ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF PUBLIC HEALTH

Validation of The Amharic Version of The Summary of Diabetes Self-Care Activity Scale Among Diabetes Patients in Addis Ababa Public Hospitals, a, Ethiopia.

BY: Molla Gashu (BSc IN PUBLIC HEALTH)

A RESEARCH PAPER SUBMITTED TO THE GRADUATE PROGRAM OF ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF PUBLIC HEALTH IN PARTIAL FULFILLMENT FOR THE DEGREE OF MASTERS OF PUBLIC HEALTH WITH SPECIALTY IN EPIDEMIOLOGY AND BIOSTATISTICS

ADDIS ABABA, ETHIOPIA

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VALIDATION OF THE AMHARIC VERSION OF THE SUMMARY OF DIABETES SELF-CARE ACTIVITY SCALE AMONG DIABETES PATIENTS IN ADDIS ABABA PUBLIC HOSPITALS, AA, ETHIOPIA.

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Name of advisors	Primary: Dr. Ayele Belachew (MD, PhD, Associate Professor) Secondary: Yimer Seid (Assistant professor of preventive medicine)
Full title of the research project	Validation of the Amharic version of the summary of diabetes self-care activity scale (SDSCA) among diabetes mellitus patients in Addis Ababa public hospitals, AA, Ethiopia.
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Acronyms

DC…….Dietary Control

DSC.....Diabetes self-care

GM…….Glucose Management

IDF.....International diabetic's federation

PA----------Physical Activity

PCA.....Principal component analysis

SCODI-K..... self-care of diabetes inventory

SDSCA.....Summary of diabetes self-care activity scale

SEM…….Structural equation modeling

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Abstract

Introduction: Measuring what it tends to measure makes a tool powerful and useful for decision-making. As the Amharic version summary of diabetes self care activity scale (SDSCA) construct doesn't yet validated, there is an urgent need of validation of the tool for research and clinical practice purpose. This study aims to validate the Amharic version of the summary of the diabetes self-care activity scale (SDSCA) among diabetes mellitus patients in Addis Ababa public hospitals, AA, Ethiopia.

Method: A facility-based cross-sectional study design was used to recruit 600 study participants at four Addis Ababa public hospitals. A multistage sampling method was used to recruit the study participants. The already translated Amharic version SDSCA tool was used. The data was collected using ODK software and exported to SPSS and Stata for analysis. Both exploratory and confirmatory factor analysis was performed on 300 randomly allocated separate samples. Cronbach's alpha was used to see the internal consistency of the items in each factor and items in the whole new construct. Bartlett's test of sphericity and Kaiser-Meyer-Olkin **(**KMO) were conducted to see the factorability of the items and sample adequacy.

Principal axis factoring with oblimin rotation was used for the EFA. The number of factors in the new construct was determined based on their Eigen value. Finally confirmatory factor analysis was conducted to see the stability of the scale.

Result: The KMO was 0.595 and Bartlett's test of sphericity was significant (Chi-square=2387.59, df=36, and p-value <0.0001) showing sample adequacy and factorability of the items. A total of 4 factors with an eigenvalue greater than one constituting 9_items were identified using exploratory factor analysis. It is also confirmed with confirmatory factor analysis using a different sample. The Average variance executed (AVE) becomes 0.78 with a composite reliability of 0.97. Since the AVE is greater than 0.5 and composite reliability is >0.7 we can say that there is convergence between the items and the new construct. The overall internal consistency of the new construct was 0.853 which is > 0.7 affirming the reliability of the construct.

Conclusion: We can conclude that this 4-factor structure with a 9-item SDSCA is highly valid and reliable. From now on the new SDSCA construct from the current study is called the "the validated Amharic version SDSCA". Researchers and clinicians are highly recommended to use this validated tool. It is recommended to be valid in the other local languages of the country to customize the application of the SDSCA tool to the local culture.

Keywords: SDSCA, Amharic version, Addis Ababa, validation

CHAPTER ONE

INTRODUCTION

1.1. Background

Promoting a lifestyle that incorporates a good diet, frequent exercise, quitting smoking, and maintaining a healthy body weight is the cornerstone of diabetic self-care (1). Diabetes self-care (DSC) implies the execution of actions directed by and for people to satisfy their needs and contribute to the maintenance of life, health, and well-being. In coexistence with diabetes, the self-care routine covers the use of medication and the adoption of healthy lifestyle habits (balanced diet, regular practice of physical activity, moderate alcohol use, and smoking cessation) as an essential condition for metabolic control and the prevention of chronic complications of the disease (1).

