, D. (2020). How do self-care maintenance, self-care monitoring, and self-care management affect glycated haemoglobin in adults with type 2 diabetes? A multicentre observational study. *Endocrine*, 69(3), 542-552.

- Fragoso, L. V. C., dos Santos Oliveira, M. D. C., Fragoso, E. B., & de Araújo, M. F. M. (2019). Self-Care Among Type 1 Diabetes Mellitus Bearing People: Adolescents' Experience. *Revista de Pesquisa, Cuidado é Fundamental Online*, 11(2), 289-296.
- Geneti, Y., Wondwossen, K., Adimasu, M., Deressa, D., Aga, F., Lami, M., ... & Dinku, H. (2022). Adherence to Diabetes Self-Management and Its Associated Factors Among Adolescents Living with Type 1 Diabetes at Public Hospitals in Addis Ababa, Ethiopia: A Cross-Sectional Study. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, 15, 659.
- Gray, A., & Threlkeld, R. J. (2019). Nutritional recommendations for individuals with diabetes.
- Hajinia, Z., Alaeekarahroudy, F., Zaeri, H., & Ghasemi, E. (2021). Effect of Self-Care Education on Self-Management Behaviors of Children with Type 1 Diabetes. *Journal of Modern Family Medicine*, 1(1), E104.
- Insel, R. A., Dunne, J. L., Atkinson, M. A., Chiang, J. L., Dabelea, D., Gottlieb, P. A., ... & Ziegler, A. G. (2015). Staging presymptomatic type 1 diabetes: a scientific statement of JDRF, the Endocrine Society, and the American Diabetes Association. *Diabetes care*, 38(10), 1964-1974.
- Ismaili, D., Spahiu, F., Beqiri, L., & Berisha, A. (2018). Nursing Care in Children with Type 1 Diabetes Mellitus.
- Jaiswal, M., Divers, J., Dabelea, D., Isom, S., Bell, R. A., Martin, C. L., ... & Feldman, E. L. (2017). Prevalence of and risk factors for diabetic peripheral neuropathy in youth with type 1 and type 2 diabetes: SEARCH for Diabetes in Youth Study. *Diabetes care*, 40(9), 1226-1232.
- Ji, X., Wang, Y., & Saylor, J. (2021). Sleep and type 1 diabetes mellitus management among children, adolescents, and emerging young adults: A systematic review. *Journal of Pediatric Nursing*, 61, 245-253.
- Kafl, R. H., & El Sayed, A. (2020). Self-Care Management of Children with Type 1 Diabetes Mellitus: Effect of an Educational Training Program.
- Kazeminezhad, B., Taghinejad, H., Borji, M., & Tarjoman, A. (2018). The effect of self-care on glycated hemoglobin and fasting blood sugar levels on adolescents with diabetes. *Journal of Comprehensive Pediatrics*, 9(2).

- Kise, S. S., Hopkins, A., & Burke, S. (2017). Improving school experiences for adolescents with type 1 diabetes. *Journal of School Health, 87*(5), 363-375.
- La Banca, R. O., Laffel, L. M., Volkening, L. K., C Sparapani, V., de Carvalho, E. C., & Nascimento, L. C. (2021). Therapeutic play to teach children with type 1 diabetes insulin self-injection: a pilot trial in a developing country. *Journal for Specialists in Pediatric Nursing, 26*(1), e12309.
- Los, E., & Wilt, A. S. (2021). Diabetes mellitus type 1 in children. In StatPearls [Internet]. StatPearls Publishing.
- Marks, B. E., & Wolfsdorf, J. I. (2020). Monitoring of pediatric type 1 diabetes. *Frontiers in Endocrinology, 11*, 128.
- McKnight, J. A., Wild, S. H., Lamb, M. J. E., Cooper, M. N., Jones, T. W., Davis, E. A., ... & Miller, K. M. (2015). Glycaemic control of Type 1 diabetes in clinical practice early in the 21st century: an international comparison. *Diabetic Medicine, 32*(8), 1036-1050.
- Miller, K. M., Foster, N. C., Beck, R. W., Bergenstal, R. M., DuBose, S. N., DiMeglio, L. A., ... & Tamborlane, W. V. (2015). Current state of type 1 diabetes treatment in the US: updated data from the DMT1 Exchange clinic registry. *Diabetes care, 38*(6), 971-978.
- Mobasseri, M., Shirmohammadi, M., Amiri, T., Vahed, N., Fard, H. H., & Ghojzadeh, M. (2020). Prevalence and incidence of type 1 diabetes in the world: a systematic review and meta-analysis. *Health promotion perspectives, 10*(2), 98.
- MOH (2020): Health Status in Palestine. Annual Report. Palestinian National Authority, Ramallah, Palestine.
- Momani, A. M. (2019). Understanding Type 1 Diabetes Self-Care Management Among Adolescents and their Parents in Jordan: A Qualitative Study. The University of Manchester (United Kingdom).
- Montali, L., Zulato, E., Cornara, M., Ausili, D., & Luciani, M. (2022). Barriers and facilitators of type 1 diabetes self-care in adolescents and young adults. *Journal of Pediatric Nursing, 62*, 136-143.

