ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

NURSING POSTGRADUATE PROGRAM

ADHERENCE TO DIABETES SELF MANAGEMENT AND ASSOCIATED FACTORS AMONG ADOLESCENTS WITH TYPE 1 DIABETES IN PUBLIC HOSPITALS OF ADDIS ABABA, ETHIOPIA, 2021: A CROSS_SECTIONAL STUDY

PRINCIPAL INVESTIGATOR: YOMILAN GENETI (BSc)

A RESEARCH THESIS SUBMITTED TO POST GRADUATE STUDIES IN ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS IN PEDIATRICS AND CHILD HEALTH NURSING

JUNE, 2021

ADDIS ABABA, ETHIOPIA

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JUNE, 2021
ADDIS ABABA, ETHIOPIA

APPROVAL SHEET

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

POSTGRADUATE PROGRAM

This thesis by Yomilan Geneti Muse is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in pediatrics and child health nursing

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ACKNOWLEDGEMENTS

Primarily, I'm very grateful to God for every protection and support he did for me. Next, I would like to express my deepest gratitude to Addis Ababa and Dire Dawa University for giving me the chance to pursue my education in the postgraduate study program of pediatric and child health nursing. I would also like to extend my appreciation to Addis Ababa University, College of Health Sciences, librarians, and internet center coordinators for their support and assistance in getting important materials during this thesis write-up.

I would also like to convey my heartfelt thanks, appreciation, and acknowledgement to my advisors Ms. Kalkidan Wondwossen (MSc, Assistant professor) and Mr. Mekonen Adimasu (BSc., MSc), for their unreserved guidance, timely feed-backs, and constructive suggestions in the course of this thesis development.

Finally, my heartfelt thanks go to data collectors, supervisors, study participants, health institutions administrators, data clerks, and all others who directly or indirectly supported my work for their kind cooperation and invaluable collaboration; without them, this research would not have succeeded!

ABBREVIATIONS AND ACRONYMS

AAU:	Addis Ababa University
ADA:	American diabetic association
ADSM:	Adherence to diabetes self-management
AOR:	Adjusted Odd Ratio
BLSH:	Black Lion Specialized Hospital
COR:	Crude Odd Ratio
CSA:	Central Statistical Agency of Ethiopia
COVID 19:	Coronavirus Disease 2019
DKA:	Diabetic Ketoacidosis
DKT:	Diabetic Knowledge test
DSMP-SR:	Diabetes Self-Management Profile Self report
ETB:	Ethiopian Birr
FBG:	Fasting Blood Glucose
HbA1c:	Glycosylated hemoglobin
ISPAD:	International Society for Pediatrics and Adolescents Diabetes
SSA:	Sub-Saharan Africa
T1D:	Type 1 Diabetes

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ABSTRACT

Background: Type 1 diabetes is one of the quickly growing problems in Ethiopia. Adherence to diabetes self-management of adolescents with type 1 diabetes is crucial for the control of type 1 diabetes to diminish mortality and morbidity. Prove of level of adherence to diabetes self-management and associated factors in adolescents with type 1 diabetes in Ethiopia is unknown. **Objectives**: To determine adherence to diabetes self-management and associated factors among adolescents with type 1 diabetes in public hospitals of Addis Ababa, Ethiopia, from March 10 to April 25, 2021. **Method**: Institutional based cross-sectional study was done in four arbitrary chosen public hospitals of Addis Ababa. Systematic random sampling technique was used to select a total of 422 participants. A structured and pretested questionnaire was prepared and interview technique was used for data collection. The data was collected by utilizing Kobo collect version 1.30.1 and exported to excel for checking and cleaning. Later the data was exported to SPSS version 25 for analysis. Descriptive statistics, bivariable and multivariable logistic regression analysis was performed. A variable that has a P-value of <0.2 in bi-variable logistic regression analysis was subjected to multivariable logistic regression analysis to control the confounding factors. The level of significance was pronounced at P-value <0.05. **Results**: With 98.1% response rate, a total of 414 diabetic adolescents were interviewed. About 218 participants (52.7%) had poor adherence to overall diabetes self-management. The prevalence of poor adherence to insulin administration, dietary management, management of hypoglycemia, blood glucose testing, and regulation of exercise were 56.8%, 68.4%, 42%, 54.8% and 50.5% respectively. Self-efficacy (AOR=8.7, 95% CI: (1.9, 14.1) and P=0.005), social support (AOR=4.6, 95%CI: (1.5,13.5) and P=0.006), age (AOR=0.2, 95%CI: (0.1,0.4) and P=0.001), good knowledge of the disease (AOR=9.046, 95%CI: (3.83,13.5) and P=0.000), moderate knowledge (AOR=6.763, 95%CI: (2.18,12.921) and P=0.001), and time since diagnosis of type 1 diabetes (AOR=0.1, 95%CI:(0.02-0.2) and P=0.005) were significantly associated with adherence to diabetes self-management. **Conclusions and Recommendations:** More than half of the participants had poor adherence. Planning a comprehensive rule of adherence and expanding the recurrence of follow-up visits in diabetic clinics were profoundly suggested. **Keywords**: Adherence, Self-management, Adolescents

CHAPTER 1: INTRODUCTION

1.1 Background

Adherence to diabetes self-management of adolescents with type 1 diabetes is an evolutionary process that involves the development of understanding by learning to interact with the complex nature of the disease. It is a daily, deep rooted, dynamic, an active and proactive process that involves collaboration with the health care providers. It is the interactions of the health-related behaviors that patients engaged in to care for the chronic conditions of the disease [1].

Control of type 1 diabetes (T1D) mandates adolescent's adherence to overall diabetes treatment guideline. Adolescents ought to get socially touchy and formatively suitable diabetes self-management instruction and back. Motivated adolescents who are dynamic in their self-management are exceptionally critical for viable control of the disease [2].

Nowadays research shows that the cause for destitute adherence to diabetes self-management of adolescents with T1D are various. These factors are shorter since diagnosis of the disease, Presence of comorbidities, depressive symptoms, poor patient provider-relationships, less frequency of visits to the diabetic clinics and the like [3].

Indeed, in the event that most inquiries have centered on adherence to medicine, adherence moreover includes other health-related behaviors that expand past taking endorsed drugs.

Few studies are conducted to assess the overall adherence to diabetes self-management domains in adolescents [4-6].

Thus, adherence to diabetes self-management (ADSM) has five main domains. These main domains are: adherence to insulin administration, adherence to dietary management, adherence to management of hypoglycemia, adherence to blood glucose testing, and adherence to regulation of exercise [7].

Adherence to regulation of exercise is said to happen when adolescents take part in oxygen in aerobic exercise for at least 60 minutes per day. Adherence to management of insulin administration is following multiple-dose insulin injections or continuous subcutaneous insulin infusion therapy that is recommended by health care providers [8, 9].

Adherence to dietary management needs no special nutritional requirements for diabetic adolescents other than those for ideal development and advancement. But caloric blend ought to contain around 55% carbohydrate, 30% fat, and 15% protein. Approximately 70% of the carbohydrates content should be derived from complex carbohydrates which require prolonged digestion and absorption so that plasma glucose level increases slowly [9].

Adherence to blood glucose testing is when adolescents with type 1 diabetes test their glucose levels numerous times every day. Essentially, adherence to the management of hypoglycemia is anticipation and control of seriously diminished blood glucose level [2].

The prevalence of poor adherence to diabetes self-management among adolescents with type 1 diabetes is very high worldwide. But different studies are showing that the prevalence of poor adherence to diabetes self-management among adolescents with type 1 diabetes are higher in middle and low-income countries than high-income countries [5, 10].

Adherence to diabetes self-management could be helpful for prevention, and minimization of complications, and improvements of the quality of life of affected adolescents. Previous studies have reported poor health outcomes to be associated with poor adherence to diabetes self-management [11, 12].

Generally, the effectiveness of type 1 diabetes management ultimately depends on adolescence's adherence to diabetes self-management. Hence, long-term complications of the illness are exasperated by destitute adherence. Thus, to prevent the complication of type 1 diabetes adherence to diabetes self-management is obligatory [9, 13]. The aim of this study was to determine self-management and associated factors among adolescents with type 1 diabetes in public hospitals of Addis Ababa.

1.2 Statement of Problems

Adherence to diabetes self-management has been proved to be important for the control of type 1 diabetes. Accumulated evidence showed that several trials have led to establish clinical guidelines. These clinical guidelines dictate following adherence to the regulation of exercise, management of insulin administration, dietary management, blood glucose testing, and management of hypoglycemia to control the disease on their own [14].

Nevertheless, adherence to diabetes self-management is a formidable challenge for patients, families, and clinicians. Because, availability of clinical guidelines and effective insulin medication alone will not bring the forecasted outcomes of controlling the disease if there is no good adherence. Only few studies specifically address the issue of adherence with recommendations for a healthy lifestyle. These limited numbers of studies conducted demonstrates a high prevalence of poor adherence in adolescent's populations worldwide [1, 15].

Hence the most common cause of uncontrolled type 1 diabetes is poor adherence to diabetes self-management. In high-income countries (America for example) poor adherence is around twenty percent [16]. Whereas the population in low- and middle-income countries are especially being affected through engagement to easily modifiable risk factors. For instance, a study showed that 66%, 89%, 79%, and 21% of T1D adolescents in Palestine are non-adherent to glucose testing, dietary management, exercise, and insulin administration respectively [5].

In Uganda, the overall prevalence of poor adherence to diabetes self-management of adolescents is 63%. Similarly, poor adherence to insulin administration, glucose testing, and dietary management were 48%, 23.5%, and 70.5% respectively [6]. Similarly, in Cameroon, the mean poor adherence to diabetes self-management of adolescents is 67% [17].

On the other hand, inadequate knowledge of adolescents about type 1 diabetes can result in poor adherence to diabetes self-management. In Ethiopia, a study revealed a very high prevalence of poor knowledge about type 1 diabetes in preadolescents which suggests a high prevalence of poor adherence to diabetes self-management of adolescents in the country [18].

Poor adherence to diabetes self-management may impose different impacts on the health care system of the adolescents. Hence, most adolescents showed complications of the disease due to poor adherence. These complications are diabetes ketoacidosis (DKA). Anorexia nervosa, microvascular disease (nephropathy, retinopathy, neuropathy), and macrovascular disease

(coronary artery disease, peripheral vascular disease, stroke) [19, 20].

Similarly, a study showed that adolescents with poor adherence to diabetes self-management have poor quality of life. They are especially at high risk for psychiatric disorders and anxiety symptoms [12]. Moreover, adolescents with poor adherence to diabetes self-management have prolonged hospital admissions, higher levels of depression and poor self-efficacy which indicate their poor quality of life [11].

Researchers tried to predict factors that could impede or enhance adherence to diabetes self-management. Some of the factors were time since diagnosis of the disease, self-efficacy, social support, knowledge about the disease, comorbidities, and socio-demographic characteristics [3, 21]. Furthermore, the socioeconomic conditions and psychological characteristics of adolescents are strongly associated with adherence to diabetes self-management [22].

Moreover, adherence to structured diabetes self-management plan and its domains are very difficult in adolescence. In many countries, especially in economically disadvantaged families, access to insulin and self-management tools, including structured diabetes education, are scarce. This may lead to severe disability and early death as a result of harmful substances known as 'ketones' building up in the body [23]. Thus, proper adherence to diabetes self-management by developing a trusting and motivating relationship between health care professionals and the adolescent is the only option to improve health behaviors and health status [24].

Though the issue of adherence to diabetes self-management requires strong devotion and considerable attention, few studies were conducted to show the gap and magnitude of the problem. To the extent of the investigator's knowledge, there has been no published study that determines adherence to diabetes self-management and associated factors among adolescents with type 1 diabetes in Ethiopia. Therefore, the aim of the study was to assess adherence to diabetes self-management of adolescents with type 1 diabetes and associated factors in the study area. Hence, such types of data would show the level of poor adherence and would be essential for the care delivery services of the adolescents to fill the gaps to resolve the problem.

1.3 Justification of the Study

Adolescent's success in adherence to diabetes self-management is impossible if adults do tasks for them. But Adolescent's success is highly likely if the adult has witnessed that the adolescent does successfully adhere to diabetes self-management under a variety of circumstances without the adult's help, so the adolescent is given complete responsibility for their own task.

In Ethiopia, even if the health care providers are giving appropriate care for adolescents with type 1 diabetes, the associated complications of the disease are still increasing. The reason for the increment of this problem may be secondary to poor adherence to diabetes self-management. Most of the studies done in the country only focus on adults with type 2 diabetes and to some extent on adults with type 1 diabetes. There is no knowledge about adherence to diabetes self-management and the factors associated with it among adolescents with type 1 diabetes.

Nevertheless, educating and encouraging the adolescents for general strict adherence to diabetes self-management is the cornerstone for the management of type 1 diabetes. Therefore, understanding the level of adherence to diabetes self-management and related factors in adolescents with T1D is critical for countries like Ethiopia to decrease the alarming mortality and morbidity related to the disease.

1.4 Significance of the Study

Since type 1 diabetes is the major health problem around the world including Ethiopia, assessing adherence to diabetes self-management has paramount significance in improving the effectiveness, efficacy, and coverage of interventions on combating the disease. The information that has been generated through this research will help Addis Ababa city administration health bureaus and donors interested in child health to develop appropriate strategies and programs to promote good adherence of adolescents to T1D self-management.

The Study will assist the policy makers in developing a strategy to tackle the problem from the root. In addition, the study result will indirectly help health care providers and the community as a best opportunity and initiation to deepen their knowledge and awareness of adolescent's adherence to diabetes self-management.

On the other hand, it can be used as existing evidence for other researchers to investigate further studies. Moreover, the research thesis will serve as partial fulfillment of the requirements for the degree of Master of Science in Pediatrics & Child Health Nursing for the principal investigator.

1.5 Objectives

1.5.1 General Objective

To determine adherence to diabetes self-management and associated factors among adolescents with type 1 diabetes in selected public hospitals of Addis Ababa, Ethiopia, 2021.

1.5.2 Specific Objectives

To determine adherence to diabetes self-management among adolescents with type 1 diabetes in public hospitals of Addis Ababa, Ethiopia, 2021.

To identify factors associated with adherence to diabetes self-management among adolescents with type 1 diabetes in public hospitals of Addis Ababa, Ethiopia, 2021.

CHAPTER 2: LITERATURE REVIEW

2.1 **Adherence to Diabetes Self-management**

Adherence to diabetes self-management follows and emphasizes a person-centered model of care through the integration of tools and programs into routine care. This element of the chronic care model is about how people could be empowered to take control and improve their confidence to manage the disease [2].

A study conducted in Indiana University; America, showed that adolescents with T1D should be assessed for assuming responsibility for self-management. This achievement has implications for adolescent's diabetes self-management, psychosocial quality of life, short-and long-term health [25].

The magnitude of poor adherence to diabetes self-management among adolescents is relatively high for most countries. For example, a descriptive study conducted in Iraq showed that out of 100 adolescents with type 1 diabetes 46% had poor adherence to diabetes self-management[26]. Another study conducted in Palestine shows that 60% of adolescents with T1D are non-adherent to diabetes self-management [5].

Furthermore, a study conducted in Uganda shows that the overall prevalence of poor adherence to diabetes self-management of adolescents is sixty-three percent [6]. Similarly, a study conducted in Cameroon revealed that the average prevalence of poor adherence to diabetes self-management in adolescents is 67.4% [17]. Generally, the prevalence of poor adherence to diabetes self-management implies poor control of type 1 diabetes in adolescents with type 1 diabetes [27].

Although most researchers have focused on adherence to medication, adherence also encompasses other health-related behaviors that extend beyond taking prescribed drugs. Studies that determine overall adherence to diabetes self-management among adolescents are scarce. For the prevention of diabetes related morbidity and mortality, there is an immense need for dedicated self-management behaviors [4].

2.1.1 Adherence to Insulin Administration

The prevalence of poor adherence to insulin administration in adolescents with T1D is generally poor for most of the countries in the world. For example, a study conducted in Pakistan showed that 88.1% of adolescents were non-adherent to their prescribed insulin regimen [3]. Another study conducted in the Netherlands showed that adherence to the insulin administration self-management domain in adolescents with type 1 diabetes declined with increasing age due to the challenges of transition of self-management from parents to the adolescents themselves [28].

Additionally, a review of studies conducted in Massachusetts; America show that pubertal physiology increases the chance of relative insulin resistance and poor adherence [29]. Furthermore, a study conducted in Kampala, Uganda revealed that out of 150 participants 32% did not take their insulin medication as prescribed [30].

Poor adherence to insulin administration in adolescents with T1D has multiple impacts on their health and survival. For instance, a study conducted in Britain, showed that insulin treatment non-compliance was associated with increased all-cause mortality in adolescents with type 1 diabetes [31].

2.1.2 Adherence to Dietary Management

American diabetes association (ADA) reported that poor adherence to dietary management of adolescents is due to their behavior problems and poor knowledge. Thus many adolescents with T1D are struggling with adherence and not meeting dietary guidelines for their disease [32].

For adolescents with type 1 diabetes, the challenge in adherence to dietary management is to maintain good glycemic control while providing adequate energy for growth and development. For instance, a study conducted in Australia revealed that modification in dietary advice for adolescents was required, depending on their developmental stage [33].

Nowadays, the prevalence of poor adherence to dietary management of adolescents is rapidly increasing. For example, a study conducted in Pakistan revealed that out of 194 adolescents, 58.5% of them were non-adherent to dietary recommendation [3]. On another hand, a nationwide survey conducted in Brazil showed that 45.8% of the adolescents reported to be non-adherent to dietary management [34].

2.1.3 Adherence to Management of Hypoglycemia

The International Society for Pediatrics Adolescents Diabetes (ISPAD) defined hypoglycemia as a fall of the blood glucose level that exposes the patients to potential problems. It also explained hypoglycemia as blood glucose level of less than or equal to 65mg/dL [35].