Diabetes complications can be controlled with simultaneous comprehensive practices including early diagnosis, diabetes medication adherence and healthy day to day life style. Healthy diet, appropriate physical activity, foot care routine blood glucose testing can best be practiced autonomously by patients. In order to identify those DM patients who are practicing those self-care practices and those who do not, a standardized tool that specifically measure DM self care practice is required. Those tools also need to be culturally adapted to a local setting (2).

Despite the introduction of numerous self-care measuring scales, analyses of valid questionnaires usually reveal the important data that has been omitted. The most widely used tool in that regard is likely the Summary of Diabetes Self-Care Activities Measure (SDSCA). It has undergone extensive research evaluation, displayed suitable psychometric properties, and has been translated into multiple languages (2).

The SDSCA tool was created for the first time in 1994 and updated in 2000 and 2005. It was translated and validated in several languages, including English, Spanish, Korean, Turkish, Arabic, and Chinese, demonstrating strong internal validity and reliability but displaying a different factor structure, demonstrating the existence of cultural differences in scale understanding. Cultural differences and the standard of care provided in various facilities

have an impact on the summary of the diabetes self-care activity scale. Therefore, to have a beneficial impact on the practice, planning for the promotion of various diabetes self-care activities must take into account local customs and cultural norms. In addition, the standard of care provided to patients will be taken into consideration (2).

Validation of tools that measure the above diabetic self-care practice of diabetes mellitus (DM) patients has been conducted in different languages. The current study is intended to assess the construct validity of the Amharic version of the summary of the diabetic self-care activity scale (SDSCA). Construct validity is about how well a test measures the concept it was designed to evaluate. It is one of four types of measurement validity, which include construct validity, face validity, and criterion validity. Construct validity, which is relevant when there is no gold standard, concerns whether the instrument yields the predicted results based on the construct's known properties (3).

1.1. Statement of the problem

Diabetes control is very crucial in diabetes patients. Literatures showed that it is highly impacted with diabetes patient's day to day self care behavior including recommended dietary intake, appropriate physical activity, foot care and cessation of smoking behaviors. All the above self care behaviors can best is measured with a validated tool for the local setting (3).

After the revised English version of SDSCA was published, it was validated in different languages and cultural settings all over the world. As the lifestyle, diet, language, and even dialects are quite different from continent to continent and from country to country, the adaptation of such tools is of paramount importance.

A tool with too many items causes the respondents to fade out at some point during the interview. Especially items that are at the end of the tool will not receive similar attention from the respondents as items at the beginning of the interview. Therefore, it is recommended that a tool be as small in number as possible without losing what the original construct intended to measure.

Scientific reports and evidence are usually weighted in terms of valid and reliable tool usage and the methods followed. Evidence that is reported using invalidated tools is usually seen in doubt for references to other studies and for clinical use as well.

Several studies in Ethiopia have shown that diabetic self-care is not well practiced, despite the fact that it has demonstrated a notable decrease in the incidence and progression of DM complications (5-9). However, since studies in the Ethiopian context are conducted using the invalidated SDSCA tool, the reported low self-care practice might be questionable. It will be difficult to use those findings for further research or clinical purposes. Clinicians, however, need scientific evidence regarding DM self-care practices in order to implement them in their day-to-day clinical practice. There is a clear gap in the validation of SDSCA in the Ethiopian context.

To say a tool is valid, it has to give a guarantee on measuring approximately what the original tool intends to measure. As of now, the translated Amharic version of SDSCA has been used for research without validation. Other researchers have been using their own translated SDSCA tool. Whether those items in each latent variable solely measure those latent variables or not is not yet supported by evidence for the Amharic version of SDSCA.

Sometimes translated items that we assumed to measure some latent unobserved variable may not practically measure them. It might measure another unintended latent variable instead. In other cases, an item may even not relate to the expected latent variable in any way. One affirms all the above doubts by conducting a factor analysis. Unless such constructs are validated, we can't be confident enough to use such tools to generate scientific evidence. In the Ethiopian context, currently, research has been done with the translated Amharic version of SDSCA without construct validation of the tool. Therefore, there is an urgent need for the validation of the translated Amharic version of SDSCA for research and clinical purposes.