- Nakamura, N., Yakushijin, Y., Kanamaru, T., Tani, H., Ideno, K., & Nakai, A. (2019). Development and validity testing of the revised diabetes self-care inventory for children and adolescents. *Diabetology international*, 10(2), 117-125.
- Noorani, M., Ramaiya, K., & Manji, K. (2016). Glycaemic control in type 1 diabetes mellitus among children and adolescents in a resource limited setting in Dar es Salaam-Tanzania. *BMC endocrine disorders*, 16(1), 1-8.
- Odeh, R., Gharaibeh, L., Badran, E. F., Hani, F. B., & Alassaf, A. (2022). Children with type one diabetes who are migrants and refugees suffer from poor metabolic control and frequent acute complications, a study from Jordan, a limited resource country with high migrant/refugee population. *Diabetes Research and Clinical Practice*, 185, 109807.
- Ortiz La Banca, R., Rebutini, F., Alvarenga, W. A., de Carvalho, E. C., Lopes, M., Milaszewski, K., & Nascimento, L. C. (2022). Checklists for assessing skills of children with type 1 diabetes on insulin injection technique. *Journal of Diabetes Science and Technology*, 16(3), 742-750.
- Palestinian Central Bureau of Statistics (2020). *Results of the general census of population, housing and establishments*, Ramallah, Palestine.
- Parviainen, A., Härkönen, T., Ilonen, J., But, A., Knip, M., & Finnish Pediatric Diabetes Register. (2022). Heterogeneity of Type 1 Diabetes at Diagnosis Supports Existence of Age-Related Endotypes. *Diabetes care*, 45(4), 871-879.
- Pathak, V., Pathak, N. M., O'Neill, C. L., Guduric-Fuchs, J., & Medina, R. J. (2019). Therapies for type 1 diabetes: current scenario and future perspectives. *Clinical Medicine Insights: Endocrinology and Diabetes*, 12, 1179551419844521.
- Phelan, H., Lange, K., Cengiz, E., Gallego, P., Majaliwa, E., Pelicand, J., ... & Hofer, S. E. (2018). ISPAD Clinical Practice Consensus Guidelines 2018: Diabetes education in children and adolescents. *Pediatric diabetes*, 19, 75-83.
- Polonsky, W. H., & Henry, R. R. (2016). Poor medication adherence in type 2 diabetes: recognizing the scope of the problem and its key contributors. *Patient preference and adherence*, 10, 1299.