During the management of hypoglycemia attention should be given for prevention of hyperglycemia. For instance, a study conducted in Australia found that the mothers who worry most about hypoglycemia maintain their child's blood glucose levels above recommended levels [36].

Poor adherence to management of hypoglycemia has multiple impacts on the quality of life of adolescents. For example, a study conducted in America revealed that poor adherence to management of hypoglycemia increases depressive symptoms [37].

Generally, even though hypoglycemia is a concern for adolescents with T1D, new and emerging technologies can help to control hypoglycemia. For example, a study conducted in Switzerland identified that flash monitoring was an essential technique to improve adherence to glucose monitoring and detecting hypoglycemia in adolescents with type 1 diabetes [38].

2.1.4 Adherence to Blood Glucose Testing

Poor adherence to blood glucose testing among adolescents was reported from different countries worldwide. For instance, a study conducted in Palestine revealed that approximately 66% of patients reported significant non-adherence to blood glucose testing [5]. Similarly, most of the African adolescents with T1D poorly control their blood glucose level. For example, a study conducted in Kenya identified that the median of adolescents participated in the study poorly controlled their blood glucose [39].

Moreover, American diabetes association reported that frequent glucose monitoring before, during and after exercise, was important to prevent, detect, and treat abnormal blood glucose levels with exercise [2]. A study also indicates that Poor glycemic control, which is common among T1D, is associated with lower literacy, self-perception of insufficient adherence to diet and inadequate monitoring of HbA1c level. Specific actions, particularly those targeting improving adherence to diet and insulin, may contribute to successful management of T1D [40].

2.1.5 Adherence to Regulation of Exercise

The Prevalence of poor adherence to exercise in adolescents with type 1 diabetes is very high in the world. For instance, a study conducted in Portugal revealed that 35% of adolescents with T1D had poor involvement in physical activity [41]. Another study conducted in Pakistan showed that out of a total of 194 patients 42.3% are non-adherent to physical activity [3].

Poor adherence to exercise in adolescents with T1D has multiple impacts on themselves, the health care systems as well as the public at large. For example, The World Health Organization(WHO) reports that 3.2 million people die each year due to physical inactivity [42]. Similarly, a study conducted in Britain revealed that there were strong correlations between depressive symptoms and physical inactivity[21]. Furthermore, a review of studies done in America revealed that Poor adherence to exercise in adolescents with T1D decreases cardiorespiratory fitness, body composition, bone health, insulin sensitivity, and psychosocial well-being [43].

2.2. Factors Associated with Adherence to Diabetes Self-Management

2.2.1 Socio Demographic Factors

Age

A study conducted in Tanzania illustrated that participants with age between 10 and 14 showed 1.3times better adherence to diabetes self-management than those with age between 15 and 18 ($P < 0.022$) [44]. Similarly, a study conducted by Oxford University revealed that lower adherence scores to glucose monitoring, diet, and exercise were reported among older adolescents relative to preadolescents [45].

Gender

A study conducted in London, Britain found that females adolescents were 1.05 times more adherent to diabetes self-management than males (AOR 95% CI: 1.05(1-1.96) and $P = 0.02$) [46]. In contrast, a systematic review conducted in Australia illustrated that there was no obvious relationship between gender and adherence to diabetes self-management among adolescents with type 1 diabetes [47].

Education

A study conducted in India revealed that adolescents must be encouraged to participate in the proper education of adherence to diabetes self-management so that they ensure self-management practice and adapt with their own life [48]. A study conducted in Cameroon revealed that adolescents with educational of tertiary level (collage/University) were 30% more adherent to glycemic control than those who were unable to read and write (AOR 95% CI of 0.7(0.55-0.79) and $P < 0.003$) [17].

2.2.2 Medical factors

Time Since Diagnosis

The duration since being diagnosed with T1D has effects on adherence to diabetes self-management Some adolescents who had shorter history of T1D were found to be better than adolescents with longer duration in adherence to diabetes self-management. For instance, a study conducted in America found that adolescents with shorter diabetes duration reported performing significantly more diabetes self-management than individuals with a longer duration of the problem $P=0.02$ [49]. Similarly, a study conducted in Tanzania illustrated that adolescents

with shorter diabetes duration since diagnosis had a better adherence to diabetes self-management than adolescents with longer duration [44].

In contrast, another study from Britain found that adolescents with time since diagnosis of T1D above 6 years were 98% greater understanding about the disease and lower negative emotional response than those with time since diagnosis less than 5years (AOR 95% CI: 0.02(0.01-0.03) and P=0.01) [46]. Similarly, a study conducted in Cameroon showed that adolescents with above 2 years' time since diagnosis had 93% better adherence to glycemic control than those with time since diagnosis below 2years (AOR 95% CI: 0.07(0.01-0.43) and P=0.004 [17].

Co-morbidities

Comorbidity is one patient specific factor that affects T1D control in adolescents. Several studies illustrated that T1D is a metabolic disorder, which is associated with several comorbidities and complications affecting every organ system. Hypertension, heart failure, cardiomyopathy, strokes, coronary artery disease, Peripheral vascular disease, epilepsy, cancer, asthma, cognitive dysfunction and dementia are among comorbidities associated with T1D [50-55]. Locally, a study conducted in Jimma University specialized hospital; Ethiopia illustrated that type 1 diabetes is strongly associated with retinopathy, peripheral neuropathy, hypertension and nephropathy [56].

2.2.3 Knowledge about Type 1 Diabetes

Adolescents' knowledge about type 1 diabetes is very important for management of the disease. But their parents' knowledge about the disease has minimal effect on the management of the disease. Therefore, rather than focusing on the parent it is very crucial to educate and strengthen the adolescents themselves. For instance, a study conducted in Jacksonville, America illustrated that parental knowledge about type 1 diabetes was not associated with any type 1 diabetes outcome: however, greater youth knowledge predicted better treatment adherence [57].

A study conducted in Makerere University, Uganda showed that adolescents who had moderate knowledge about type 1 diabetes were 51% less adherent to diabetes self-management than adolescents who had good knowledge about the disease (AOR 95% CI: 0.49(0.33-0.72) and P = 0.001). Similarly, adolescents who had poor knowledge about type 1 diabetes were 68% less adherent to diabetes self-management than adolescents who had good knowledge about the disease (AOR 95% CI: 0.32(0.19, 0.55) and P=0.001) [6].

Moreover, a study conducted in Portugal revealed that many adolescents with type 1 diabetes had misunderstandings, as well as a low level of knowledge about adherence to diabetes self-management [58].

2.2.4 Self-efficacy

The concept of self-efficacy originated with Bandura's social cognitive theory. Bandura characterized self-efficacy as "belief in one's abilities to organize and execute the course of activity required to deliver a given attainments". Self-efficacy may mediate the relation between knowledge, abilities and performance or moderate the effectiveness of an intervention [59].

A systematic review of studies conducted in Columbia illustrated that providing care and support can improve adherence to diabetes self-management by increasing self-efficacy[60]. Another study conducted in Spain showed that 32% of patients were unable to follow the treatment recommendations for the management of their disease due to lack of self-efficacy [61]. Furthermore, study conducted in Iran showed that self-efficacy is a significant determinant factor for successful adherence to diabetes self-management [62].

2.2.5 Social Support

Social support is considered as a complex and dynamic process that involves individuals and their social networks, working to satisfy their needs, provide and complement the resource they have and, thus, cope with the disease [63]. A study conducted in Kampala, Uganda showed that adolescents who had social support were 2 times more adherent to diabetes self-management than who had no social support (AOR 95% CI: 1.66 (1.61, 1.71) [6].

Lack of Social support is significantly associated with low quality of life, poor adherence to diabetes self-management and high level of HbA1c. For example, a study from Denmark revealed that lack of social support was significantly associated with high diabetic distress and poor diabetic self-management [64].

2.3 Conceptual Framework

This Conceptual framework is developed by the principal investigator after reviewing different literatures on the same topic [5, 61, 64, 65]. The framework explains adherence to diabetes self-management and factors associated with it.

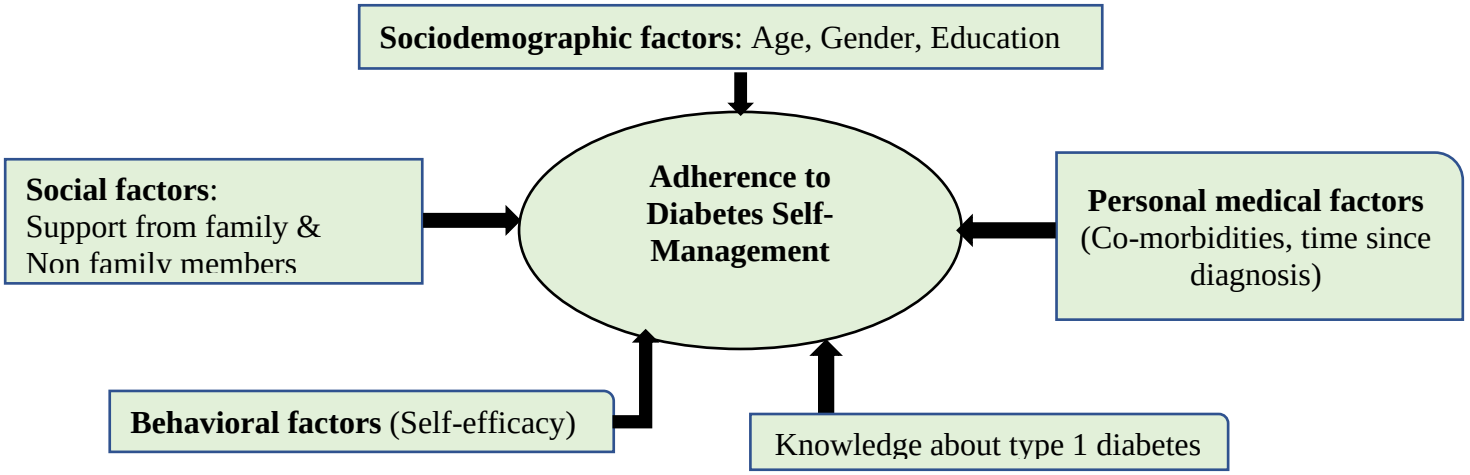

Figure 1: Conceptual framework on diabetes self-management among Adolescent with type 1 diabetes in selected public hospitals of Addis Ababa, Ethiopia, 2021.

CHAPTER 3: METHODS AND MATERIALS

3.1 Study Area and Period

The study was conducted in Addis Ababa city administration, Ethiopia, from March 10 to April 25, 2021. Addis Ababa city was conveniently selected as a study area based on the goals of the study, feasibility, and the availability of diabetic clinics at all levels of the health care system in the study area.

Addis Ababa city is the capital city of Ethiopia in which 25% of the urban people of the country live. It is also one of the rapidly developing towns in Africa. Based on the last census conducted by the Central Statistical Agency of Ethiopia (CSA), the city has a total population of 3,384,569. But currently, it is estimated that the total population of the city is around 8 million. Addis Ababa city lies at an altitude of 7,546 feet (2,300 meters). It has a surface area of about 530.14 km^2 [66]. The health coverage status of the city in 2015 was estimated to be 52.2%.

There are a total of 52 hospitals in the city, of which 12 of them are public hospitals that give diabetes follow up services for adolescents. Therefore, the study involves 30% of the 12 public hospitals selected by utilizing lottery methods. Thus, the study will be conducted in chronic follow up units of Black Lion Specialized Hospital (BLSH), Yekatit 12 Medical Collage Hospital, Zewuditu Memorial Hospital, and Menilik II Referral hospital.

3.2 Study Design

An institutional based descriptive cross sectional study design was used.

3.3 Population

3.3.1 Source Population

All adolescents with type 1 diabetes who visited the outpatient department at public hospitals in Addis Ababa, Ethiopia.

3.3.2 Study Population

Randomly selected adolescents with type 1 diabetes who fulfilled the inclusion criteria and those who visited outpatient department during the study period at selected public hospitals in Addis Ababa, Ethiopia.

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion Criteria

All adolescents with type 1 diabetes who visited the outpatient department at selected public hospitals in Addis Ababa and those on insulin treatment at least for 1 year period before commencement of the study were included in the study.

3.4.2 Exclusion Criteria

Adolescents who were unable to speak, those who had a major hearing problem, those who have serious physical and mental retardation were excluded from the study.

3.5 Sample Size Determination and Sampling Technique

3.5.1 Sample Size Determination

Sample size was determined by using single population proportion formula based on the following assumptions.

Prevalence (P): 50% because the prevalence of adherence to diabetes self-management of T1D for adolescents in Ethiopia was not known.

Margin of Error (d): 5% and Confidence level: 95% then the sample size was:

$N= Z\alpha/2^{2} * P (1-P)/d^{2}$

$N= (1.96)^{2} \times 0.5 (1-0.5) / (0.05)^{2}$ = 3.8416 * 0.25/0.0025 = 384.16 = **384**

Then by taking 10% non-response rate the final sample size was 422.

3.5.2 Sampling Techniques

From the ten public hospitals in Addis Ababa city that gives chronic follow up care services for adolescents with T1D, four public hospitals were selected by using a simple random sampling technique. This study was conducted on the public hospitals' chronic pediatric follow up units. The number of study units for each hospital was proportionally allocated (based on the number of adolescents coming per month) and those who were part of the final sample size were selected using systematic random sampling.

The number of adolescents coming per month were 340, 160, 320, & 60 for Black lion Specialized Hospital, Zewuditu Memorial Hospital, Yekatit 12 Medical College Hospital & Menilik II Referral Hospital respectively. Then by using proportional allocation formula:

Number of study units = Ni*n/N

Where; Ni = Number of follow up per month at each hospital

nf = Sample size = 422 K = sampling interval

N = The sum of total number of follow up per month at each hospital.

Number of study units of Black lion Specialized Hospital = 340*422/880 = 163, k=2

Number of study units of Zewuditu Memorial Hospital = 160*422/880 = 76, K=2

Number of study units of Yekatit 12 Medical College Hospital = 320*422/880 = 154, K= 2

Number of study units of Menilik II Referral Hospital = 60*422/880 = 29, K=2

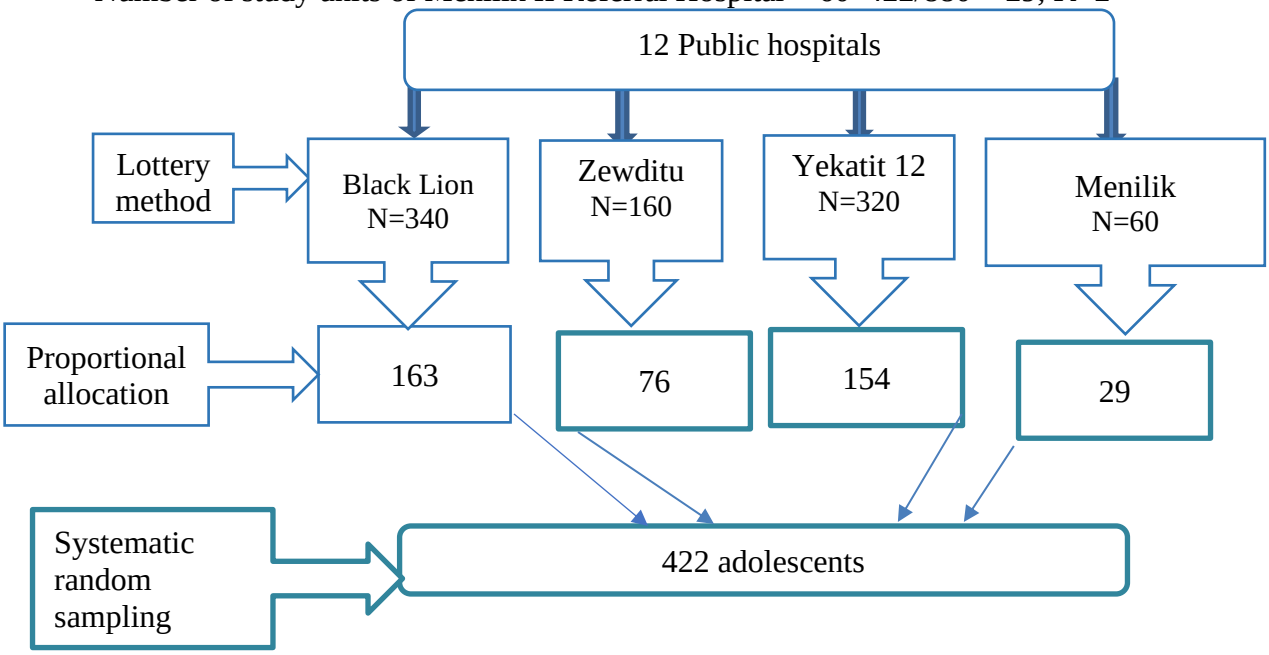

Figure 2: Schematic representation of sampling procedure on diabetes self-management among adolescents with T1D in selected public hospitals of Addis Ababa, Ethiopia, 2021.

3.6 Operational Definitions

The following variables were very important and their definitions are according to this study.

Adolescence: Is a phase of developmental life cycle in human beings that is conventionally understood as the years between 10 & 18 years old [67].

Adherence: Is the extent to which a person's behavior corresponds with the advice from health care providers. It is defined by the number of correct answers given by participants divided by the total number of questions and multiplied by one hundred to determine percent of adherence. Where the total scores of less than or equal to fifty percent indicate poor adherence and greater than fifty percent indicate good adherence [1].

Adherence to Diabetes Self-management: Refers to behaviors such as following adherence to management of insulin administration, dietary management, management of hypoglycemia, blood glucose testing, and regulation of exercise. For each domain the percentage will be calculated and categorized as good adherence to diabetes self-management for 'diabetes self-management profile self-report questionnaire' scores greater than 50% and poor adherence to diabetes self-management for scores less than or equal to 50% [7, 68].