1.2. Justification of the study

Giving diabetes self-care recommendations to patients based on the English version of SDSCA might not be culturally and linguistically sensitive. Self-care recommendations

based on the invalidated Amharic version of SDSCA, on the other hand, brought some other problems. We can't be sure whether all the items of a latent variable or factor are actually measuring that variable or not without conducting a validation study in the Ethiopian context. Some of the items may not actually measure that latent variable or may not have a correlation with the latent variable.

Only maintaining the items that have an exclusively high correlation with only one latent variable by conducting factor analysis will reduce the burden on patients during the interview and may give us a more accurate response.

1.3. Significance of the study

A more precise SDSCA that can measure what is intended to be measured will be easy for clinical recommendation purposes and research purposes. By doing so, we can get more accurate evidence from studies regarding diabetes self-care practices. It will be useful to develop a guide to improve the patient's self-care practice based on evidence. It will act as a baseline study for those who want to conduct SDSCA tool validation in other Ethiopian languages.

CHAPTER TWO

LITERATURE REVIEW

Currently most researches conducted in Ethiopia regarding summary of diabetes self care activity scale used their own locally translated SDSCA tools. Because of this there is no singled out standardized Amharic version SDSCA in the country. The report findings from such tools are different even in similar study settings (5-8).

There are currently at least 16 common diabetes self-assessment instruments available around the globe. There are different tools used in literatures for the measurement of diabetes self care worldwide. There is a bit difference on the content they aimed to measure. Some literatures use Diabetes self management questionnaire (DSMQ). It has four subscales and 16 self-care items. It doesn't though include some of the major diabetes self care contents such

as foot care and smoking status (10). The researchers found that the self-care inventory—revised version—and the summary of diabetes self-care activities (SDSCA) were the most popular tools in terms of measuring diabetes self care practice exclusively (SCI-R) (11, 12).

The summary of the diabetes self-care activity scale (SDSCA) questionnaire is a brief but highly reliable and valid self-report measure of diabetes self-care that is useful both for clinical practice and research. It was included as one of the diabetes self-assessment tools based on evidence from a systematic review of seven different studies (13).

The original SDSCA measure evaluated five components of the diabetes management plan: general diet, targeted diet, exercise, medication use, and blood-glucose testing. Studies utilizing the measure in more recent times have also included questions on smoking and foot hygiene. Similar to the Rand Corporation survey, respondents provide descriptions of the frequency with which they engaged in various activities over the previous seven days. Because it might be difficult to identify a clear, constant standard for a patient to measure their behavior against, the SDSCA assesses self-care levels as opposed to adherence or compliance to a prescribed regimen (12).

The original SDSCA measure assessed five aspects of the diabetes regimen: general diet, specific diet, exercise, medication taking, and blood glucose testing. More recent studies using the scale have also included items on foot care and smoking. Similar to the Rand Corporation questionnaire, respondents report on the frequency with which they performed various activities over the previous 7 days. The SDSCA assesses levels of self-care and not adherence or compliance to a prescribed regimen because of the difficulties associated with identifying, for a given patient, a specific, unchanging standard against which behavior should be compared (4).

An essential component of the diabetic regimen that was left out of the original SDSCA is foot care, which is covered in the revised edition. There are additional sections on smoking cigarettes (12). It is crucial to know a patient's smoking status so that the right counsel may be given, even if it is not typically considered to be a component of the diabetes regimen given the significantly increased risk of cardiovascular illnesses among diabetes patients.

The revised version of the SDSCA also includes the following three modifications: 1) The suggested version does not include questions about taking medications since these items' test-retest reliability is decreased by severe ceiling effects and a lack of responder variability. *2*) Although the diet scale has moderate to high validity, dropping it from the revised tool was recommended as it lacks internal consistency. *3) It* has been changed since it no longer accurately represents modern medical nutrition therapy guidelines, which emphasize adaptability in meal planning and carbohydrate tracking. To update this diet item, we changed the focus from sweets to carbohydrates and added it to the list of enlarged items (13).

The small number of significant correlations between the SDSCA subscales and participant characteristics revealed from the 7 study findings demonstrates that the SDSCA can be generalized to different diabetes subpopulations, including insulin status, sex, number of comorbid conditions, and diabetes duration (13).

Recently, a study conducted in South Korea preferred to use the self-care of diabetes inventory (SCODI-K) to measure the self-care practices of type 2 DM patients (4).