- Polit, D.F. & Beck, C.T. (2017). Resource manual for nursing research. Generating and assessing evidence for nursing practice. 10 ed. Wolters Kluwer Health, lippincott, Williams & Wilkins, Philadelphia.
- Polskie Towarzystwo Diabetologiczne. Zalecenia kliniczne dotyczące postępowania chorych na cukrzycę 2018. Diabetol Prakt 2018; 4: 1-102.
- Rafeezadeh, E., Ghaemi, N., Heidarian Miri, H., & Rezaeian, A. (2019). Effect of an educational video game for diabetes self-management on adherence to a self-care regimen in children with type 1 diabetes. Evidence Based Care, 9(2), 74-83.
- Riegel, B., Jaarsma, T., Lee, C. S., & Strömberg, A. (2019). Integrating symptoms into the middle-range theory of self-care of chronic illness. ANS. Advances in nursing science, 42(3), 206.
- Shahbazi, H., Ghofranipour, F., Amiri, P., & Rajab, A. (2018). Factors affecting self-care performance in adolescents with type i diabetes according to the PEN-3 cultural model. International Journal of Endocrinology and Metabolism, 16(4).
- Stefanowicz, A., & Stefanowicz, J. (2018). The role of a school nurse in the care of a child with diabetes mellitus type 1-the perspectives of patients and their parents: Literature review. Slovenian Journal of Public Health, 57(3), 166-174.
- Subramanian, S., & Baidal, D. (2021). The management of type 1 diabetes. Endotext [Internet].
- Syed, F. Z. (2022). Type 1 Diabetes Mellitus. Annals of Internal Medicine, 175(3), ITC33-ITC48.
- Tong, H., Qiu, F., & Fan, L. (2022). Characterising common challenges faced by parental caregivers of children with type 1 diabetes mellitus in mainland China: a qualitative study. BMJ open, 12(1), e048763.
- Turin, A., & Radobuljac, M. D. (2021). Psychosocial factors affecting the etiology and management of type 1 diabetes mellitus: A narrative review. World Journal of diabetes, 12(9), 1518.
- Verma, A., Rajput, R., Verma, S., Balania, V. K., & Jangra, B. (2020). Impact of lockdown in COVID 19 on glycemic control in patients with type 1 Diabetes Mellitus. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 14(5), 1213-1216.
- World Health Organization. Global strategy on diet, physical activity and health. Available from: www.who.int. Updated 15 May (2018).

Annexes

Annex (1) Map of Palestine



Annex (2) Consent Form

بسم الله الرحمن الرحيم

عزيزي المشارك:

أنا الباحثة شرين رزق حلاسه، أدرس في برنامج ماجستير تمريض الأطفال جامعة القدس، وأقوم بإجراء دراسة بحثية حول ممارسات الرعاية الذاتية للأطفال المصابين بداء السكر من النوع الأول في قطاع غزة والتي هي جزء من متطلبات الحصول على درجة الماجستير في تمريض الأطفال. هذه الدراسة ممولة ذاتياً، وسيتم استخدام النتائج فقط لأغراض البحث العلمي، حيث من الممكن أن تساعد نتائج هذه الدراسة على تحسين الممارسة الذاتية للأطفال المصابين بداء السكر من النوع الأول.

لقد تم اختيارك عشوائياً للمشاركة في هذه الدراسة، مع العلم أن مشاركتك في هذه الدراسة ليس له أي آثار سلبية بطريقة مباشرة أو غير مباشرة.

وعليه أرجو من حضرتكم المساعدة في تعبئة هذه الاستبانة مع العلم أنني أرحب وأقدر مشاركتك فإن المشاركة اختيارية، حيث بإمكانك رفض المشاركة أو التوقف عن الإجابة على أسئلة الاستبانة، وبإمكانك أيضاً إلغاء المشاركة في الاستبانة في أي وقت تشاء. سيتم الاحتفاظ بسرية إجاباتك تماماً، ولن يتم تعريف أي مشترك في أي تقرير يستند إلى هذه الدراسة.

قد يستغرق ملء الاستبانة من 15-20 دقيقة فقط. يرجى المساعدة في الإجابة على جميع الأسئلة قدر الإمكان وعدم التردد في طلب أي توضيحات بشأن أسئلة هذه الاستبانة.

وتقبلوا فائق الشكر والتقدير

الباحثة: شرين رزق حلاسه

هل تقبل الاشتراك في هذه الدراسة والإجابة على أسئلة الاستبانة؟

أقبّل المشاركة

أرفض المشاركة

Annex (3) Self-Care Practices among Children with Type-1 Diabetes Mellitus in The Gaza Strip, Palestine Questionnaire (Arab version)

القسم الأول: الخصائص الفردية				
الجنس		ذكر		أنثى
العمر		بالسنوات		
المستوى التعليمي للطفل	غير متعلم	ابتدائي	اعدادي	ثانوي
المستوى التعليمي للاب	غير متعلم	ابتدائي	ثانوي	جامعي
المستوى التعليمي للام	غير متعلم	ابتدائي	ثانوي	جامعي
الدخل الشهري بالشيكل				
حالة عمل الاب		يعمل		لا يعمل
حالة عمل الام		يعمل		لا يعمل
مدة المرض بالسكر من النوع الأول				
أقل من سنه		1-5 سنوات	10-5.1 سنوات	أكثر من 10 سنوات