Adherence to Insulin Administration: The participants were classified as having good adherence to insulin, if they had scored 'diabetes self-management profile self-report questionnaire' adherence to insulin administration part greater than 50%. Likewise, they were classified as having poor adherence to insulin, if they had scored less than or equal to 50% [69].

Adherence to Dietary Management: The participants were classified as having good adherence to dietary management, if they had scored 'diabetes self-management profile self-report questionnaire' adherence to dietary management part greater than 50%. In the same way, they were classified as having poor adherence to dietary management, if they had scored less than or equal to 50% [7, 68].

Adherence to Management of Hypoglycemia: The participants were classified as having good adherence to management of hypoglycemia, if they had scored 'diabetes self-management profile self-report questionnaire' adherence to management of hypoglycemia part greater than 50%. Similarly, they were classified as having poor adherence to management of hypoglycemia, if they had scored less than or equal to 50% [9].

Adherence to Blood Glucose Testing: The participants were classified as having good adherence to blood glucose testing, if they had scored 'diabetes self-management profile self-

report questionnaire' adherence to blood glucose testing part greater than 50%. Similarly, they were classified as having poor adherence to blood glucose testing, if they had scored less than or equal to 50% [70].

Adherence to exercise: The participants were classified as having good adherence to exercise, if they had scored 'diabetes self-management profile self-report questionnaire' adherence to exercise part gre32ater than 50%. Similarly, they were classified as having poor adherence to exercise, if they had scored less than or equal to 50% [8].

Knowledge about type 1 diabetes: Respondents those with score greater than or equal to 80%, 60%-79%, less than or equal to 59% of the total diabetes knowledge test (DKT) evaluation of life styles and management scale were taken as having good knowledge, moderate knowledge, and poor knowledge about type 1 diabetes respectively [6, 71].

Self-efficacy: Is the belief in one's capabilities to organize and execute the courses of action required to produce given attainment. In this study, respondents who scored greater than 50% of the questionnaires on "self-efficacy in adolescents, girls and boys with insulin-dependent diabetes mellitus" scale were considered as having good self-efficacy to cope up and manage their disease. Similarly, respondents who scored less than or equal to 50% were considered as having poor self-efficacy [72].

Social Support: Is the support gained from family and non-family members. In this study, respondents whose scores were greater than fifty percent on the diabetes social support questionnaire-family version and friend version will be taken as having social support. Also respondents who were scored less than or equal to 50% were considered as having no social support [73, 74].

3.7 Study Variables

3.6.1 Dependent Variables

Adherence to diabetes self-management of type 1 diabetes

3.6.2 Independent Variables:

Socio-demographic Factors: Age, sex, level of education of the family and the child.

Personal Factors: Comorbidities, knowledge about type 1 diabetes, time since diagnosis, duration of taking insulin medications, age at diagnosis.

Behavioral Factors: Self-efficacy

Social Factors: Support from families and non-family members of the society.

3.8 Data Collection Method

3.8.1 Data Collection Instrument

Institutional based cross-sectional study was done in four arbitrary chosen public hospitals of Addis Ababa. Systematic random sampling technique was used to select a total of 422 participants. A structured and pretested questionnaire was prepared and interview technique was used for data collection. All of the questions were prepared in English and translated to Amharic by experts and back translated to English for consistency. The questionnaire contains six parts.

Part I: Participant's socio-demographic characteristics: This part includes: Gender, age, educational level, and Address or site of data collection[44].

Part II: Personal medical factors

This part is composed of Age of diagnose, duration of taking insulin medications, number of years of follow up and comorbidities[46].

Part III: Adherence to diabetes self-management: Data about self-management activities was collected using the tool called "Validation of Structured Interview for the Assessment of Diabetes Self-management" questionnaire [75] which was revised in 2012 [76] and cross culturally adapted in Hindi in 2020. Its reported internal consistency reliability was α=0.835 [7]. This Diabetes Self-Management Profile Self-Report (DSMP-SR) has 24 item instrument quantifies five areas of diabetes self-management which were insulin administration (4 items), dietary management (6 items), hypoglycemia management (4 items), blood glucose testing (7 items), and exercise (3 items). Then 5-point Likert scale with the anchors 1=never, anchors

2=Almost never, anchors 3=Sometimes, anchors 4=Almost always, anchors 5=always was used. Therefore, those with scores greater than 50% are categorized as having good adherence and those with scores less than or equal to 50% are categorized as having poor adherence. For each domain of adherence, the same thing was applied [7, 68].

Part IV: Knowledge about Type 1 diabetes: The diabetes knowledge test (DKT) was utilized to assess diabetic patients' general understanding of their disease and treatment recommendations. DKT was developed and tested for reliability and validity by the University of Michigan researchers, which was adopted for this study. DKT consists of 23 questions which have been shown to adequately estimate a general patient's knowledge of diabetes related to the 5 domains of adherence to diabetes self-management [71].

The score for each participant was determined by dividing the number of correct answers by the total number of questions then multiplied by 100 to give a 0 to 100 score. To assess the level of knowledge about diabetes, patients' level of knowledge was recorded in to three groups on the basis of their DKT scores as good, moderate, and poor knowledge if they score greater than or equal to 80%, 60-79%, and less than or equal to 59% respectively [6].

Part V: Self-efficacy: 'Self-efficacy in adolescent girls and boys with T1D scale' was used to measure self-efficacy [72]. The reported internal consistency reliability was 0.91. The questionnaires have 35-items instruments and modified in to a 5-point scale ranging from "totally unconfident" to "totally confident". Totally unconfident was scored 1, unconfident scored 2, not sure scored 3, confident was scored 4, totally confident was scored 5. Therefore, respondents who scored greater than 50% of the questionnaires were considered as having good self-efficacy to cope up, and manage their disease [77].

Part VI: Social support: The diabetes Social support questionnaires family version and friend version which contains 52 total items was used to assess support gained from family, friend and/or significant others. Responses were coded as follows: No=1, Yes=2. The support score was calculated by summing the 52 responses in the questionnaires and the resulting total was divided by 52 and multiplied by 100 to give 0 to 100 score. Respondents whose score was above 50% on the questionnaires were taken as having social support [73, 74].

3.8.2 Data Collectors

Four trained BSc nurse professionals and two BSc nurse professionals were assigned as data collectors and supervisors respectively. Two days training was given on overall objective of the study, questionnaire clarification, sampling strategy, ethical considerations, how to facilitate and supervise the data collection process.

3.8.3 Data Collection Procedures

Face to face interview using structured questionnaire was used for the data collection**.** Consent form, Assent form and information sheet with details of the study, was given to the participants and their family to obtain an informed consent. Participants were assured of their confidentiality through anonymity by using code numbers on their questionnaire. Subsequently, those who are willing to participate in the study were asked the questionnaire after taking informed, voluntary and signed consent and assent. Data collectors guided and facilitated the data collection process by giving directions, clarifications and checking for completeness of the data. Supervisors and the principal investigator also have followed the overall activities daily.

3.9 Data Quality Assurance

The quality of data was assured by properly designing the tool, and the questionnaires were pretested in St. Paul Generalized Specialized Hospital and Tirunesh Beijing Hospital using 5% of the sample size, on 21 study units. The questionnaire was translated to Amharic language and back translated into English by another person to check for consistency and similarity.

The data collection tool was assessed for completeness, consistency, applicability and important modifications were made prior to the actual data collection. The study procedures protected the patient's privacy by allowing anonymous and voluntary participation. A frequency check was done for controlling errors during data analysis and the Cronbach alpha reliability test was calculated using SPSS and it was 0.72.

3.10 Data Processing and Analysis

The data was collected by using Kobo collect software version 1.30.1 from randomly selected adolescents with type 1 diabetes who fulfilled the inclusion criteria and those who visited outpatient departments during the study period at selected Public hospitals. Then the data was checked and cleaned in excel software for exporting to SPSS version 25 software for analysis. Incomplete and inconsistent data were excluded from analysis.

The results of the descriptive statistics were expressed as percentages and frequencies. Associations between independent and dependent variables were analyzed first using bivariable analysis to identify factors which were associated with the outcome variable. Those variables which were found to have an association with the outcome variable at $P<0.2$ and which fitted for binary logistic regression model were entered to multivariable logistic regression analysis to control the confounding factors. Then the fitness of the model was checked using Hosmer and Lemeshow goodness of fit. The magnitude of the association between the different variables in relation to dependent was measured using adjusted odds ratio (AOR) and 95% confidence interval and P values below 0.05 were considered to be statistically significant.

3.11 Ethical Considerations

Ethical clearance was obtained from the Research and Ethics Committee of the department of Nursing and midwifery of Addis Ababa University (AAU) and an official letter was sent to the selected public hospitals. The study was conducted in accordance with the declaration of Helsinki and information about the study was explained to the participants, including the procedure, disadvantage and benefits of the study.

The respondents were told that they have the right to refuse to participate or decline participating in the study any time in between and refusing to participate in the study would not affect them. Respondent's confidentiality of information was ensured by excluding names from the questionnaires and the information they gave were used for the purpose of the study only.

Finally, data collection was made after written assent of all adolescents were taken along with parental written consent. The respondents' privacy was maintained by conducting the interview in a private place and they were informed that there won't be any incentive or harm for their participation in this study.

CHAPTER 4: RESULTS

4.1 Sociodemographic Characteristics of Adolescents with Type 1 Diabetes

A total of 422 diabetic adolescents were selected to participate in this study, among these, 414 participated making a 98.1% response rate. The data was collected from Black lion Specialized Hospital, Yekatit 12 Medical College Hospital, Zewuditu Memorial Hospital and Menilik II Referral Hospital. The majority of the participants 234(56.5%) were female. The age of the respondents ranged from 10 to 18 years with the mean age of 13.64 years. About 211(51%) were found within the age group of 15 to 18 years. Of the total respondents about 262(63.3%) had primary level (1–8 grade) of education (**Table 1**).

Table 1: Distribution of socio-demographic characteristics of adolescents with type 1 diabetes in selected public hospitals in Addis Ababa, March to April 2021 (n=414).

Characteristics	Categories	Frequency(n=414)	Percentage (%)
Age category	10 to 14 years	203	49.0
	15 to 18 years	211	51.0
Sex	Male	180	43.5
	Female	234	56.5
Educational status	Unable to read and write	42	10.1
	Primary level (1–8 grade)	262	63.3
	Secondary level (9–12 grade)	101	24.4
	Tertiary level (>12 grade)	9	2.2

4.2 Medical Characteristics of Adolescents with Type 1 Diabetes

Out of the total 414 respondents, 227 (54.8%) of the total participants were diabetic for at least 6 years and 247 (59.7%) of the total participants were receiving insulin injection for a duration of at most 5years. All of the participants were on insulin injection with the mean duration of receiving insulin medication 4.86 years. The mean time since diagnosis with disease was 5.7 years and 79.7% of the total participants were diagnosed with diabetes after the age of 6. Majority of the participants (99%) had no comorbidities and Hypertension was found to be the only comorbidity that was reported in this study (**Table 2**).

Table 2: Distribution of Medical characteristics of Adolescents with Type 1 Diabetes in selected public hospitals in Addis Ababa, March to April 2021 (n=414).

Characteristics	Categories	Frequency(n=414)	Percentage (%)
Time since diagnosis of T1D	1 to 5 years	187	45.2
	6years and above	227	54.8
Age at diagnosis with T1D	1 to 5 years	84	20.3
	6 years and above	330	79.7
Duration of taking insulin medications	1 to 5 years	247	59.7
	6 years and above	167	40.3
Comorbidities	Yes	2	.5
	No	412	99.5
Knowledge about type 1 diabetes	Poor	209	50.5
	Moderate	134	32.4
	Good	71	17.1

4.3 Knowledge about Type 1 Diabetes

Two hundred nine (50.5% of the total participants) had poor knowledge about type 1 diabetes and only 71 participants (17.1%) had good knowledge about type 1 diabetes (table 3).

Table 3: Knowledge about Type 1 Diabetes among Adolescents in selected public hospitals in Addis Ababa, March to April 2021 (n=414).

Characteristics	Categories	Frequency(n=414)	Percentage (%)
Knowledge about type 1 diabetes	Poor	209	50.5
	Moderate	134	32.4
	Good	71	17.1

4.3 Behavioral and Social Characteristics of Participants

The mean scores for self-efficacy and social support were adopted as influencing factors and entered into a multivariable logistic regression model to examine their relationships with adherence to diabetes self-management. The majority of the participants (70.8%) showed good self-efficacy and Two hundred fifty-nine (62.6%) had social support (table 4).

Table 4: Distribution of Behavioral and Social Characteristics of Adolescents in selected public hospitals in Addis Ababa, March to April 2021 (n=414).

Characteristics	Categories	Frequency(n=414)	Percentage (%)
Self-efficacy	Poor	121	29.2
	Good	293	70.8
Social support	No	155	37.4
	Yes	259	62.6

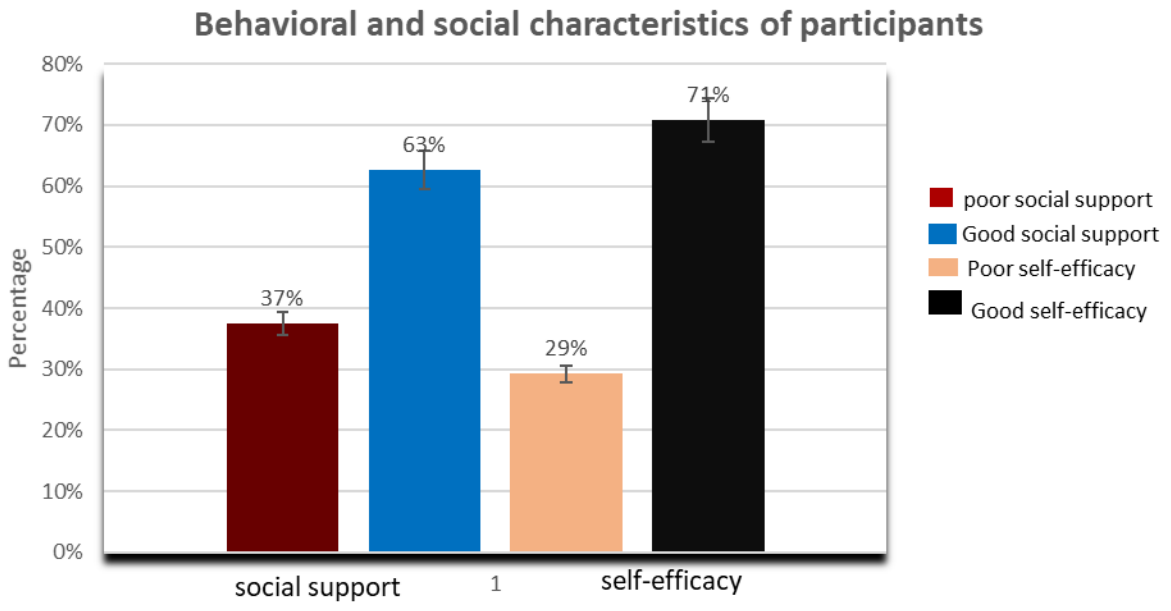

Figure 3: Self-efficacy and Social support of adolescents with type 1 diabetes in selected public health hospitals in Addis Ababa, Ethiopia, March to April 2021 (n=414).

4.4 Level of Adherence to Diabetes Self-Management

Overall adherence to diabetes self-management was calculated using the Diabetes Self-Management Report (DSM-SR) which contains 24 items. Using this score, the overall prevalence of good adherence to diabetes self-management for the participants were 47.3% (196 participants) and the prevalence of total poor adherence to diabetes self-management were 52.7% (218 participants) CI:95% (0.47, 0.57).

The prevalence of poor adherence to insulin administration, dietary management, management of hypoglycemia, blood glucose testing, and regulation of exercise were 56.8% (235 participants), 68.4% (283 participants), 42% (174 participants), 54.8% (227 participants) and 50.5% (209 participants) respectively (Figure 4).

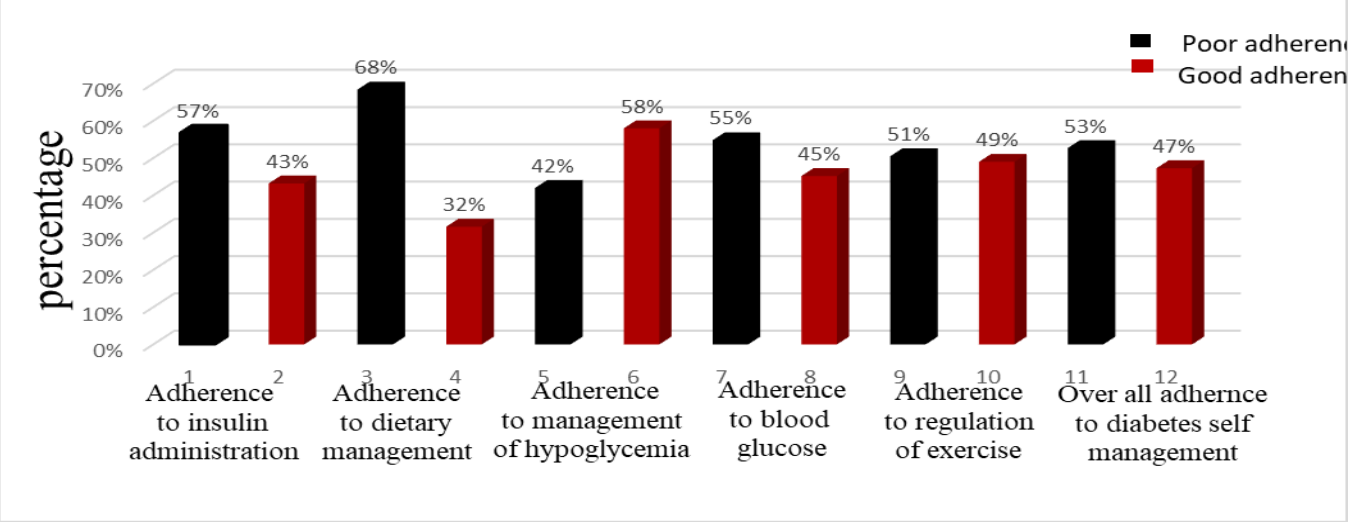

Figure 4: Level of adherence to diabetes self-management of adolescents with type 1 diabetes in Addis Ababa public health hospitals, March; to April 2021 (n=414)

4.4.1 Adherence to Insulin Administration

One hundred forty-three participants (29.2%) were sometimes given their insulin injection more than 30 minutes late and the majority of them sometimes took less insulin than usual. Around thirty percent of the total participants had never taken insulin injection than usual and thirty-three percent of the total participants sometimes missed their insulin injection when they forgot or where too busy (Table 5).