القسم الثاني: البيانات السريرية

- آخر قراءة لمخزون السكر التراكمي كانت بتاريخ:
- الطولسم
- الوزنكغم
- أمراض أخرى
- لا
- نعم، أذكرها.....
- هل تم إدخالك للمستشفى خلال السنة الماضية؟
- لا
- نعم، حدد سبب دخولك للمستشفى.....
- هل تلقيت معلومات حول مرضك من قبل مزودي الخدمات الصحية في المركز الصحي الذي تتابع فيه؟
- نعم
- لا

- من هو مقدم الرعاية الصحية الذي قدم لك المشورة بشأن الرعاية الذاتية لمرض السكر من النوع الأول في المركز الصحي الذي تتابع فيه؟

- الطبيب
- الممرضة
- كلاهما
- اخرى

القسم الثالث: الرعاية الذاتية

(أ) الحميه الغذائية

1) كم مره قمت بتناول غذاء صحي (الخضروات الطازجة، الفاكهة الطازجة، الحبوب الكاملة مثل القمح والشوفان، الدهون الصحية مثل: زيت الزيتون والمكسرات، البروتينات الخالية من الدهون مثل: اللحم الأحمر والدجاج، في الأيام السبعة الماضية؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة
2) كم مرة تناولت الفواكه والخضروات في آخر سبعة أيام؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة
3) كم مرة تناولت الأطعمة الغنية بالدهون مثل اللحوم الحمراء أو منتجات الألبان كاملة الدسم في آخر سبعة أيام؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة
4) كم مرة في السبعة أيام الماضية قمت بتوزيع الكربوهيدرات (البطاطا الحلوة، الذرة، الشوفان، التمر، الزبيب، العدس بالتساوي على مدار اليوم؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة

(ب) ممارسة الرياضة

5) كم عدد الأيام السبعة الأخيرة التي شاركت فيها في 30 دقيقة على الأقل من النشاط البدني؟ (إجمالي دقائق النشاط المستمر بما في ذلك المشي).							
يوم 0	يوم 1	يوم 2	يوم 3	يوم 4	يوم 5	يوم 6	يوم 7
6) كم عدد الأيام السبعة الماضية التي شاركت فيها في جلسة تمرين معينة (مثل السباحة والمشي وركوب الدراجات) بخلاف ما تفعله في المنزل أو كجزء من عملك؟							
يوم 0	يوم 1	يوم 2	يوم 3	يوم 4	يوم 5	يوم 6	يوم 7

(ج) العناية بالقدم

7) كم مرة قمت بفحص قدميك في السبعة أيام الماضية؟							
مرة 0	مرة 1	مرة 2	مرة 3	مرة 4	مرة 5	مرة 6	مرة 7
8) كم مرة قمت بفحص حذائك من الداخل في السبعة أيام الماضية؟							
مرة 0	مرة 1	مرة 2	مرة 3	مرة 4	مرة 5	مرة 6	مرة 7
9) كم عدد الأيام التي غسلت فيها قدميك في السبعة أيام الماضية؟							
يوم 0	يوم 1	يوم 2	يوم 3	يوم 4	يوم 5	يوم 6	يوم 7
10) كم مرة غطيت قدميك في السبعة أيام الماضية؟							
مرة 0	مرة 1	مرة 2	مرة 3	مرة 4	مرة 5	مرة 6	مرة 7
11) كم عدد الأيام التي جففت فيها بين أصابع قدميك بعد الغسيل في السبعة أيام الماضية؟							
يوم 0	يوم 1	يوم 2	يوم 3	يوم 4	يوم 5	يوم 6	يوم 7

(د) فحص سكر الدم

12) كم عدد المرات التي أوصى بها مقدم الرعاية الصحية الخاص بك بفحص السكر في السبعة أيام الماضية؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة
13) كم عدد مرات فحص السكر يوميا في السبعة أيام الماضية؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة

(هـ) الأدوية

14) كم عدد الأيام التي تناولت فيها أي دواء في السبعة أيام الماضية؟							
0 يوم	1 يوم	2 يوم	3 يوم	4 يوم	5 يوم	6 يوم	7 يوم
15) كم مرة التزمت في اخذ حقن الأنسولين الموصي بها في السبعة أيام الماضية؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة
16) كم عدد مرات حقن الأنسولين يوميا؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة

(و) العناية بالجسم

17) كم مرة التزمت بالعناية بالأسنان بعد كل وجبة في السبعة أيام الماضية؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة
18) كم مرة التزمت برعاية أعضائك التناسلية عن طريق الاستحمام كل يوم في السبعة أيام الماضية؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة
19) كم مرة التزمت بالاعتناء بأظافر قدميك في السبعة أيام الماضية؟							
0 مرة	1 مرة	2 مرة	3 مرة	4 مرة	5 مرة	6 مرة	7 مرة

ز) العناية باضطرابات السكر

20) هل لديك المقدرة على التعامل مع أعراض انخفاض سكر الدم (شحوب، ارتعاش، تعرق، صداع، جوع أو الغثيان، سرعة ضربات القلب أو عدم انتظامه)؟	
لا	نعم
21) هل لديك المقدرة على التعامل مع أعراض ارتفاع سكر الدم (عطش شديد، جوع شديد، كثرة التبول، ارهاق، تغميم الرؤية)؟	
لا	نعم

عزيزي المتطوع لقد انتهيت من الإجابة على جميع أسئلة الاستبانة، شكراً لك على وقتك الثمين. لأي استفسار يرجى

عدم التردد في الاتصال بي.

Annex (4) Self-Care Practices among Children with Type-1 Diabetes Mellitus in The Gaza Strip, Palestine Questionnaire (English version)

Section one: individual characteristics

Gender	Male		Female	
Age in years				
Educational level of the child	Illiterate	Primary	preparatory	Secondary
Father's educational level	Illiterate	Primary	Secondary	University
The mother's educational level	Illiterate	Primary	Secondary	University
Monthly income in shekels				
Father working condition	working		not working	
Mother working condition	working		not working	
Duration of disease with type 1 diabetes	Below 1 years	5-1	10-5.1	Above 10

Section two: Clinical Data

- The last HbA1c reading was on:
- Length.....cm
- Weight.....Kg
- other diseases

No

Yes, mention it.....

- Have you been admitted to hospital last year?

No

Yes, specify the reason for admission to the

hospital.....

- Have you received information about your illness from the health service providers at the health center where you are being followed?

Yes

No

●Which health care provider advised you about self-care for type 1 diabetes at your health center?

Doctor

Nurse

Both

Other

Section (3): Self-care sub-scale

DIET

(1) How often have you eaten a healthy diet (fresh vegetables, fresh fruits, whole grains such as wheat and oats, healthy fats such as olive oil and nuts, lean proteins such as red meat and chicken) in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(2) How often did you eat fruits and vegetables in the last seven days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(3) How often have you eaten high-fat foods such as red meat or full-fat dairy products in the last seven days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(4) How many times in the last 7 days did you distribute your carbohydrates (sweet potatoes, corn, oats, dates, raisins, lentils evenly throughout the day?)							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times

Exercise

(5) How many of the last seven days have you engaged in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking).							
0 day	1 day	2 day	3 day	4 day	5 day	6 day	7 day
(6) How many of the past seven days have you engaged in a specific exercise session (eg swimming, walking, cycling) other than what you do at home or as part of your job?							
0 day	1 day	2 day	3 day	4 day	5 day	6 day	7 day

Foot care

(7) How often have you checked your feet in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(8) How many times have you checked the inside of your shoes in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(9) How many days did you wash your feet in the last 7 days?							
0 day	1 day	2 day	3 day	4 day	5 day	6 day	7 day
(10) How many times did you cover your feet in the last 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(11) How many days have you dried between your toes after washing in the last 7 days?							
0 day	1 day	2 day	3 day	4 day	5 day	6 day	7 day

Blood sugar test

(12) How often has your healthcare provider recommended that you check your sugar in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(13) How many times a day did you check your blood sugar in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times

Medication

(14) How many days did you take any medication in the last 7 days?							
0 day	1 day	2 day	3 day	4 day	5 day	6 day	7 day
(15) How many times have you taken the recommended insulin injections in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(16) How many times a day do you inject insulin?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times

body care

(17) How often have you brushed your teeth after each meal in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(18) How many times have you taken care of your genitals by showering every day in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times
(19) How many times have you taken care of your toenails in the past 7 days?							
0 times	1 time	2 times	3 times	4 times	5 times	6 times	7 times

Diabetic care

(20) Do you have the ability to deal with the symptoms of low blood sugar (pallor, trembling, sweating, headache, hunger or nausea, rapid tachycardia arrhythmias ?	
No	Yes
(21) Do you have the ability to deal with the symptoms of high blood sugar (extreme thirst, extreme hunger, frequent urination, fatigue, blurred vision?	
No	Yes

Annex (5) Approval from Al Quds University

Al Quds University
Faculty of Health Professions
Nursing Dept. – Gaza



جامعة القدس
كلية المهن الصحية
حاذرة التمريض - غزة

التاريخ: 2022/9/13

د.ضرة الأخ/ أ. هاني سلطان الوحيدي حفظه الله
مدير عام وحدة المعلومات الصحية بوزارة الصحة
السلام عليكم ورحمة الله وبركاته

الموضوع: تسهيل مهمة الطالبة الباحثة شرين رزق حلاسة

تحديكم كلية المهن الصحية بجامعة القدس أطيب التحيات، ونرجو من حضرتكم مساعدة الطالبة المذكورة
بخصوص جمع معلومات خاصة بموضوع دراستها البحثية للحصول على درجة الماجستير في تمريض
الأطفال، والدراسة بعنوان:

ممارسات الرعاية الذاتية للأطفال المصابين بداء السكر من النوع الأول في قطاع غزة

حيث ستكون عينة الدراسة من أطفال مرضى السكر من النوع الأول من عمر 10 الى 18 سنة من
المتريدين على مراكز الرعاية الأولية بوزارة الصحة (شهداء جباليا- الرمال - دير البلح- شهداء خانينوس-
دشدهاء رفح) وستجمع البيانات بواسطة استبانة.

وتفضلوا بقبول وافر الاحترام والتقدير


د. حمزة محمد عبد الجواد
أستاذ مساعد في علوم التمريض
منسق برامج ماجستير التمريض بغزة
كلية المهن الصحية - جامعة القدس
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تلفاكس: +972 8 2644220
خلوي: +972 599 852755

دائرة التمريض
Nursing Department


Tel: 08 2644210+08 2644220

08 2644210+08 2644220
08.644.20

Annex (6) List of names of experts for examining the contents of the questionnaire

No.	Name	Scientific Degree	Workplace
1.	Osama Elian	Ph.D. in pediatric nursing	AL- Aqsa university- Gaza
2.	Ahmed Nijm	Ph.D. in Community Health Nursing	Al Azhar University- Gaza
3.	Abd- Rahman Al-Hams	Ph.D. in Community Health Nursing	Palestine College of Nursing
4.	Shatha Albeik	Master in public health	Unrwa/health department/hq amman
5.	Hamza Abdeljawad	Assistant Prof. in Community Health Nursing	Al-Quds University
6.	Mohammad Ubaid	Master in Public Heath Health management	UNRWA Health Department Gaza Strip
7.	Abd- Majeed Thabit	Ph.D. in pediatric nursing	Palestine College of Nursing

Annex (7) Approval from Helsinki Committee

**المجلس الفلسطيني للبحوث الصحي**
Palestinian Health Research Council
تعزيز النظام الصحي الفلسطيني من خلال مأسسة استخدام المعلومات البحثية في صنع القرار
Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee
For Ethical Approval

Date: 06/06/2022 **Number:** PHRC/HC/1130/22

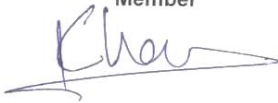

Name: Shereen Rezeq Halasa الاسم:


We would like to inform you that the committee had discussed the proposal of your study about: نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Self-Care Practices among Children with Type-1 Diabetes Mellitus in The Gaza Strip, Palestine

The committee has decided to approve the above mentioned research. و قد قررت الموافقة على البحث المذكور عاليه
Approval number PHRC/HC/1130/22 in its meeting on 06/06/2022 بانرقم والتاريخ المذكوران عاليه


Signature


Member  **Member** 

Chairman 

General Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:- 



E-Mail: pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين
شارع النصر - مفترق العيون

Annex (8): Approval from Ministry of Health

State of Palestine
Ministry of health

دولة فلسطين
وزارة الصحة

التاريخ: 13/09/2022
رقم المراسلة 1056724

السيد : جهاد عبدالقادر عكاشه المحترم

مدير دائرة /الإدارة العامة للوحدات الإدارية المساعدة /وزارة الصحة
السلام عليكم ...