Table 5: Adherence to Insulin Administration of adolescents with type 1 diabetes in Addis Ababa Public hospitals, March to April 2021 (n=414).

Questions	Never	Almost Never	Sometimes	Almost Always	Always
How often have you received insulin injection more than thirty minutes later?	71(17.1%)	48(11.6%)	121(29.2%)	65(15.7%)	109(26.3%)
How often have you received less insulin than you should have?	68(16.4%)	28(6.8%)	225(54.3%)	44(10.6%)	49(11.8%)
How often have you received more than you should have?	122(29.7%)	55(13.3%)	123(29.5%)	70(16.9%)	44(10.6%)
How often have you missed insulin when you forgot or were too busy?	105(25.4%)	72(17.4%)	137(33.1%)	44(10.6%)	56(13.5%)

4.4.2 Adherence to Dietary Management

Majority of respondents (40.3%) almost never estimate their food to figure out how much to eat since being diagnosed with diabetes and 35% of the total participants never consumed fast foods. Majority of respondents had sometimes eaten more than what was on their meal plan and never made change to insulin before eating more than what was on their meal plan. 45% of the total participants had sometimes eaten less than what was planned in the past 3 months. Only 27% of respondents had sometimes made any insulin changes before eating less than usual (Table 6).

Table 6: Adherence to dietary management of adolescents with type 1 diabetes in Addis Ababa Public hospitals, March to April 2021 (n=414).

Questions	Never	Almost Never	Sometimes	Almost Always	Always
Did you usually approximate your meal to forecast how much to eat?	45(10.9%)	167(40.3%)	90(21.7%)	79(19.1%)	33(8.0%)
How often have you consumed fast food such as sweets, cookies, cakes ice cream, chips, or others?	144(34.8%)	104(25.1%)	63(15.2%)	76(18.4%)	27(6.5%)
How often have you consumed more than what was on your meal plan?	79(19.1%)	40(9.7%)	216(52.2%)	51(12.3%)	28(6.8%)
Before you ate more than usual, did you make any insulin changes?	130(31.4%)	72(17.4%)	99(23.9%)	81(19.6%)	32(7.7%)
Before you ate less than usual, did you make any insulin changes?	99(23.9%)	90(21.7%)	114(27.5%)	50(12.1%)	61(14.7%)
In the past 3 months, how often have you eaten less than what was planned?	67(16.2%)	58(14.0%)	185(44.7%)	51(12.3%)	53(12.8%)

4.4.3 Adherence to Management of Hypoglycemia

Majority of respondents (31.4%) always keep something handy in case their sugar gets too low and 40.3% of them sometimes check their low blood sugar before treating it. More than one third of respondents always treat their low blood sugars if it happens and majority of them never carry any kind of diabetic identification, like card or bracelet (Table 7).

Table 7: Adherence to Management of Hypoglycemia among adolescents with type 1 diabetes in Addis Ababa Public hospitals, March to April 2021 (n=414).

Questions	Never	Almost Never	Sometimes	Almost Always	Always
Did you keep something handy in if your sugar got too low?	52(12.6%)	36(8.7%)	123(29.7%)	73 (17.6%)	130(31.4%)
If you think you had low blood sugar, how often did you check it before treating?	68(16.4%)	30(7.2%)	167(40.3%)	64(15.5%)	84(20.3%)
How often do you treat your low blood sugars if it happens?	15(3.6%)	34(8.2 %)	97(23.4%)	128(30.9%)	138(33.3%)
Did you hold diabetic identification, like a card or bracelet?	332(80.2%)	34(8.2%)	32(8.8%)	37(9.3%)	19(4.7%)

4.4.4 Adherence to Blood Glucose Testing

Around half of respondents always checked their blood sugar and 28% of them almost never did a blood glucose testing with 30 minutes before a meal. Majority of respondents almost never did a blood glucose testing within 2-3 hours after heavy exercise and within 2-3 hours after a meal. Sometimes, 37.4% of respondents had changed insulin dose, diet, or exercise when their blood glucose ran high and 22% of them did a ketone test when they were sick. Around 16% of respondents almost always did a ketone test in the past 3 months, when they had two blood sugar results above 240 in a row (Table 8).

Table 8: Adherence to Blood Glucose Testing of adolescents with type 1 diabetes in Addis Ababa Public hospitals, March to April 2021 (n=414).

Questions	Never	Almost Never	Sometimes	Almost Always	Always
How often have you checked your blood sugar?	28(6.8%)	32(7.7%)	61(14.7%)	106(25.6%)	187(45.2%)
How often did you do a blood sugar check within 30 minutes before a meal?	87(21.0%)	117(28.3%)	89(21.5%)	77(18.6%)	44(10.6%)
How often did you do a blood sugar check within 2–3 hours after heavy exercise?	73(17.6%)	138(33.3%)	111(26.8%)	72(17.4%)	20 (4.8%)
How often did you do a blood sugar check within 2-3 hours after a meal?	67(16.2 %)	156(37.7%)	86(20.8%)	80(19.3%)	23(5.6%)
How often have you changed insulin dose, diet or exercise when blood sugars run high?	49 (11.8%)	94(22.7 %)	155(37.4%)	36 (8.7%)	80 (19.3%)
In the past 3 months, if you had two blood sugar results above 240 in a row, how often did you do a ketone test?	59(14.3%)	132(31.9%)	112(27.1%)	65(15.7%)	46(11.1%)
When you are sick, how often do you do a ketone test?	164 (19.6)	91(%22.0)	91(22.0%)	67(16.2%)	83(20.0%)

4.4.5 Adherence to Regulation of Exercise

Majority of respondents (29%) always had been engaged in exercise such as running, or playing any sports for at least 20 minutes. Almost always, the majority of respondents did change their meal plan or insulin if they got more or less exercise than usual (Table 9).

Table 9: Adherence to Regulation of Exercise adolescents with type 1 diabetes in Addis Ababa Public hospitals, March to April 2021 (n=414).

Questions	Never	Almost Never	Sometimes	Almost Always	Always
How often have you engaged in exercise such as running, or playing any sports for at least twenty minutes?	71(17.1%)	48(11.6%)	109(26.3%)	65(15.7%)	121(29.2%)
If you got more exercise than usual, how often did you change the meal plan or insulin?	39(9.4%)	82(19.8%)	94(22.7%)	137(33.1%)	62(15.0%)
If you got less exercise than usual, how often did you change the meal plan or insulin?	90(21.7%)	22(5.3%)	117(28.3%)	120(29.0%)	65(15.7%)

4.3 Factors Associated with Adherence to Diabetes Self-Management.

Both bi-variable and multivariable logistic regression analysis were implemented to determine the factors that were associated with diabetes self-management. Ten variables were entered into bi-variable logistic regression. Then nine variables were transferred to multivariable logistic regression based on p-value of >0.2. After controlling possible confounding effects of other covariates, Adolescents' knowledge about type 1 diabetes, age, time since diagnosis of the disease, self-efficacy and social support were found to be significantly associated with adherence to overall diabetes self-management

Adolescents who had social support were 5times more adherent to overall diabetes self-management than those who had no social support (AOR=4.6, 95% CI: 1.5-13.5, P=0.006). Similarly, the participants with good self-efficacy were 9times more adherent to overall diabetes self-management than those who had poor self-efficacy (AOR=8.7, 95% CI: 1.9-14.1, P=0.005). Moreover, the adolescents with shorter duration of time since diagnosis of T1D had 90% more adherent to overall diabetes self-management than those who had longer duration of time since diagnosis (AOR=0.1, 95% CI:0.02-0.2, P=0.001). Likewise, participants with age below 14years were 86% more adherent to overall diabetes self-management than those with age above 15years (AOR=0.14, 95% CI:0.1-0.4, P=0.001).

Moreover, the adolescents with good knowledge about type 1 diabetes were 9times more adherent to overall diabetes self-management than those with poor knowledge (AOR=9.046, 95%CI: 3.83-13.5, P=0.000). Likewise, adolescents with moderate knowledge about type 1 diabetes were 8times more adherent to overall diabetes self-management than those with poor knowledge (AOR=6.763, 95%CI: 2.186-12.921, P=0.001). Whereas, the adolescent's educational status, level of education, duration of taking insulin medications, gender and age of diagnosis were not associated with adherence to overall diabetes self-management (table 10).

Table 10: Factors associated with overall diabetes self-management in multivariable analysis model among adolescent with type 1 diabetes in Addis Ababa Public health hospitals, March; to April 2021(n=414).

Variables	Poor	Good	COR	(95% C.I)	P-Value	AOR	(95% C.I)	P-Value
Educational level								
Unable to read and write	33	9	1	1		1	1	
Primary level	171	91	1.9	(0.9, 4.3)	0.093	1.1	(0.2, 5.7)	0.901
Secondary level	12	89	27	(10.5, 70.5)	0.000	2.5	(3.2, 20.8)	0.002
Tertiary level	2	7	13	(2.3, 72.8)	0.004	10.5	(2.6, 43.5)	0.014
Gender								
Male	56	124	1	1		1	1	
Female	162	72	0.2	(0.1, 0.3)	0.000	0.8	(0.3, 2.3)	0.662
Age of diagnose								
1 to 5 years	39	45	1	1		1	1	
6years and above	179	151	0.7	(0.5, 1.2)	0.006	0.5	(0.13 1.7)	0.260
Duration of taking insulin								
1 to 5 years	87	160	1	1		1	1	
6years and above	131	36	0.15	(0.1, 0.23)	0.000	0.9	(0.1, 11.2)	0.960
Time since diagnosis of T1D								
1 to 5 years	24	163				1	1	
6years and above	194	33	0.03	(0.02, 0.04)	0.000	0.1	(0.02-0.2) *	0.001
Participant's age								
10-14 years	60	143	1	1		1	1	
15-18 years	158	53	0.14	(0.09, 0.2)	0.000	0.2	(0.1 - 0.4) *	0.001
Social Support								
No	131	24	1	1		1	1	
Yes	87	172	10.8	(6.5, 17.9)	0.000	4.6	(1.5 - 13.5) *	0.006
Self-efficacy								
Poor	111	10	1	1		1	1	
Good	107	186	19.3	(9.7, 38.4)	0.000	8.7	(1.9 - 14.1) *	0.005
Knowledge about T1D								
Poor knowledge	170	39	1	1		1	1	
Moderate knowledge	39	95	9.5	(5.7, 15.9)	0.030	6.763	(2.186-12.921) *	0.001
Good knowledge	9	62	34.9	(16, 75.7)	0.000	9.046	(3.83-13.5) *	0.000

*****P value is significant at P<0.05 P value of Hosmer and Lemeshow Test = 0.18

Note: 1=Reference

CHAPTER 5: DISCUSSION

5.1 Adherence to Diabetes Self-management

Adherence to overall diabetes self-management in adolescents with type 1 diabetes is the process of developing understanding by learning to live with the complex nature of the disease in the social context. This study aimed to determine the level of adherence to overall diabetes self-management and associated factors among adolescents with T1D in four diabetic clinics of Addis Ababa, Ethiopia. Few studies had been performed to measure adherence to diabetes self-management, especially relating to the five domains of adherence to diabetes self-management (adherence to insulin administration, dietary management, management of hypoglycemia, blood glucose testing and exercise) in adolescents [5, 6, 17, 26].

This study reported overall adherence to diabetes self-management among adolescent with T1D was poor in 52.7% of the participants. This level of poor adherence to diabetes self-management was higher than what has been reported in Iraq [26]. This difference in the level of adherence may be due to the difference in tools that was used in the study. However, when compared to what has been reported in Palestine and Cameroon [5, 17] the finding from this study was a better report. This discrepancy could be explained by methodological factors were there was difference in study design, sample size, and tool that used to collect data.

With regard to a specific adherence to diabetes self-management, prevalence of good adherence to dietary management accounts for only 31.6 percent of adolescents. This report indicates lower adherence to dietary management compared to the studies that were conducted in Brazil and Pakistan [3, 34]. However, the level of adherence to dietary management in this study was comparable to that of Ugandan study, which was reported at 29.5% [30]. This similarity could be secondary to the same study design used in both studies and similarities in food habits of these two African countries [78].

On the other hand, the uniqueness of the level of adherence to dietary management in this study from the studies conducted in Brazil and Pakistani adolescents could be attributed to food habits and dietary trends difference of these populations. Adolescents' diet in developing countries contains fast foods and usually unhealthy street food [30, 78]**.** Therefore, incorporating dietary management to the care plan of adolescents with type 1 diabetes is mandatory for better adherence and control of type 1 diabetes among this population.

Additionally, good adherence to insulin administration was 43.2% which is better than a report in Uganda[30]. This difference could be due to different tools that were used to collect the data. In terms of adherence to blood glucose testing only 45.2% of the adolescents who were involved in this study had good adherence which is lower than reports from Kenya [39]. The study in Kenya involved only 82 adolescents. This small sample size contributes to discrepancy in the level of adherence to diabetes self-management between the two studies.

Certainly, the level of good adherence to blood glucose testing in this study was higher than that of Palestinian adolescents which was 34 percent [5]. This discrepancy could be due to differences in study design, sample size, and tools that were used to collect data. Furthermore, prevalence of good adherence to regulation of exercise was 49.5% which is lower than reports from Portugal and Pakistan [3, 41]. The possible discrepancy could be related to cultural differences and lack of organized setup in living areas in developing countries like Ethiopia. Finally, with regard to adherence to management of hypoglycemia 58% of the participants had good adherence, which is better finding than other domains of adherence to diabetes self-management in this study.

5.2 Factors Associated with Adherence to Diabetes Self-Management

Adherence to diabetes self-management was significantly associated with age, time since diagnosis, knowledge about type 1 diabetes, 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. This finding was consistent with the study conducted by Oxford university and Tanzania [44, 45]. The reason why adherence decreases as age increases could be due to the fall in social support as the age of the participants increases.

Similarly, the adolescents with shorter time since diagnosis of T1D had better adherence to diabetes self-management than adolescents with longer time since diagnosis. This report was the same finding with the studies from Tanzania and America [44, 49] but contradicted with the study from Cameroon and Britain [17, 46]. From this finding we can conclude that as time since diagnosis increase the patients get bored with the diseases process which in turn decreases adherence.

Moreover, adolescents with good knowledge about type 1 diabetes had 9times better adherence to overall diabetes self-management than adolescents with poor knowledge. Likewise, adolescents with moderate knowledge about type 1 diabetes were 7times more adherent to overall diabetes self-management than adolescents with poor knowledge. Previous study also showed that greater adolescents' knowledge predicts better adherence to diabetes self-management [57].

Furthermore, respondents who had good self-efficacy were 9times more adherent to diabetes self-management than patients who had poor self-efficacy, since they have higher self-esteem to control their disease. Several studies also reported that self-efficacy is the significant determinant factor for successful adherence to diabetes self-management [60-62].

Finally, respondents who had social support (both family and friends support) manifest 5times adherent than those with no social support. The reason may be respondents who had good social support would share their concerns and burdens. Reports from different countries also found that lack of social support was significantly associated with low quality of life and poor adherence to diabetes self-management [6, 64].

Although studies from different parts of the world revealed that presence of co morbidities has significant association with poor adherence to diabetes self-management (50-57) the findings

from this study does not indicate any association. Likewise, the finding from this study report showed that there was no significant association between adherence to diabetes self-management and educational status. This report contradicts with a study from Cameroon which revealed that adolescents with educational status of tertiary level (collage/University) were 30% more adherent than those who cannot read and write [17].. Similarly, there was no significant association between duration of taking insulin and adherence to diabetes self-management.

Moreover, there is no significant relationship between gender of the participants and level of diabetes self-management among adolescents with type 1 diabetes; which was the same finding with a study conducted in Australia [47]. Whereas this finding contradicted with a report from Britain, which revealed that females showed 1.05 times good adherence to diabetes self-management than males [46].

CHAPTER 6: STRENGTHS AND LIMITATIONS

Strengths

This study considered five domains of diabetes self-management; adherence to regulation of exercise, adherence to management of insulin administration, adherence to dietary management, adherence to blood glucose testing, and adherence to management of hypoglycemia, which were mostly studied separately in other studies. The study also included important influencing factors like adolescents' knowledge about type 1 diabetes, self-efficacy and social support. Furthermore, the data was collected by kobo collect software, which saves time and enhances the quality of the data. Finally, the findings of this study could be generalized to adolescents who were attending diabetes follow up at public health hospitals of Addis Ababa.

Limitations

This study didn't include diabetic adolescents who were attending follow up in private health facilities. Next, the data on diabetes self-management was also collected through self-reporting methods which may cause recall and social desirability biases. The cross-sectional nature of the data also made it impossible to reach the causal relation between the different independent variables and adherence to diabetes self-management. Finally, absence of national guidelines on adherence to diabetes self-management among adolescents, limit this study to focus on foreign countries guidelines.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study assessed adherence to diabetes self-management and associated factors among adolescents with type 1 diabetes. Around 52.7% of adolescents participated in this study had poor adherence to overall diabetes self-management. Knowledge about T1D, Age, Time since diagnosis of T1D, self-efficacy and social support were significantly and positively associated with adherence to diabetes self-management.