الموضوع / تسهيل مهمة الباحثة شرين رزق شعبان حلاسة

التفاصيل // السلام عليكم نهديكم أطيب التحيات ونود منكم تسهيل مهمة الباحثة شرين رزق شعبان حلاسة الملتحق/ة ببرنامج
ماجستير تمرير الأطفال – جامعة القدس أبو ديس في إجراء بحث بعنوان: Self-Care Practices among Children with
Type-1 Diabetes Mellitus in the Gaza Strip, Palestine حيث الباحثة لتعبئة استبانة من عدد من المرضى
المرجلعين في مرافق وزارة الصحة مراكز الرعاية الأولية) . دون إجراء أي تدخل طبي او سحب عينات دم . نأمل توجيهاتكم لذوى
الاختصاص بضرورة الحصول على الموافقة المستنيرة من المشاركين . بما لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث
العلمي، ودون تحمل الوزارة أي أعباء أو مسنولية وتفضلوا بقبول التحية والتقدير ملاحظات / تسهيل المهمة الخاص بالدراسة أعلاه
صالح لمدة 3 أشهر من تاريخه. يرجى التأكد من توافق الاستبانة المرفقة والتي يتم تعبئتها ميدانيا على ان لا يتم أي إضافة أو تعديل
على الاستبانة المرفقة

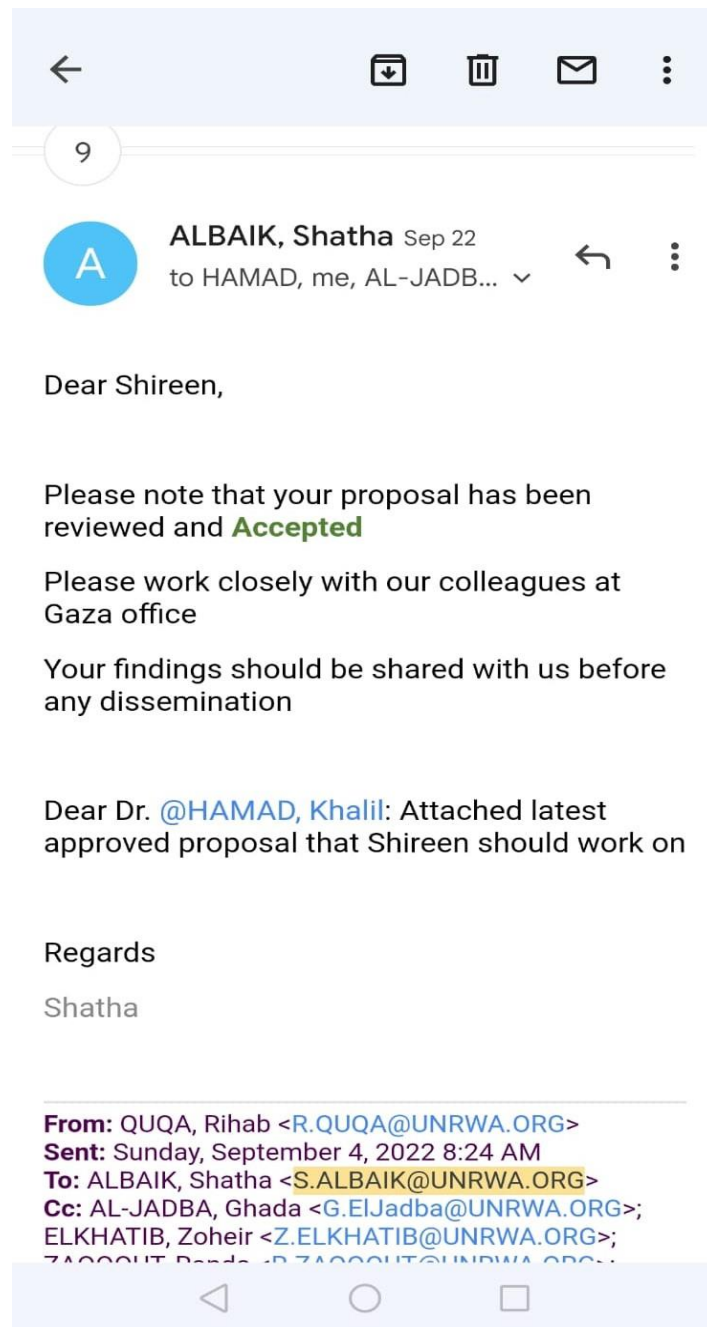
علي حسن البليسي
حكيم جامعي

المرفقات
■ استبانة شرين رزق حلاسة pdf



Gaza Tel. (+970) 8-2846949 2846949-8 (970+) تلفون. غزة
Fax. (+970) 8-2826295 2826295-8 (970+) فاكس.