Recommendations

This study revealed that there was a need to improve adherence to diabetes self-management for adolescents with type 1 diabetes. The following recommendations are forwarded to the respective stakeholders:

For policy makers/health institutions management and Addis Ababa health bureaus:

The investigator wishes to recommend to:

- Organize and provide continuous refreshing training on adherence to diabetes self-management and related topics for health care providers to improve their knowledge on diabetes so that they can share their knowledge to the adolescents with type 1 diabetes.
- Work with higher stakeholders to prepare a comprehensive guideline of adherence to diabetes self-management for adolescents with type 1 diabetes.
- Setting advertisements on adherence to diabetes self-management of adolescents with type 1 diabetes by using mass media like television, radio, facebook and the like.

For health care providers:

- The health care providers working in diabetes clinics should provide age specific education both separately and with the family of the adolescents on how to adhere to diabetes self-management.
- The health care providers working in diabetes clinics should prepare care plans that can increase adolescents' knowledge about type 1 diabetes.
- More than half of the adolescents were lower in educational status and almost all of them are on transitional period from familial support to independent interaction to their disease condition. Thus, it is important to increase the frequency of follow up visits in diabetic clinics to have good adherence and to minimize the complication of the disease.

For future research:

- It is recommended to do further study by including private health institutions to increase the representativeness of the study.
- More research in different segments of populations and in different parts of the country should be done to investigate the problem in further and design interventional activities accordingly.
- Emphasize on the impact of interventions targeting those subgroups noted to be at higher risk of poor adherence to diabetes self-management for example; Respondents who had poor self-efficacy, Lack of social support, shorter time since diagnosis of T1D, older adolescents and those not knowledgeable.
- Emphasize on the organizational and health care provider related factors which were not well covered in this study but are associated with adherence to diabetes self-management.

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APPENDIX

Annex I: English version Information Sheet and Informed Voluntary Consent Form for Study participants

My name is _____. I am working as a data collector for the study being conducted in this Hospital by Mr. Yomilan Geneti, who is studying for his Master's degree at Addis Ababa University, the College of Health Sciences. I kindly request you to lend me your attention to explain you about the study and anything related to the study.

1. The study/project title

Adherence to diabetes self-management and associated factors among adolescents with type 1 diabetes in Public Hospitals of Addis Ababa, Ethiopia, 2021.

2. Purpose/aim of the study

The findings of this study can be of a paramount importance for the Hospital to plan intervention programs to promote adherence to type 1 diabetes self-management of adolescent in the community, thereby improve adolescent's health in general. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillments of a Master's Program in Pediatrics and Child health Nursing for the principal investigator.

3. Procedure and duration

I will interview you using a questionnaire to provide me with pertinent data that is helpful for the study. The interview will take about 30 minutes, so I kindly request you to spare me this time for the interview.

4. Risks and benefits

The risk of being participating in this study is very minimal, but only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

5. Confidentiality

The information you will provide me will be confidential. There will be no information that will identify you in particular. The findings of the study will be general for the study population and will not reflect anything particular of individual persons. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

6. Rights

Participation for this study is fully voluntary. You have the right to participate or not in this study. Also, you have the right to withhold at any time and this will not label you for any loss of benefits which you otherwise are entitled. You do
not have to answer any question that you do not want to answer.

7. Contact address

If there are any questions or enquires any time about the study or the procedures, please contact: Principal Investigator: Yomilan Geneti, at mobile phone: +251928651326 Email: ilaamee16@gmail.com as well as Institutional Health Research Ethics Review Committee of Addis Ababa University College of Health Sciences at office phone +251115536590 or P.O. Box. 9086, Addis Ababa, Ethiopia.

8. Declaration of informed voluntary assent form

I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I agree to participate as a volunteer.

_____ _____

Date Name and signature of volunteer

I certify that purpose of the study, potential benefits and possible risks associated with participating in this study was explained to the above individual.

_____ _____

Date Name and signature of researcher

I assure that I informed and took the assent.

_____ _____

Date Name and signature of the Data Collector

_____ _____

Date Name and signature of the Supervisor

Annex II: English version Information Sheet and Informed Voluntary Consent Form for Parents/Guardians

My name is _____. I am working as a data collector for the study being conducted in this Hospital by Mr. Yomilan Geneti, who is studying for his Master's degree at Addis Ababa University, the College of Health Sciences. I kindly request you to lend me your attention to explain you about the study and anything related to the study.

1. The study/project title

Adherence to diabetes self-management and associated factors among adolescents with type 1 diabetes in Public Hospitals of Addis Ababa, Ethiopia, 2021.

2. Purpose/aim of the study

The findings of this study can be of a paramount importance for the Hospital to plan intervention programs to promote adherence to type 1 diabetes self-management of adolescent in the community, thereby improve adolescent's health in general. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillments of a Master's Program in Pediatrics and Child health Nursing for the principal investigator.

3. Procedure and duration

I will interview your child using a questionnaire to provide me with pertinent data that is helpful for the study. The interview will take about 30 minutes, so I kindly request your child to spare me this time for the interview.

4. Risks and benefits

The risk of being participating in this study is very minimal, but only taking few minutes from your child's time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

5. Confidentiality

The information your child will provide me will be confidential. There will be no information that will identify your child in particular. The findings of the study will be general for the study population and will not reflect anything particular of individual persons. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

6. Rights

Participation for this study is fully voluntary. Your child has the right to declare to participate or not in this study. If your child decides to participate, he/she have the right to withdraw from the study at any time and this will not label him/her for any loss of benefits which he/she otherwise are entitled. He/she do not have to answer any question that do not want to answer.

7. Contact address

If there are any questions or enquires any time about the study or the procedures, please contact: Principal Investigator: Yomilan Geneti, at mobile phone: +251928651326 Email: ilaamee16@gmail.com as well as Institutional Health Research Ethics Review Committee of Addis Ababa University College of Health Sciences at office phone +251115536590 or P.O. Box. 9086, Addis Ababa, Ethiopia.

8. Declaration of informed voluntary consent form

I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. My child has been given the opportunity to ask questions for things that may have been unclear. My child has informed that he/she has the right to withdraw from the study at any time or not to answer any question that he/she do not want. Therefore, I fully agree and permit my child to participate if and only if he/she is willing.

_____ _____

Date Name and signature of volunteer

I certify that purpose of the study, potential benefits and possible risks associated with participating in this study was explained to the above individual.

_____ _____

Date Name and signature of researcher

I assure that I informed and took the consent.

_____ _____

Date Name and signature of the Data Collector

Annex III: English Version Questionnaires

Dear Respondents:

This questionnaire is prepared to assess adherence to diabetes self-management and associated factors among adolescents with type 1 diabetes in Public Hospitals of Addis Ababa, Ethiopia, 2021. The assessment will be made as partial fulfillment for the requirements of Degree of Master in Pediatrics and Child health Nursing for the principal investigator. The questionnaire will take only about 30 minutes. You are kindly requested to give response to the questions.

The information you provide is confidential and used only for the purpose of this study. If you have any confusion or question, please don't hesitate to ask the data collector. Your cooperation and participation are very crucial for the successful completion of the assessment.

Thank you in advance for your cooperation!

Questionnaire code: ___Data collection date: ____Data collector's name and signature: ____

Supervisor's Name and signature: _____ _____

Instruction: Please read the following questions listed below and circle/tick the best option and write your answer on the space provided to some of the questions.

Part I: Participant's socio-demographic characteristics

No	Questions	Coding categories	Skip
000001	Address or site of data collection	_____	
000002	Gender	1. Male 2. Female	
000003	Age	_____year (in completed years)	
000004	Educational status	1=Unable to read and write. 2=Primary level (1-8 grade) 3=Secondary level (9-12 grade) 4=Tertiary level (>12 grade)	

Part II: Personal medical factors

Please read the questions and fill the given answer on the space provided.

No	Questions	Category
00001	At what age have you been diagnosed?	
00002	How long have you been taking insulin medications?	
00003	What is the number of years of your follow up?	
00005	Do you have any comorbidities? If yes, list them.	

Part III: Adherence to diabetes self-management

Tick on the alternative given as your correct answer. **Never:** If entirely avoids the behavior, **Almost Never:** If the behavior is performed rarely, **sometimes:** If the behavior is performed partially, **Almost Always:** If the behavior is performed most of the time, **always:** If the behavior is performed all the time.

No	Questions	Never (1)	Almost never (2)	Sometimes (3)	Almost always (4)	Always (5)
	Adherence to regulation of exercise					
0001	How often have you engaged in exercise such as running, or playing any sports for at least twenty minutes?					
0002	If you got more exercise than usual, how often did you change the meal plan or insulin?					
0003	If you got less exercise than usual, how often did you change the meal plan or insulin?					
	Adherence to management of hypoglycemia					
0004	Did you keep something handy if your sugar got too low?					
0005	If you think you had low blood sugar, how often did you check it before treating?					
0006	How often do you treat your low blood sugars if it happens?					
0007	Did you hold diabetic identification, like a card or bracelet?					
	Adherence to dietary management					
0008	Did you usually approximate your meal to forecast how much to eat?					
0009	How often have you consumed fast food such as sweets, cookies, cakes ice cream, chips, or others?					
00010	How often have you consumed more than what was on your meal plan?					
00011	Before you ate more than usual, did you make any insulin changes?					
00012	Before you ate less than usual, did you make any insulin changes?					
00013	In the past 3 months, how often have you eaten less than what was planned?					
	Adherence to insulin administration					
00014	How often have you received insulin more than thirty minutes later?					
00015	How often have you received less insulin than you should have?					
00016	How often have you received more than you should have?					
000I7	How often have you missed insulin when you forgot or were too busy?					
	Adherence to blood glucose testing					
00018	How often have you checked your blood sugar?					
00019	How often did you do a blood sugar check within 30 minutes before a meal?					
00020	How often did you do a blood sugar check within 2–3 hours after heavy exercise?					
00021	How often did you do a blood sugar check within 2-3 hours after a meal?					

00022	How often have you changed insulin dose, diet or exercise when blood sugars run high?
00023	In the past 3 months, if you had two blood sugar results above 240 in a row, how often did you do a ketone test?
00024	When you are sick, how often do you do a ketone test?

Part IV: Knowledge about Type 1 diabetes

Tick (√) in front of your correct answer from the given alternatives.

No	Questions	Category
001	The diabetes diet is:	a. The way most American people eat. b. A healthy diet for most people c. Too high in carbohydrate for most people. d. Too high in protein for most people.
002	Which of the following is highest in carbohydrate?	a. Baked chicken c. Baked potato b. Swiss cheese d. Peanut butter
003	Which of the following is highest in fat?	a. Low fat milk c. Corn b. Orange juice d. Honey
004	Which of the following is a "free food"?	a. Any unsweetened food. c. Any food that says "sugar free" on the label b. Any dietetic food d. Any food that has less than 20cal/service
005	Glycosylated hemoglobin (hemoglobin Al) is a test that is a measure of your average blood glucose level for the past:	a. Day c. 6-10 weeks b. Week d. 6 months
006	Which is the best method for testing blood glucose?	a. Urine testing c. Both are equally good b. Blood testing
007	What effect does unsweetened fruit juice have on blood glucose?	a. Lowers it c. Has no effect b. Raises it
008	Which should not be used to treat low blood glucose?	a. 3 hard candies c. 1 cup diet soft drink b. 1/2 cup orange juice d. 1 cup skim milk
009	For a person in good control, what effect does exercise have on blood glucose?	a. Lowers it c. Has no effect b. Raises it
0010	Infection is likely to cause:	a. An increase in blood glucose c. No change in blood glucose b. A decrease in blood glucose
0011	The best way to take care of your feet is to:	a. Look at and wash them daily. c. Soak them for one hour each day b. Massage them with alcohol each day. d. Buy shoes a size larger
0012	Eating foods lower in fat decreases your risk for:	a. Nerve disease c. Heart disease b. Kidney disease d. Eye disease
0013	Numbness and tingling may be symptoms of:	a. Kidney disease c. Eye disease b. Nerve disease d. Liver disease
0014	Which of the following is usually not associated with diabetes?	a. Vision problems c. Nerve problems b. Kidney problems d. Lung problems
0015	Signs of ketoacidosis include:	a. Shakiness b. Sweating c. Vomiting d. Low blood glucose
0016	If you are sick with the flu, which of the following changes should you make?	a. Take less insulin c. Eat more proteins b. Drink less liquids d. Test for glucose and ketones more often
0017	If you have taken intermediate-acting insulin (NPH or Lente), you are most likely to have an insulin reaction in:	a. 1-3 h c. 12-15 h b. 6-12 h d. More than 15 h

0018	You realize just before lunch time that you forgot to take your insulin before breakfast. What should you do now?	a. Skip lunch to lower your blood glucose b. Take the insulin that you usually take at breakfast c. Take twice as much insulin as you usually take at breakfast d. Check your glucose level to decide how much insulin to take
0019	If you are beginning to have an insulin reaction, you should:	a. Exercise c. Drink some juice b. Lie down and rest d. Take regular insulin
0020	Low blood glucose may be caused by:	a. Too much insulin c. Too much food b. Too little insulin d. Too little exercise
0021	If you take your morning insulin but skip breakfast blood glucose level will usually:	a. Increase c. Remains the same b. Decrease
0022	High blood glucose may be caused by:	a. Not enough insulin. c. Delaying your snack b. Skipping meals. d. Large ketones in your urine
0023	Which one of the following will most likely cause an insulin reaction?	a. Heavy exercise c. overeating b. Infection d. not taking your insulin

Part V: **Self efficacy**

This section is concerned with respondent's self-efficacy to deal with type 1 diabetes. Please read the following questions. After each question, please make a check in the circle to show how much you believe you can or cannot do what is asked now. **Totally unconfident**: if you are not self-assured at all to cope up with the disease process, **Unconfident:** if you have no self-assurance, **not sure:** if you are not sure about the answer to the question, **Confident:** if are self-assured to cope up with disease process, **totally confident:** if you are highly self-assured about coping with disease process

No	Questions	Totally Unconfident (1)	Un confident (2)	Not sure (3)	Confident (4)	Totally Confident (5)
01	Can you be the one in charge of giving your insulin injection to yourself?					
02	Can you figure out your own meals and snacks at home?					
03	Can you figure out what foods to eat when you are away from home?					
04	Can you keep track of your own blood sugar levels?					
05	Can you watch your own sugar levels in your urine?					
06	Can you change the amount of insulin when you get a lot of extra exercise?					
07	Can you judge the amount of food you should eat before activities?					
08	Can you figure out how much insulin to take by yourself when you are sick in bed?					
09	Can you prevent having reactions?					
010	Can you void or get rid of dents, swelling, or redness of your skin where you get your injection?					

011 Can you talk to your doctor and ask for the things you need?

012 Can you suggest to your parents changes in your insulin dose?

013 Can you sleep away from home on a class trip or at a friend's house where no one knows about your diabetes?

014 Can you keep yourself free of high blood sugar levels?

015 Can you know how to make your urine tests look better or worse than they are?

016 Can you avoid having acetones?

017 Can you change your doctor if you don't like him/her?

018 Can you feel able to stop a reaction when you are having one?

019 Can you ask for help you need from other people when you feel sick?

020 Can you tell to your friend you have diabetes?

021 Can you play baseball or other sports that take a lot of energy?

022 Can you argue with your doctor if you felt he/she were not being fair?

023 Can you prevent blindness and other complications from your diabetes?

024 Can you tell your boyfriend or girlfriend you are diabetic?

025 Can you do things you have been told not to when you really want to do them?

026 Can you get attention from others when your diabetes is controlled as when it isn't?

027 Can you easily talk to a group of people at a party when you don't know them?

028 Can you make a teacher see your point of view?

029 Can you show your anger to a friend when he/she has done something to upset you?

030 Can you take responsibility for getting your homework and chores done?

031 Can you regularly wear a medical alert tag or bracelet which says “I have Diabetes”?

032 Can you sneak food not on your diet without getting caught?

033 Can you believe that you have the ability to have control over your diabetes?

034 Can you follow your doctor's orders for taking care of your diabetes?

035 Can you run your life the same as you would if you didn't have diabetes?

Part VI: Social support

This section is about support gained from family and non-family members. After reading the following question chose the correct response that explains the support that you are getting from your family and non-family members.

No: If you are not getting the stated support from your family and non-family members

Yes: If you are getting the stated support from your family and non-family members

S/N	Questions	No	Yes
1	Do you have one particular person who give you insulin injection?		

2 Do you have one particular person who remind you to take insulin injection?
3 Do you have one particular person who praise you for giving yourself injection correctly or on time?
4 Do you have one particular person who help out when you give yourself insulin injection?
5 Do you have one particular person who wake you up so you can take your morning injection on time.
6 Do you have one particular person who change their own schedule to get an early start too, when you give yourself a morning insulin injection?
7 Do you have one person who check after you've taken your insulin to make you have done it?
8 Do you have one person who let you know they appreciate how difficult it is to take insulin injection?
9 Do you have one particular person who ask you about the results of your blood tests?
10 Do you have one particular person who watch you test your blood sugars to see what the values are?
11 Do you have one particular person who test your blood sugar for you?
12 Do you have one particular person who remind you to test your blood sugar?
13 Do you have one particular person who make sure you have materials needed for blood testing?
14 Do you have one person who let you know that they appreciate how hard it is to test blood sugars daily?
15 Do you have one particular person who set up materials you need for testing your blood sugar?
16 Do you have one particular person who praise you for testing your blood sugar on your own?
17 Do you have one particular person who help out when you test your blood sugar?
18 Do you have one particular person who keep track of testing results for you?
19 Do you have one particular person who; watch for signs that your blood sugar is low?
20 Do you have one particular person who help out when you might be having a reaction?
21 Do you have one particular person who encourage you to eat the right foods
22 Do you have one person who let you know they understand how important it is for you to eat right?
23 Do you have one particular person who ask if certain foods are okay for you to eat, before serving?
24 Do you have one particular person who do the grocery shopping for your meals?
25 Do you have one particular person who schedule meals at the times you need to eat?
26 Do you have one particular person who remind you about sticking to your meal plan?
27 Do you have one particular person who suggest foods you can eat on your meal plan?
28 Do you have one particular person who join you in eating the same foods as you?
29 Do you have one particular person who get on your case after you ate something you shouldn't?
30 Do you have one particular person who avoid tempting you with meal that you shouldn't have?
31 Do you have one particular person who watch what you eat to make sure that you eat the right foods?
32 Do you have one particular person who cook meals for you that fit your meal plan?
33 Do you have one particular person who choose restaurants that serve food you can eat?
34 Do you have one particular person who eat at the same time you do?
35 Do you have one particular person who praise you for following your diet?
36 Do you have one particular person who tell you when you've eaten too much or too little?
37 Do you have one particular person who show they're pleased when you've eaten right?
38 Do you have one particular person who keep track of your mean plan for you?
39 Do you have one particular person who buy special foods that you can eat?
40 Do you have one particular person who tell you not to eat something you shouldn't?
41 Do you have one particular person who suggest ways you can get exercise?
42 Do you have one particular person who remind you to exercise?
43 Do you have one particular person who invite you to join in exercising with them?
44 Do you have one particular person who congratulate or praise you for exercising regularly?
45 Do you have one particular person who encourage you to join an organized sports activity?
46 Do you have one particular person who buy sports equipment for you?
47 Do you have one particular person who exercise with you?

48 Do you have one particular person who are available to listen to worries about your diabetes care?
49 Do you have one particular person who give you things to read on diabetes care?
50 Do you have one particular person who tell you how well you've been doing with your diabetes care?
51 Do you have one particular person who encourage you to do a good job of taking care of your diabetes?
52 Do you have one particular person who understand when you sometimes make mistakes in taking care of your diabetes?

Thank you for your participation!

አባሪ IV፡ ለተሳታፊዎች ለጥናት የማረጋገጫ ስምምነት ቅጽ እና የመረጃ ወረቀት

ስሜ _____ነው: እኔ በ አቶ **ዮሚላን ገነቲ** በዚህ ሆስፒታል ውስጥ ለሚካሄደው ጥናት እንደ መረጃ ሰብሳቢነት እየሰራሁ ነው፡፡ እሱ ለሁለተኛ ዲግሪው በ አዲስ አበባ ዩኒቨርሲቲ ፣ የጤና ሳይንስ ኮሌጅ እየተማረ ነዉ፡፡ ስለ ጥናቱ እና ከጥናቱ ጋር ተያያዥነት ያላቸውን ማናቸውንም ነገሮች እንድገልጽልህ/ሽ ትኩረት እንድትሰጥኝ/ጭኝ በአክብሮት እጠይቃለሁ ፡፡

1. የጥናቱ ርዕስ

በአዲስ አበባ ፣ በኢትዮጵያ ፣ 2021 የመንግስት ሆስፒታሎች አይነት 1 የስኳር በሽታ ባለባቸው ጎረምሶች ላይ የስኳር በሽታ ራስን በራስ እንክብካቤ እና ተያያዥ ሁኔታዎች

2.. የጥናቱ ዓላማ

የዚህ ጥናት ግኝት ሆስፒታሉ የ ዓይነት 1 ስኳር በሽታ ራስን በራስ እንክብካቤ የሚያበረታቱ ፕሮግራሞች ለማቀድ እና በአጠቃላይ የጉርምስና ጤናን ለማሻሻል እጅግ አስፈላጊ ነዉ፡፡ በተጨማሪም የዚህ ጥናት ዓላማ ለዋና መርማሪው በሕፃናት ሕክምና እና በልጆች ጤና አጠባበቅ ነርስ ማስተርስ ፕሮግራም ፍፃሜ እንደ ተፈላጊ ፅሑፍ መጻፍ ነው ፡፡

3. ሥነ ሥርዓት እና ቆይታ

ለጥናቱ ጠቃሚ የሆኑ መረጃዎችን እንድታቀርብልኝ/ቢልኝ ጥያቄዉን ተጠቅሜ ቃለ መጠይቅ አደርጋለሁ ፡፡ ቃለመጠይቁ 30 ደቂቃ ያህል ይወስዳል ፣ ስለዚህ ለቃለ መጠይቁ በዚህ ጊዜ እንድታቆይኝ/የኝ በትህትና እጠይቃለሁ ፡፡

4. ጥቅማጥቅሞች

በዚህ ጥናት ውስጥ የመሳተፍ ችግር በጣም አናሳ ነው ፣ ግን ካኝች/ካኝተ ጊዜ ጥቂት ደቂቃዎችን ብቻ ይወስዳል። በዚህ ጥናት ውስጥ ለመሳተፍ ቀጥተኛ ክፍያ አይኖርም ፡፡ ነገር ግን የዚህ ምርምር ግኝት ለአከባቢው የጤና እቅድ አውጪዎች አስፈላጊ መረጃን ሊያሳይ ይችላል ፡፡

5. ምስጢራዊነት

የምታቀርብልኝ/ቢልኝ መረጃ ሚስጥራዊ ይሆናል ፡፡ የጥናቱ ግኝቶች ለጥናቱ ህዝብ አጠቃላይ ይሆናሉ እንጂ የግለሰቦችን የተለየ ነገር የሚያንፀባርቅ አይሆንም ፡፡ ጥያቄዉ ስሞችን ከማሳየት እንዲቆጠር ኮድ ይደረጋል ፡፡ ተሳታፊዎችን ከምርምር ጋር ሊያገናኝ የሚችል በቃል ወይም በፅሁፍ ሪፖርቶች ውስጥ ማጣቀሻ አይሰጥም ፡፡

6. መብቶች

የዚህ ጥናት ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት የሚደረግ ነው። በዚህ ጥናት ውስጥ ለመሳተፍ ወይም ላለመሳተፍ የማወጅ መብት አለክ/አለሽ ፡፡ ለመሳተፍ ከወሰንክ/ሽ በማንኛውም ጊዜ ከጥናቱ የመውጣት መብት አለክ/ሽ እና ይህ በሌላ መንገድ

ሊያገኝዋቸው በሚትችል/ይ ጥቅማጥቅሞች ማጣት ላይ መለያ አያስገኝልህም/ሽም ። መመለስ የማትፈልግ/ጊ ማንኛውንም ጥያቄ መመለስ የለብህም/ሽም ።

7. የግንኙነት አድራሻ

ስለ ጥናቱ ወይም ስለ አሠራሩ ማንኛውም ጥያቄ ካለ/ሽ እባክህ/ሽ ዋና መርማሪዉ **ዮሚላን ገነቲን** አነጋግር/ሪ። ሞባይል ስልክ፡ +251928651326፤ ኢሜል፡ ilaamee16@gmail.com፤ እንዲሁም የአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ ተቋም የጤና ጥናት ሥነ ምግባር ግምገማ ኮሚቴ ቢሮ ስልክ +251115536590 ወይም ፖ ሣጥን. 9086 ፣ አዲስ አበባ ፣ ኢትዮጵያ ።

8. በመረጃ የተደገፈ ማረጋገጫ መግለጫ

የተሳታፊውን የመረጃ ወረቀት አንብቤያለሁ ። የምርምርውን ዓላማ ፣ አሰራሮችን ፣ ችግሮችን እና ጥቅሞችን ፣ ሚስጥራዊነትን ፣ የተሳትፎ መብቶችን እና ለማንኛውም ጥያቄዎች የግንኙነት አድራሻ በሚገባ ተረድቻለሁ ። ግልጽ ባልሆኑ ነገሮች ላይ ጥያቄዎችን ለመጠየቅ እድሉ ተሰጥቶኛል ። ጥናቱን በማንኛውም ጊዜ የማግለል ወይም የማልፈልገውን ማንኛውንም ጥያቄ ያለማመለስ መብት እንዳለኝ ተገለፀልኝ ። ስለሆነም በዚህ ጥናት ለመሳተፍ ፈቃደኛ ነኝ ።

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ቀን የተሳታፊው ስም እና ፊርማ

የጥናቱን ዓላማ ፣ ሊገኙ የሚችሉ ጥቅሞች እና በዚህ ጥናት ውስጥ ከመሳተፍ ጋር ተያይዘው ሊከሰቱ የሚችሉ ነገሮች ከላይ ለተጠቀሰው ግለሰብ መገልፀን በስም እና ፊርማዬ አረጋግጣለሁ።

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ቀን የተመራማሪው ስም እና ፊርማ

ማረጋገጫውን እንደወሰድኩ አረጋግጣለሁ።

_____ _____

ቀን የመረጃ ሰብሳቢው ስም እና ፊርማ

_____ _____

ቀን የተቆጣጣሪው ስም እና ፊርማ

አባሪ V፡ የአማርኛ ቅጅ ለወላጆች / አሳዳጊዎች ለጥናት የፈቃደኝነት ስምምነት ቅጽ እና የመረጃ ወረቀት

ስሜ _____ነው: እኔ በ አቶ **ዮሚላን ገነቲ** በዚህ ሆስፒታል ውስጥ ለሚካሄደው ጥናት እንደ መረጃ ሰብሳቢነት እየሰራሁ ነው። እሱ ለሁለተኛ ዲግሪው በ አዲስ አበባ ዩኒቨርሲቲ ፣ የጤና ሳይንስ ኮሌጅ እየተማረ ነዉ። ስለ ጥናቱ እና ከጥናቱ ጋር ተያያዥነት ያላቸውን ማናቸውንም ነገሮች እንድገልጽልዎ ትኩረት እንድትሰጠኝ በአክብሮት እጠይቃለሁ ።

1. የጥናቱ ርዕስ

በአዲስ አበባ ፣ በኢትዮጵያ ፣ 2021 የህዝብ ሆስፒታሎች አይነት 1 የስኳር በሽታ ባለባቸው ጎረምሶች ላይ የስኳር በሽታ ራስን በራስ እንክብካቤ እና ተያያዥ ሁኔታዎች

2.. የጥናቱ ዓላማ

የዚህ ጥናት ግኝት ሆስፒታሉ የ ዓይነት 1 ስኳር በሽታ ራስን በራስ እንክብካቤ የሚያበረታቱ ፕሮግራሞች ለማቀድ እና በአጠቃላይ የጉርምስና ጤናን ለማሻሻል እጅግ አስፈላጊ ነዉ።። በተጨማሪም የዚህ ጥናት ዓላማ ለዋና መርማሪው በሕፃናት ሕክምና እና በልጆች ጤና አጠባበቅ ነርስ ማስተርስ ፕሮግራም ፍፃሜ እንደ ተፈላጊ ፅሑፍ መጻፍ ነው ።።

3. ሥነ ሥርዓት እና ቆይታ

ለጥናቱ ጠቃሚ የሆኑ መረጃዎችን እንዲያቀርብልኝ መጠይቅ በመጠቀም ለልጅዎ ቃለ መጠይቅ አደርጋለሁ ።። ቃለመጠይቁ 30 ደቂቃ ያህል ይወስዳል ፣ ስለሆነም ልጅዎ ለቃለ መጠይቁ በዚህ ጊዜ እኔን እንዲያቆየኝ በትህትና እጠይቃለሁ ።።

4. ጥቅማጥቅሞች

በዚህ ጥናት ውስጥ የመሳተፍ ችግር በጣም አነስተኛ ነው ፣ ግን ከልጅዎ ጊዜ ጥቂት ደቂቃዎችን ብቻ ይወስዳል። በዚህ ጥናት ውስጥ ለመሳተፍ ቀጥተኛ ክፍያ አይኖርም ።። ነገር ግን የዚህ ምርምር ግኝት ለአከባቢው የጤና እቅድ አውጪዎች ጠቃሚ መረጃን ሊያሳይ ይችላል ።።

5. ምስጢራዊነት

ልጅዎ የሚሰጠኝ መረጃ ሚስጥራዊ ይሆናል ።። በተለይም ልጅዎን የሚለይበት መረጃ አይኖርም ።። የጥናቱ ግኝቶች ለጥናቱ ህዝብ አጠቃላይ ይሆናሉ እንጂ የግለሰቦችን የተለየ ነገር የሚያንፀባርቅ አይሆንም ።። ጥያቄዉ ስሞችን ከማሳየት እንዲቆጠር ኮድ ይደረጋል ።። ተሳታፊዎችን ከምርምር ጋር ሊያገናኝ የሚችል በቃል ወይም በፅሁፍ ሪፖርቶች ውስጥ ማጣቀሻ አይሰጥም

6. መብቶች

የዚህ ጥናት ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት የሚደረግ ነው። በዚህ ጥናት ውስጥ ለመሳተፍ ወይም ላለመሳተፍ የማወጅ መብት አለዎት ።። ለመሳተፍ ከወሰኑ በማንኛውም ጊዜ ከጥናቱ የመውጣት መብት አለዎት እና ይህ በሌላ መንገድ ሊያገኙዋቸው በሚችሉት ጥቅማጥቅሞች ማጣት ላይ መለያ አያስገኝልዎትም ።። መመለስ የማይፈልጉትን ማንኛውንም ጥያቄ መመለስ የለብዎትም ።።

የዚህ ጥናት ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት የሚደረግ ነው። ልጅዎ በዚህ ጥናት ውስጥ ለመሳተፍ ወይም ላለመሳተፍ የማወጅ መብት አለው። ልጅዎ ለመሳተፍ ከወሰነ በማንኛውም ጊዜ ከጥናቱ የመላቀቅ መብት አለው ይህ ደግሞ በማንኛውም መንገድ ሊያገኙት በሚችሉት ጥቅማጥቅሞች ላይ መለያ አያደርግም ።። እሱ / እሷ መልስ መስጠት ለማይፈልግ ማንኛውንም ጥያቄ መመለስ አይኖርባትም/በትም።

7. የግንኙነት አድራሻ

ስለ ጥናቱ ወይም ስለ አሠራሩ ማንኛውም ጥያቄ ካለዎት መርማሪዉ **ዮሚላን ገነቲን** ያነጋግሩ።። ስልክ፡ +251928651326፤ ኢሜል፡ ilaamee16@gmail.com፤ እንዲሁም የአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ ተቋም የጤና ጥናት ሥነ ምግባር ግምገማ ኮሚቴ ቢሮ ስልክ +251115536590 ወይም ፖ ሣጥን. 9086 ፣ አዲስ አበባ ፣ ኢትዮጵያ ።።

8. በመረጃ የተደገፈ ፈቃደኝነት መግለጫ

የተሳታፊውን የመረጃ ወረቀት አንብቤያለሁ ።። የምርምርውን ዓላማ ፣ አሰራሮችን ፣ ችግሮችን እና ጥቅሞችን ፣ ሚስጥራዊነትን ጉዳዮች ፣ የተሳትፎ መብቶችን እና ለማንኛውም ጥያቄዎች የግንኙነት አድራሻ በሚገባ ተረድቻለሁ ።። ልጄ ግልጽ ባልሆኑ ነገሮች ላይ ጥያቄዎችን የመጠየቅ ዕድል ተሰጥቶታል ።። ልጄ በማንኛውም ጊዜ ከጥናቱ የመላቀቅ ወይም የማይፈልገውን/የማትፈልጋትን ማንኛውንም ጥያቄ የመመለስ መብት እንዳለው/ላት ተረድቻለሁ ።። ስለሆነም ፣ ልጄ ሙሉ በሙሉ ፈቃደኛ ከሆነ እንዲሳተፍ ፈቅጃለሁ።

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ቀን የተሳታፊው ስም እና ፊርማ

የጥናቱን ዓላማ ፣ ሊገኙ የሚችሉ ጥቅሞች እና በዚህ ጥናት ውስጥ ከመሳተፍ ጋር ተያይዘው ሊከሰቱ የሚችሉ ነገሮች ከላይ ለተጠቀሰው ግለሰብ መገልፀን በስም እና ፊርማዬ አረጋግጣለሁ፡፡

_____ _____

ቀን የተመራማሪው ስም እና ፊርማ

ማረጋገጫውን እንደወሰድኩ አረጋግጣለሁ፡፡

_____ _____

ቀን የመረጃ ሰብሳቢው ስም እና ፊርማ

_____ _____

ቀን የተቆጣጣሪው ስም እና ፊርማ

አባሪ VI: የአማርኛ ቅጅ ጥያቄዎች

ውድ ተሳታፊዎች -

ይህ ጥያቄ የስኳር በሽታ ራስን በራስ እንክብካቤ ልምድን እና ተጓዳኝ ሁኔታዎችን በጉርምስና ዕድሜ ላይ ከሚገኘው የስኳር ህመምተኞች መካከል በአዲስ አበባ ፣ ኢትዮጵያ 2021 ፣ ውስጥ ለመገምገም ተዘጋጅቷል፡፡

ግምገማው ለዋና መርማሪው በሕፃናት ሕክምና እና የሕፃናት ጤና አጠባበቅ ነርስ ማስተር መስፈርት ፍፃሜ ይደረጋል፡፡ ጥያቄዉ ለማጠናቀቅ 30 ደቂቃ ያህል ብቻ ይወስዳል። ለጥያቄዎቹ እውነተኛ ምላሽ እንዲትሰጥ/ጭ በትህትና እጠይቃለዉ ፡፡ የምታቀርብህ/ሽ መረጃ ሚስጥራዊ እና ለዚህ ጥናት ዓላማ ብቻ የሚያገለግል ነው ፡፡ ግራ መጋባት ወይም ጥያቄ ካለህ/ሽ እባክህ/ሽ መረጃ ሰብሳቢውን ጠይቅ/ቂ። ጥያቄዉ እስኪጠናቀቅ ድረስ ያንተ/ች ትብብር እና ተሳትፎ ምዘናውን በተሳካ ሁኔታ ለማጠናቀቅ በጣም አስፈላጊ ነው ፡፡

ስለ ትብብርህ/ሽ በቅድሚያ አመሰግናለሁ!