Annex (9) Approval from UNRWA



Abstract in Arabic

عنوان الدراسة: ممارسات الرعاية الذاتية للأطفال المصابين بداء السكر من النوع الأول في قطاع غزة، فلسطين

إعداد: شرين رزق شعبان حلاسة

إشراف: د. محمد الجرجاوي د. سامر النواجحة

الملخص:

تعتبر ممارسات الرعاية الذاتية بين الأطفال المصابين بداء السكر من النوع الأول مهمة جدًا لتحسين نتائج صحة الطفل وتقليل معدل الوفيات. الهدف من هذه الدراسة هو تقييم مستوى ممارسات الرعاية الذاتية للأطفال المصابين بداء السكر من النوع الأول في قطاع غزة. اتبعت هذه الدراسة المنهج الوصفي التحليلي. وتم استخدام طريقة العينة الملائمة لجمع البيانات، وتألفت من 251 طفلاً تتراوح أعمارهم بين 10 و 18 عامًا ممن لديهم داء السكر من النوع الأول ويحضرون الى مراكز الرعاية الصحية الأولية الحكومية والأونروا في قطاع غزة (مركز شهداء جباليا ومركز شهداء الرمال ومركز شهداء دير البلح ومركز شهداء خانيونس ومركز شهداء رفح). أجريت الدراسة خلال الفترة من شباط 2022 إلى تشرين الثاني 2022. لجمع البيانات، استخدم الباحث الاستبيان الهاتفي لتقييم مستوى ممارسات الرعاية الذاتية للأطفال المصابين بداء السكر من النوع الأول في قطاع غزة. تم إجراء دراسة تجريبية على 25 استبيانًا، وتم فحص وضوح وصحة محتوى الاستبيان من قبل مجموعة من الخبراء، وتم فحص الموثوقية وتراوح معامل ألفا بين 0.740 و 0.825. وتم عمل إجراءات إحصائية مختلفة لتحقيق أهداف الدراسة والإجابة على أسئلة البحث. وتم الحصول على الموافقة الأخلاقية من لجنة هلسنكي وتم إرفاق استمارة الموافقة بكل استبيان، وكذلك تم الحصول على الموافقة الإدارية لجمع البيانات من وزارة الصحة ووكالة الأمم المتحدة لإغاثة وتشغيل اللاجئين الفلسطينيين (أونروا). إجمالي متوسط الدرجة (بالأيام) لممارسات الرعاية الذاتية للأطفال المصابين بداء السكر من النوع الأول هو 3.88 يومًا. ممارسة الرعاية الذاتية التي حصلت على أعلى متوسط درجة هي "اختبار نسبة الجلوكوز في الدم" بمتوسط 4.38، تليها "ممارسات الدواء" بمتوسط درجة 4.37. من ناحية أخرى، فإن ممارسة الرعاية الذاتية التي حصلت على أدنى درجة هي "النظام الغذائي" بمتوسط 2.82. علاوة على ذلك فقد أظهرت النتائج أن العوامل المرتبطة بأداء ممارسات الرعاية الذاتية تشمل الدخول المسبق للمستشفى، ودخل أسرة الطفل، وتعليم الوالدين، ومكان متابعة السكر (عيادات الحكومة أو الوكالة). يجب مراقبة الأطفال من حيث نظامهم الغذائي وممارسات التمارين الرياضية، خاصة في المدرسة والمنزل، وينصح أن تركز أنشطة التثقيف الصحي على هذين المجالين. علاوة على ذلك، ينصح بوضع بروتوكول للتمريض ومقدمي الرعاية الصحية يختص بتوضيح ممارسات الرعاية الذاتية للأطفال المصابين بداء السكر من النوع الأول.