የጥያቄዉ መለያ:___ የመረጃ መሰብሰቢያ ቀን፡___ የመረጃ ሰብሳቢው ስም እና ፊርማ _____

የተቆጣጣሪ ስም እና ፊርማ _____ _____

መመሪያ-እባክህ/ሽ ከዚህ በታች የተዘረዘሩትን የሚከተሉትን ጥያቄዎች አንብብ/ቢ እና የመረጥክ/ሽ አማራጭ ቁጥር ላይ ምልክት ኣደርግ/ጊ እና ለአንዳንድ ጥያቄዎች በተሰጠው ቦታ ላይ መልስህን/ሽን ፃፍ/ፊ ፡፡

ክፍል I: ተሳታፊዎች ማህበራዊ-ስነ-ህዝብ ባህሪዎች

ተ. ቁ	ጥያቄዎች	የኮድ ምድቦች	ዝለል
000001	አድራሻ ወይም የመረጃ መሰብሰቢያ ጣቢያ	_____	
000002	ፆታ	1 ወንድ 2. ሴት	
000003	ዕድሜ	_____አመት	
000004	የትምህርት ሁኔታ	1 = ማንበብ እና መጻፍ የማይችል፤ 2 = የመጀመሪያ ደረጃ (ከ1-8 ክፍል) ፤ 3 = ሁለተኛ ደረጃ (ከ 9-12 ክፍል) ፤ 4 = የሦስተኛ ደረጃ (> 12 ክፍል)	

ክፍል II፡ አጠቃላይ የጤና ሁኔታ ግምገማ

ይህ ክፍል ስለ መላሾች አጠቃላይ የጤና ሁኔታ ነው ። ጥያቄዎቹን አንብብ/ቢ እና መልሱን በተጠቀሰው ቦታ ላይ ሙላ/ይ ።

ተ. ቁ	ጥያቄዎች	ምድብ
00001	በሽታዉ በስንት ዕድሜህ/ሽ ተገኘ?	
00002	የኢንሱሊን መድኃኒቶችን ምን ያህል ጊዜ እየወሰክ/ሽ ነው?	
00003	የከትትልህ/ሽ ዓመታት ብዛት ስንት ነው?	
00004	ሌሎች የተዛማጅ በሽታዎች አሉክ/ሽ? አዎ ከሆነ ዘርዝረው/ርዉ	

ክፍል III: የስኳር በሽታ ራስን በራስ እንክብካቤ ልምድን ማክበር

ትክክለኛዉን መልህ/ሽ የተሰጠውን አማራጭ ላይ ምልክት ኣደርግ/ጊ ። ጥያቄዎቹ በአምስት አማራጮች ይከፈላሉ- **በጭራሽ**: - ተጠሪ ባህሪውን ሙሉ በሙሉ ከተረገፈ, **በጭራሽ ማለት ይቻላል:** _ ባህሪው እምብዛም የማይከናወን ከሆነ, **አንዳንድ ጊዜ** _ ባህሪው በከፊል ከተከናወነ, **ሁል ጊዜ ማለት ይቻላል** _ ባህሪው ብዙ ጊዜ የሚከናወን ከሆነ, **ሁል ጊዜ** _ ባህሪው ሁል ጊዜ የሚከናወን ከሆነ

ተ.ቁ	ጥያቄዎች	በጭራሽ (1)	በጭራሽ ማለት ይቻላል (2)	አንዳንድ ጊዜ (3)	ሁል ጊዜ ማለት ይቻላል (4)
	ያካል ብቃት እንቅስቃሴን ደንብ ማክበር				
0001	እንደ መሮጥ ፣ ብስክሌት መንዳት ፣ መዋኘት ፣ መንሸራተት ወይም ቢያንስ ለ 20 ደቂቃዎች ማንኛውንም ስፖርቶች መጫወት ያሉ የአካል ብቃት እንቅስቃሴዎችን ምን ያህል ጊዜ አግኝተዋል/ሻል?				
0002	ከወትሮው የበለጠ የአካል ብቃት እንቅስቃሴ ካደረክ/ሽ ፣ የምግብ ዕቅድ ወይም ኢንሱሊን ምን ያህል ጊዜ ቀይረዋል/ሻል?				
0003	ከወትሮው ያነሰ የአካል ብቃት እንቅስቃሴ ካደረግክ/ሽ ፣ የምግብ ዕቅድ ወይም ኢንሱሊን ዕቅድ ምን ያህል ጊዜ ቀይረዋል/ሻል?				
	ግሉኮስ ማነስ ማቆጣጠርያ ደንብ ማክበር				
0004	የኢንሱሊን ምላሽ ሲሰጥ ወይም የስኳርህ/ሽ መጠን በጣም ዝቅተኛ ከሆነ ምቹ የሆነ ነገር ይዘህ/ሽ ነበር?				
0005	ዝቅተኛ የደም ስኳር እንዳለብህ/ሽ ካሰብክ/ሽ ከህክምናህ/ሽ በፊት ምን ያህል ጊዜ ፈትሸዋል/ሻል?				
0006	ዝቅተኛ የደም ስኳርህን/ሽን ምን ያህል ጊዜ ተፈውሰዋል/ሻል?				
0007	እንደ ካርድ ወይም አምባር ኣይነት ማንኛውንም የስኳር ህመም መታወቂያ ይዘዋል/ሻል?				
	የአመጋገብ ደንብን ማክበር				
0008	ብዙውን ጊዜ ካርቦሃይድሬትን ቆጥረህ/ሽ ወይም ምግብን መዝነህ/ሽ ነበር ወይም ምን ያህል እንደሚመገብ ለማወቅ ልውውጥን ተጠቅመህ/ሽ ነበር?				
0009	እንደ ጣፋጮች ፣ ኩኪዎች ፣ ኬኮች ፣ አይስክሬም ፣ ቺፕስ ፣ የፈረንሳይ ጥብስ ፣ ወይም ሌሎች ያሉ “ፈጣን ምግቦችን” ምን ያህል ጊዜ ኣልበላም/ሽም?				
00010	በምግብ ዕቅድህ/ሽ ላይ ከነበረው የበለጠ ምን ያህል ኣልበላም/ሽም (ከጠቅላላው የካርቦሃይድሬት ብዛት ወይም በምግብ የሚመከሩ ካሎሪዎች ብዛት)?				
00011	ከወትሮው በላይ ከመመገብ በፊት ፣ የኢንሱሊን ለውጥ አደርገዋል/ሻል?				
00012	ከወትሮው ያነሰ ከመብላትህ/ሽ በፊት ፣ የኢንሱሊን ለውጥ አደርገዋል/ሻል?				
00013	ባለፉት 3 ወራት ውስጥ ከታቀደው በታች ምን ያህል ጊዜ በልተዋል/ሻል?				
	የኢንሱሊን ማቆጣጠያ ደንብ ማክበር				
00014	ከ 30 ደቂቃዎች በላይ ዘግይተህ/ሽ የኢንሱሊን መርፌን ምን ያህል ጊዜ ኣልወሰድክም/ሽም?				
00015	ከሚገባው በታች ስንት ጊዜ ኢንሱሊን ኣልወሰድክም/ሽም?				
00016	ከሚገባው በላይ ስንት ጊዜ ኢንሱሊን ኣልወሰድክም/ሽም?				

000I7	ረስተህ/ሽ ወይም ስራ ስበዛብህ/ሽ ስንት ጊዜ የኢንሱሊን መርፌ እንዳያመለጥ ኣደረግክ/ሽ?
	የደም ውስጥ የግሉኮስ ምርመራን ደንብ ማክበር
00018	በደምህ/ሽ ውስጥ ያለውን የስኳር መጠን ምን ያህል ጊዜ ፈትሸዋል/ሻል?
00019	ምግብ ከመብላትህ/ሽ በፊት በ 30 ደቂቃዎች ውስጥ ምን ያህል ጊዜ የደም ስኳር ምርመራ ኣደረግክ/ሽ?
00020	ከከባድ የአካል ብቃት እንቅስቃሴ በኋላ ከ2-3 ሰዓታት ውስጥ ምን ያህል ጊዜ የደም ስኳር ምርመራ ኣደረግክ/ሽ?
00021	ከምግብ በኋላ ከ2-3 ሰዓታት ውስጥ ምን ያህል ጊዜ የደም ስኳር ምርመራ ኣደረግክ/ሽ?
00022	የደም ስኳር መጠን ከፍ ሲል የኢንሱሊን መጠን ፣ ምግብ ወይም የአካል ብቃት እንቅስቃሴ ምን ያህል ጊዜ ለውጠዋል/ሻል?
00023	ባለፉት 3 ወራቶች ውስጥ በተከታታይ ከ 240 በላይ ሁለት የደም ስኳር ውጤቶች ካለህ/ሽ የኬቲን ምርመራ ምን ያህል ጊዜ ኣደግክ/ሽ?
00024	ሲታመም/ሚ ምን ያህል ጊዜ የኬቲን ምርመራ ኣደረግክ/ሽ?

ክፍል አራት-ስለ የስኳር በሽታ ዓይነት 1 ዕውቀት

ይህ ክፍል የስኳር በሽታ ዓይነት 1 እና አያያዝን በተመለከተ ስለ እውቀት ነው ። ከተሰጡት አማራጮች ፊት (√) ምልክት ኣደረግ/ጊ።

ተ.ቁ	ጥያቄዎች	ምድብ
001	የስኳር በሽታ አመጋገብ	ሀ. ብዙ የአሜሪካ ሰዎች በሚበሉ መንገድ ሐ. ለአብዛኞቹ ሰዎች በካርቦሃይድሬት በጣም ከፍተ ለ. ለአብዛኞቹ ሰዎች bም ከፍተኛ የሆነ ፕሮቲን
002	ከሚከተሉት ውስጥ የትኛው በካርቦሃይድሬት ውስጥ ከፍተኛ ነው?	ሀ. የተጋገረ ዶሮ ሐ. የተጋገረ ድንች ለ. የስዊዝ አይብ መ. የለውዝ ቅቤ
003	ከሚከተሉት ውስጥ የትኛው በስብ ከፍተኛ ነው?	ሀ. አነስተኛ ቅባት ያለው ወተት ሐ. በቆሎ ለ. ብርቱካን ጭማቂ መ. ማር
004	ከሚከተሉት ውስጥ “ነፃ ምግብ” የትኛው ነው?	ሀ. ማንኛውም ጣፈጭነት የለለዉ ምግብ ሐ. በመለያው ላይ “ከስኳር ነፃ” የሚል ማንኛው ምግብ ለ. ማንኛውም የተመጣጠነ ምግብ መ. በአንድ አገልግሎት ከ 20 ካ.ሜ በታች የ ማንኛውም ምግብ
005	ግላይኮስላይድ ሄሞግሎቢን (HbAlc) ስንት ላለፉት ጊዜያት አማካይ የደምዎ የግሉኮስ መጠን የሚለካ ምርመራ ነው?	ሀ. ቀን ሐ. ከ6-10 ሳምንታት ለ. ሳምንት መ. 6 ወራት
006	የደም ውስጥ ግሉኮስ ለመፈተሽ ከሁሉ የተሻለው ዘዴ የትኛው ነው?	ሀ. የሽንት ምርመራ ሐ. ሁለቱም እኩል ጥሩ ናቸው ለ. የደም ምርመራ
007	ያልታለፈ የፍራፍሬ ጭማቂ በደም ውስጥ ያለው የግሉኮስ መጠን ምን ውጤት አለው?	ሀ. ዝቅ ያደርገዋል ሐ. ምንም ውጤት የለውም ለ. ከፍ ያደርገዋል
008	ዝቅተኛ የግሉኮስ መጠንን ለማከም ጥቅም ላይ መዋል የሌለበት የትኛው ነው?	ሀ. 3 ጠንካራ ከረሜላዎች ሐ. 1 ስኒ አመጋገብ ለስላሳ መጠጥ ለ. 1/2 ኩባያ የብርቱካን ጭማቂ መ. 1 ስኒ የተጣራ ወተት
009	በጥሩ ቁጥጥር ውስጥ ላለ ሰው የሰውነት እንቅስቃሴ በደም ግሉኮስ ላይ ምን ተጽዕኖ ያሳድራል?	ሀ. ዝቅ ያደርገዋል ሐ. ምንም ውጤት የለውም ለ. ከፍ ያደርገዋል
0010	ኢንፌክሽን ሊያስከትል የምችል፤	ሀ. በደም ውስጥ ያለው የግሉኮስ መጠን መጨመር ሐ. በደም ውስጥ ያለው የግሉኮስ ለው የለም ለ. በደም ውስጥ ያለው የግሉኮስ መጠን መቀነስ
0011	እግርህን/ሽን ለመንከባከብ ከሁሉ የተሻለው መንገድ	ሀ. በየቀኑ ይመልከቱ እና ያጥቧቸው ሐ. በየቀኑ ለአንድ ሰዓት ያጠጧቸው ለ. በየቀኑ ከአልኮል ጋር እነሱን ማሸት መ. ከተለመደው የበለጠ መጠን ያላቸውን ጫማዎ ይግዙ
0012	በስብ ዝቅተኛ የሆኑ ምግቦችን መመገብ የምን ተጋላጭነትህን/ሽን ይቀንሰዋል-	ሀ. የነርቭ በሽታ ሐ. የልብ ህመም ለ. የኩላሊት በሽታ መ. የዓይን በሽታ
0013	መደንዘዝ እና መንቀጥቀጥ የምን ምልክቶች ሊሆኑ ይችላሉ	ሀ. የኩላሊት በሽታ ሐ. የዓይን በሽታ ለ. የነርቭ በሽታ መ. የጉበት በሽታ

0014	ከሚከተሉት ውስጥ ብዙውን ጊዜ ከስኳር በሽታ ጋር የማይዛመደው የትኛው ነው?	ሀ. የእይታ ችግሮች ለ. የኩላሊት ችግሮች	ሐ. የነርቭ ችግሮች መ. የሳንባ ችግሮች
0015	የኬቲአይዶይስ ምልክቶች የሚከተሉትን ያካትታሉ-	ሀ. መንቀጥቀጥ ለ. ላብ	ሐ. ማስታወክ መ. ዝቅተኛ የደም ውስጥ የግሉኮስ መጠን
0016	በጉንፋን ከታመሙ ከሚከተሉት ለውጦች ውስጥ የትኛውን ለውጥ ማድረግ አለብህ/ሽ?	ሀ. አነስተኛ ኢንሱሊን ይውሰዱ ለ. አነስተኛ ፈሳሾችን ይጠጡ	ሐ. ተጨማሪ ፕሮቲኖችን ይመገቡ መ. ብዙውን ጊዜ የግሉኮስ እና የኬቲን ምርመራ ያድርጉ
0017	መካከለኛ-እርምጃ የሚወስድ ኢንሱሊን (NPH or Lente) ከወሰዱ የኢንሱሊን ምላሽ ስንት ሰሃት ዉስጥ ይጀምራል?	ሀ. 1-3 ሰዓት ለ. 6-12 ሰዓት	ሐ. 12-15 ሰዓት መ. ከ 15 ሰዓት በላይ
0018	ከምሳ ሰዓት በፊት ቁርስ ሰዓት ላይ ኢንሱሊን መውሰድህን/ሽን እንደረሰህ/ሽ ከገነዘብክ/ሽ አሁን ምን ማድረግ አለብህ/ሽ?	ሀ. በደምዎ ውስጥ ያለውን የግሉኮስ መጠን ለመቀነስ ምሳ ይዝለሉ ለ. ብዙውን ጊዜ ቁርስ ላይ የሚወስዱትን ኢንሱሊን ይውሰዱ ሐ. ብዙውን ጊዜ ቁርስ ላይ እንደሚወስዱት ኢንሱሊን በእጥፍ ይውሰዱ መ. ምን ያህል ኢንሱሊን መውሰድ እንዳለብዎ ለማወቅ የደም ውስጥ የግሉኮስ መጠንን ይፈትሹ	
0019	የኢንሱሊን ምላሽ ከጀመረህ/ሽ ከሚከተሉት ምን ማድረግ አለብህ/ሽ፡-	ሀ. የአካል ብቃት እንቅስቃሴ ለ. ይተኙ እና ይረፉ	ሐ. ጥቂት ጭማቂ ይጠጡ መ. መደበኛ ኢንሱሊን መውሰድ
0020	የደም ውስጥ የግሉኮስ መጠን ዝቅተኛ በምን ሊሆን ይችላል-	ሀ. በጣም ብዙ ኢንሱሊን ለ. በጣም ትንሽ ኢንሱሊን	ሐ. በጣም ብዙ ምግብ መ. በጣም ትንሽ የአካል ብቃት እንቅስቃሴ
0021	የጠዋትህ/ሽ ኢንሱሊን የሚትወስድ/ዲ ከሆነ ግን ቁርስህ/ሽ ከዘለልክህ/ሽ የደም ውስጥ የግሉኮስ መጠን ብዙውን ጊዜ ምን ይሆናል-	ሀ. ይጨምራል ለ. ይቀነሳል	ሐ. እንደዛው ይቀራል
0022	የደም ውስጥ የግሉኮስ መጠን ከፍተኛ በምን ሊሆን ይችላል-	ሀ. ኢንሱሊን በቂ አለማሆን :: ለ. ምግብን መዝለል።	ሐ. መክሰስዎን መዘግየት መ. በሽንትዎ ውስጥ ትላልቅ ኬቶች
0023	ከሚከተሉት ውስጥ የትኛው የኢንሱሊን ምላሽ ሊያስከትል ይችላል?	ሀ. ከባድ የአካል ብቃት እንቅስቃሴ ለ. ኢንፌክሽን	ሐ. ከመጠን በላይ መብላት መ. ኢንሱሊን አለመውሰድ

ክፍል V: የራስ ውጤታማነት

ይህ ክፍል 1 ኛ ዓይነት የስኳር በሽታን ለመቋቋም የተጠሪ ራስን ውጤታማነት ይመለከታል :: እባክህ/ሽ የሚከተሉትን ጥያቄዎች አንብብ/ቢ። ከእያንዳንዱ ጥያቄ በኋላ እባክህ/ሽ በክበቡ ውስጥ አሁን የተጠየቀውን ምን ያህል ማድረግ እንደምትችል/ይ ለማሳየት ቼክ ያድርጉ :: **ሙሉ በሙሉ እምነት የለኝም**- የበሽታውን ሂደት ለመቋቋም በጭራሽ በራስህ/ሽ ካልተረጋገጥ/ሽ, **እምነት የለኝም**- የበሽታውን ሂደት ለመቋቋም በራስ መተማመን ከሌለህ/ሽ፣ **እርግጠኛ አይደለሁም**- ለጥያቄው መልስ እርግጠኛ ካልሆነክ, **በራስ መተማመን**- የበሽታውን ሂደት ለመቋቋም በራስ መተማመን ከቻልክ/ሽ፣ **ሙሉ በሙሉ በራስ መተማመን**- የበሽታ ሂደትን ስለመቋቋም በከፍተኛ በራስህ/ሽ የሚተማመን ከሆነ

No	ጥያቄዎች	ሙሉ በሙሉ እምነት የለኝም	እምነት የለኝም (2)	ሙሉ በሙሉ በራስ መተማመን
01	የኢንሱሊን መርፌን ለራስህ/ሽ የመስጠት ሃላፊነት ልትወስድ/ጅ ትችላለህ/ሽ?			
02	በቤት ውስጥ የራስህ/ሽን ምግቦች እና መክሰሶች መለየት ትችላለህ/ሽ?			
03	ከቤት ሲትወጣ ምን ዓይነት ምግቦች እንደሚትመገብ ማወቅ ትችላለህ/ሽ?			
04	የራስህ/ሽን የደም ስኳር መጠን መከታተል ትችላለህ/ሽ?			
05	በሽንትህ/ሽ ውስጥ የራስህ/ሽን የስኳር መጠን ማየት ትችላለህ/ሽ?			
06	ብዙ ተጨማሪ የሰውነት እንቅስቃሴ ሲታደርግ/ጊ የኢንሱሊን መጠንን መለወጥ ትችላለህ/ሽ?			
07	ከእንቅስቃሴዎች በፊት መመገብ ያለብህ/ሽን የምግብ መጠን መወሰን ትችላለህ/ሽ?			
08	በአልጋ ላይ ሲታመም/ሚ ምን ያህል ኢንሱሊን በራስህ/ሽ መውሰድ እንዳለብህ/ሽ ማወቅ ትችላለህ/ሽ?			

09	የኢንሱሊን ምላሾችን መከላከል ትችላለህ/ሽ?
010	ክትባቱን በሚታገኙበት ቦታ ላይ የቆዳ ስርጉድን ፣ እብጠትን ወይም የቆዳ መቅላትህ/ሽን ማስወገድ ትችላለህ/ሽ?
011	ዶክተርህ/ሽን ማነጋገር እና የሚትፈልግ/ጊ መጠየቅ ትችላለህ/ሽ?
012	በኢንሱሊን መጠንህ/ሽ ለወላጆችህ/ሽ መጠቆም ትችላለህ/ሽ?
013	በትምህርት ጉዞዎ ላይ ወይም ስለ የስኳር ህመምህ/ሽ ማንም የማያወቅበት በጓደኛህ/ሽ ቤት ከቤትህ/ሽ ወጥተህ/ሽ መተኛት ትችላለህ/ሽ?
014	ራስህ/ሽን በደም ውስጥ ካለው ከፍተኛ የስኳር መጠን ነፃ ማድረግ ትችላለህ/ሽ?
015	የሽንት ምርመራዎችህ/ሽ ከነበሩ የተሻለ ወይም የከፉ እንዲመስሉ እንዴት ማወቅ ትችላለህ/ሽ?
016	“acetone” እንዳይኖርህ/ሽ ማድረግ ትችላለህ/ሽ?
017	እሱን / እሷን ካልወደድክ/ሽ ዶክተርህ/ሽን መለወጥ ትችላለህ/ሽ?
018	የኢንሱሊን ምላሽ በሚሰጥበት ጊዜ ምላሽን ለማስቆም ትችላለህ/ሽ?
019	በሚትታመም/ሚ ጊዜ ከሌሎች ሰዎች የሚትፈልግ/ጊ እርዳታ መጠየቅ ትችላለህ/ሽ?
020	የስኳር በሽታ እንዳለብህ/ሽ ለጓደኛህ/ሽ መንገር ትችላለህ/ሽ?
021	ቤዝ ቦል ወይም ብዙ ኃይል የሚወስዱ ሌሎች ስፖርቶችን መጫወት ትችላለህ/ሽ?
022	እሱ / እሷ ሚዛናዊ እንዳልሆነ ከተሰማህ/ሽ ከሐኪምህ/ሽ ጋር መጨቃጨቅ ትችላለህ/ሽ?
023	ከስኳር በሽታዎ ዓይነ ስውርነትን እና ሌሎች ውስብስቦችን መከላከል ትችላለህ/ሽ?
024	ለወንድ ጓደኛ ወይም ለሴት ጓደኛ የስኳር ህመምተኛ እንደሆንክህ/ሽ መንገር ትችላለህ/ሽ?
025	ላንተህ/ች ማከናወን በሚትፈለግ/ጊ ጊዜ እንዳታደርግ/ጊ የታዘዝክ/ሽ ማድረግ ትችላለህ/ሽ?
026	የስኳር በሽታህ/ሽ ስቆጣጥር ልክ የስኳር በሽታህ/ሽ እንዳልተቆጣጠረ ሁሉ ከሌሎች ትኩረት ማግኘት ትችላለህ/ሽ?
027	ላንተ/ች ሳያውቋቸው በአንድ ቡድን ውስጥ ካሉ ሰዎች ጋር በቀላሉ መነጋገር ትችላለህ/ሽ?
028	አስተማሪ የአመለካከትህ/ሽን አመለካከት እንዲመለከት ማድረግ ትችላለህ/ሽ?
029	ጓደኛህ/ሽ ሊያናድድህ/ሽ አንድ ነገር ሲያደርግ ቁጣህ/ሽን ለጓደኛህ/ሽ ማሳየት ትችላለህ/ሽ?
030	የቤት ሥራህ/ሽን እና የወትሮው ሥራዎቻችህ/ሽን ለማከናወን ኃላፊነትህ/ሽን መውሰድ ትችላለህ/ሽ?
031	“የስኳር ህመም አለብኝ” የሚል የህክምና ማስጠንቀቂያ መለያ ወይም አምባር አዘውትረው መልበስ ትችላለህ/ሽ?
032	ከምግብህ/ሽ ሾልከው የገባ ሌላ ምግብ ማውጣት ትችላለህ/ሽ?
033	የስኳር በሽታህ/ሽን የመቆጣጠር ችሎታ እንዳለህ/ሽ ማመን ትችላለህ/ሽ?
034	የስኳር ህመምህ/ሽን ለመንከባከብ የዶክተሩን ትዕዛዝ መከተል ትችላለህ/ሽ?
035	የስኳር በሽታ ከሌለህ/ሽ ሕይወትህ/ሽን በተመሳሳይ መንገድ መምራት ትችላለህ/ሽ?

ክፍል VI: ማህበራዊ ድጋፍ

ይህ ክፍል ከቤተሰብ እና ከቤተሰብ ውጭ የሆኑ አባላት ስለተገኘው ድጋፍ ነው ። የሚከተለውን ጥያቄ ካነበብክህ/ሽ በኋላ ከቤተሰብህ/ሽ እና ከቤተሰብህ/ሽ ባልሆኑ አባላት እያገነህ/ሽ ያለውን ድጋፍ የሚገልጽ ትክክለኛውን መልስ ምረጥ።

የለም- ከቤተሰብህ/ሽ እና ከቤተሰብህ/ሽ ባልሆኑ አባላት የተገለፀውን ድጋፍ የማታገን ከሆነ

አዎ- ከቤተሰብህ/ሽ እና ከቤተሰብህ/ሽ ባልሆኑ አባላት የተገለፀውን ድጋፍ የሚታገን ከሆነ

ተ. ቁ	ጥያቄዎች	የለም	አዎ
1	የኢንሱሊን መርፌህ/ሽን የሚሰጥ አንድ የተወሰነ ሰው አለህ/ሽ?		
2	የኢንሱሊን መርፌህ/ሽን ማርሳትህ/ሽን የሚያስታውስ አንድ ልዩ ሰው አለህ/ሽ?		
3	በትክክል ወይም በሰዓቱ ለራስህ/ሽ የኢንሱሊን መርፌ ስለመስጠት የሚያመሰግንህ/ሽ አንድ ልዩ ሰው አለህ/ሽ?		
4	ለራስህ/ሽ የኢንሱሊን መርፌ በሚትሰጥበት ጊዜ የሚረዳ አንድ ልዩ ሰው አለህ/ሽ?		
5	የጠዋትህ/ሽን የኢንሱሊን መርፌ በሰዓቱ መውሰድ እንዲትችል የሚያነቃህ/ሽ አንድ የተለየ ሰው አለህ/ሽ?		
6	ለራስህ/ሽ የጠዋት የኢንሱሊን መርፌ በሚትወስዱበት ጊዜ ላንቺ/ተን በጊዜ ለማስጀመር የራሱን መርሃግብር የሚቀይር አንድ ልዩ ሰው አለህ/ሽ?		
7	የኢንሱሊን መርፌህ/ሽን እንደሚትወስድ/ጅ የሚጠይቅ አንድ ልዩ ሰው አለህ/ሽ?		
8	የኢንሱሊን መርፌን መውሰድ ምን ያህል ከባድ እንደሆነ እንደሚያደንቁ የሚያሳውቅህ/ሽ አንድ ልዩ ሰው አለህ/ሽ?		
9	ስለ ላንተህ/ች የደም ምርመራ ውጤቶች የሚጠይቅ አንድ የተለየ ሰው አለህ/ሽ?		
10	ውጤቶቹ ምን እንደሚሆኑ ለማየት የደምህ/ሽን የስኳር መጠን ሲፈተሽ የሚመለከት አንድ ልዩ ሰው አለህ/ሽ?		

11 የደም ስኳርህ/ሽን ላንቺ የሚመረምር አንድ ልዩ ሰው አለህ/ሽ?
12 በደምህ/ሽ ውስጥ ያለውን የስኳር መጠን እንዲመረምር የሚያስታውስህ/ሽ አንድ ልዩ ሰው አለህ/ሽ?
13 ለደም ምርመራ የሚያስፈልጉ ቁሳቁሶች መኖራቸውን የሚያረጋግጥ አንድ ልዩ ሰው አለህ/ሽ?
14 በየቀኑ የደም ስኳርን ለመፈተሽ ምን ያህል ከባድ እንደሆነ እንደሚያደንቁ የሚያሳውቅህ/ሽ አንድ ልዩ ሰው አለህ/ሽ?
15 የደም ስኳርህ/ሽን ለመፈተሽ የሚያስፈልግህ/ሽን ቁሳቁሶች የሚያዘጋጅ አንድ ልዩ ሰው አለህ/ሽ?
16 የደም ስኳርህ/ሽን በራስህ/ሽ በመፈተሽ የሚያመሰግንህ/ሽ አንድ ልዩ ሰው አለህ/ሽ?
17 የደም ስኳርህ/ሽን ሲትመረምርህ/ሽ የሚረዳ አንድ ልዩ ሰው አለህ/ሽ?
18 የምርመራ ውጤቶችን ላንተ/ቺ የሚከታተል አንድ የተወሰነ ሰው አለህ/ሽ?
19 የደም ስኳርህ/ሽ ዝቅተኛ መሆኑን የሚያሳዩ ምልክቶችን የሚከታተል አንድ ልዩ ሰው አለህ/ሽ?
20 ግብረመልስ በሚኖርበት ጊዜ የሚረዳ አንድ ልዩ ሰው አለህ/ሽ?
21 ትክክለኛዎቹን ምግቦች እንዲትመገብ/ቢ የሚያበረታታ አንድ የተለየ ሰው አለህ/ሽ?
22 በትክክል መብላት ላንተ/ቺ ምን ያህል አስፈላጊ እንደሆነ እንዲትገነዘብ የሚያሳውቅህ/ሽ አንድ የተለየ ሰው አለህ/ሽ?
23 ከመመገብህ/ሽ በፊት የተወሰኑ ምግቦች ላንተ/ቺ መመገብ ጥሩ ናቸው ብለው የሚጠይቁ አንድ የተለየ ሰው አለህ/ሽ?
24 ለምግብህ/ሽ የምግብ ሽቀጣ ሽቀጦችን የሚገዛ አንድ የተለየ ሰው አለህ/ሽ?
25 ምግብ በሚትመገብበት/ባት ጊዜ ምግብ የሚመደብ አንድ የተወሰነ ሰው አለህ/ሽ?
26 ከምግብ ዕቅድህ/ሽ ጋር ስለመጣበቅ የሚያስታውስ አንድ ልዩ ሰው አለህ/ሽ?
27 በምግብ እቅድህ/ሽ ውስጥ ሊበሏቸው የሚትችል/ይ ምግቦች የሚጠቁም አንድ የተለየ ሰው አለህ/ሽ?
28 ካንተ/ቺ ጋር ተመሳሳይ የሆኑ ምግቦችን ለመመገብ አብሮ የሚቀላቀል አንድ ልዩ ሰው አለህ/ሽ?
29 የማይገባውን ነገር ከበላህ/ሽ/ በኋላ በጉዳይህ/ሽ ላይ የሚነሳ አንድ የተለየ ሰው አለህ/ሽ?
30 ሊኖርብህ/ሽ በማይገባህ/ሽ ምግብ ወይም መጠጥ እንዳትፈተሽ/ሽ የሚያደርግ አንድ የተለየ ሰው አለህ/ሽ?
31 ትክክለኛዎቹን ምግቦች መመገብህ/ሽን ለማረጋገጥ የሚትበላ/ሽ የሚመለከት አንድ የተለየ ሰው አለህ/ሽ?
32 ከምግብ ዕቅድህ/ሽ ጋር የሚስማማ ምግብ የሚያበስልህ/ሽ አንድ ልዩ ሰው አለህ/ሽ?
33 ላንተ/ች ሊትበላ/ይ የሚትችል/ይ ምግብ የሚሰጥ ምግብ ቤቶችን የሚመርጥ አንድ ልዩ ሰው አለህ/ሽ?
34 ላንተ/ች በሚትመገብበት ጊዜ ካንተ/ቺ ጋራ የሚበላ አንድ የተወሰነ ሰው አለህ/ሽ?
35 አመጋገብህ/ሽን በመከተልህ/ሽ የሚያመሰግነው አንድ የተለየ ሰው አለህ/ሽ?
36 በጣም ብዙ ወይም በጣም ትንሽ ሲትበላ/ይ የሚነግርህ/ሽ አንድ የተለየ ሰው አለህ/ሽ?
37 በትክክል ሲትበላ/ይ ደስ እንዳላቸው የሚያሳይ አንድ የተለየ ሰው አለህ/ሽ?
38 ላንተህ/ቺ ያለህ/ሽን አማካይ እቅድ የሚከታተል አንድ የተወሰነ ሰው አለህ/ሽ?
39 ላንተ/ች ሊትበላ/ይ የሚትችል/ይ ልዩ ምግቦችን የሚገዛ አንድ ልዩ ሰው አለህ/ሽ?
40 የማይገባውን ነገር እንዳትበላ/ይ የሚነግርህ/ሽ አንድ የተለየ ሰው አለህ/ሽ?
41 የአካል ብቃት እንቅስቃሴ ማድረግ የሚትችል/ይ መንገዶች የሚጠቁም አንድ የተለየ ሰው አለህ/ሽ?
42 የአካል ብቃት እንቅስቃሴን የሚያስታውስህ/ሽ አንድ የተወሰነ ሰው አለህ/ሽ?
43 ከእነሱ ጋር የአካል ብቃት እንቅስቃሴን እንዲትቀላቀል/ይ የሚጋብዝህ/ሽ አንድ የተለየ ሰው አለህ/ሽ?
44 አዘውትረው የአካል ብቃት እንቅስቃሴ ስለሚታደርግ/ጊ የሚያመሰግንህ/ሽ አንድ ልዩ ሰው አለህ/ሽ?
45 የተደራጀ የስፖርት እንቅስቃሴን እንዲትቀላቀል/ይ የሚያበረታታ አንድ ልዩ ሰው አለህ/ሽ?
46 የስፖርት መሣሪያዎችን ላንተ/ቺ የሚገዛ አንድ ልዩ ሰው አለህ/ሽ?
47 ካንተ/ቺ ጋር የአካል ብቃት እንቅስቃሴ የሚያደርግ አንድ የተለየ ሰው አለህ/ሽ?
48 ስለ የስኳር ህመም እንክብካቤዎ ስጋቶች ወይም ጭንቀቶች ለማዳመጥ አንድ የተወሰነ ሰው አለህ/ሽ?
49 በስኳር በሽታ እንክብካቤ ላይ ለማንበብ ነገሮችን የሚሰጥ አንድ ልዩ ሰው አለህ/ሽ?
50 በስኳር ህመም እንክብካቤህ/ሽ ምን ያህል እንደሰራህ/ሽ የሚነግርህ/ሽ አንድ የተለየ ሰው አለህ/ሽ?
51 የስኳር ህመምህ/ሽን ለመንከባከብ ጥሩ ስራ እንድትሰራ/ሪ የሚያበረታታ አንድ ልዩ ሰው አለህ/ሽ?
52 የስኳር ህመምህ/ሽን ለመንከባከብ አንዳንድ ጊዜ ስህተት ሲትሰራ/ሪ የሚረዳ አንድ ልዩ ሰው አለህ/ሽ?

ስለተሳተፉበት እናመሰግናለን!