Other literature uses another tool called the Diabetes Self-Management Questionnaire (DSMQ). There are a total of 16 items incorporated within the four subscales, namely glucose management (GM), dietary control (DC), physical activity (PA), and health care use (HU) (14). After reversing the score of the nine negatively coded statements, the DSMQ is scored by averaging the results of all 16 items. Scores with a higher value indicate better self-care practices. Finally, the DSMQ scores will be changed to a scale from 0 to10, with 10 reflecting the best self-care behavior (15).

The modified version of the SDSCA study yielded seven study findings illustrating the SDSCA to be a multidimensional measure of diabetes self-management with an acceptable test-retest and internal reliability as well as indications of validity and change sensitivity. Diet and exercise validity estimates are calculated from a variety of self-reported information techniques, such as food records and self-monitoring. Significant relationships between SDSCA subscales and other criterion measures have been documented in prior research.

When taken as a whole, these relationships support the validity of the self-report measure (15).

The number of factor structures generated in most cultural adaptations is four-factor structure which are diet, physical activity, blood glucose testing and foot care (16-20).

CHAPTER THREE

OBJECTIVE

3.1. General Objective

To validate the Amharic version of the SDSCA scale among diabetes patients in Addis Ababa public hospitals, AA, Ethiopia, 2023 GC

3.2. Specific Objectives

- To determine the construct validity of the Amharic version of the summary of diabetes self-care activity scale (SDSCA) among diabetes patients in Addis Ababa public hospitals, AA, Ethiopia
- To determine the reliability of the Amharic version of the summary of diabetes self-care activity scale (SDSCA) among diabetes patients in Addis Ababa public hospitals, AA, Ethiopia.

CHAPTER FOUR: METHODS

4.1. Study setting

The study was conducted at Addis Ababa public hospitals which have separate clinics for diabetes and hypertension follow-up. There are a total of 10 public hospitals in Addis Ababa that can fulfill the above criteria. These are Black Lion Hospital, St.Paul, St. Peter, Yekatit 12, Zewditu, Ghandi, Menellik II Hospital, Ras Desta, Tirunesh Bejing, and Ammanuel hospitals. The hospitals are located on different sub cities of Addis Ababa and diabetes patients are served from all over the country with referral. There are a total of around 14,500 diabetes patients on follow up at Addis Ababa public hospitals.

4.2. Study design and period

A facility-based cross-sectional study was conducted from April 24 to June 30/2023 GC.

4.3. Source and study population

The source population of the study was all diabetes patients who have follow up at Addis Ababa public hospitals. The study population was all diabetes patients who have follow-up-selected Addis Ababa public hospitals.

4.4. Inclusion and exclusion criteria

4.4.1. Inclusion criteria

All diabetes patients with ages greater than or equal to 18 years who have follow up at the selected public hospitals were included in the study.

4.4.2. Exclusion criteria

Those diabetes patients who are on DM medication for less than a year and who can't be able to communicate were excluded from the study. In addition to this those DM patients who cannot speak Amharic were excluded from the study.

4.5. Sample size determination and sampling method

4.5.1. Sample size determination

There is no universally accepted standard sample size for factor analysis. Some scholars recommend 150-200 samples for exploratory factor analysis and 200-250 for confirmatory factor analysis. Some others recommend a sample of 5 to 10 study participants per item (widely accepted being 10 per item) for checking factor structure and validity of items given for scale analysis in case of confirmatory factor analysis (14). There are a total of 26 items in the Amharic version of the summary of the diabetes self-care activity scale. Thus the total minimum adequate sample size is 10*26=260.

However, a sample of 300 is considered as an adequate sample size for factor analysis. Therefore I considered the highest sample size and took 600 as the combined sample for both exploratory and confirmatory factor analysis.

Adding a 5% non response rate, the final sample size became:

600/1-NR=600/1-0.05= **632**

4.5.2. Sampling method and procedure

A multistage sampling method was used to select the study subjects. First thirty percent of the public hospitals in Addis Ababa were selected through the lottery method. As a result St. Paul referral hospital, Alert referral hospital, Yekatit 12 referral hospital and Menillik II referral hospital were selected. Then the sample was proportionally allocated to each selected hospital based on the number of diabetes patients who are on follow-up. Finally every diabetes patient who came for follow up was interviewed consecutively in the waiting room. Whenever the selected sample has less than one year of DM follow-up status or has less than two follow-ups, automatically he/she was dropped from the study by justifying the reason for them.

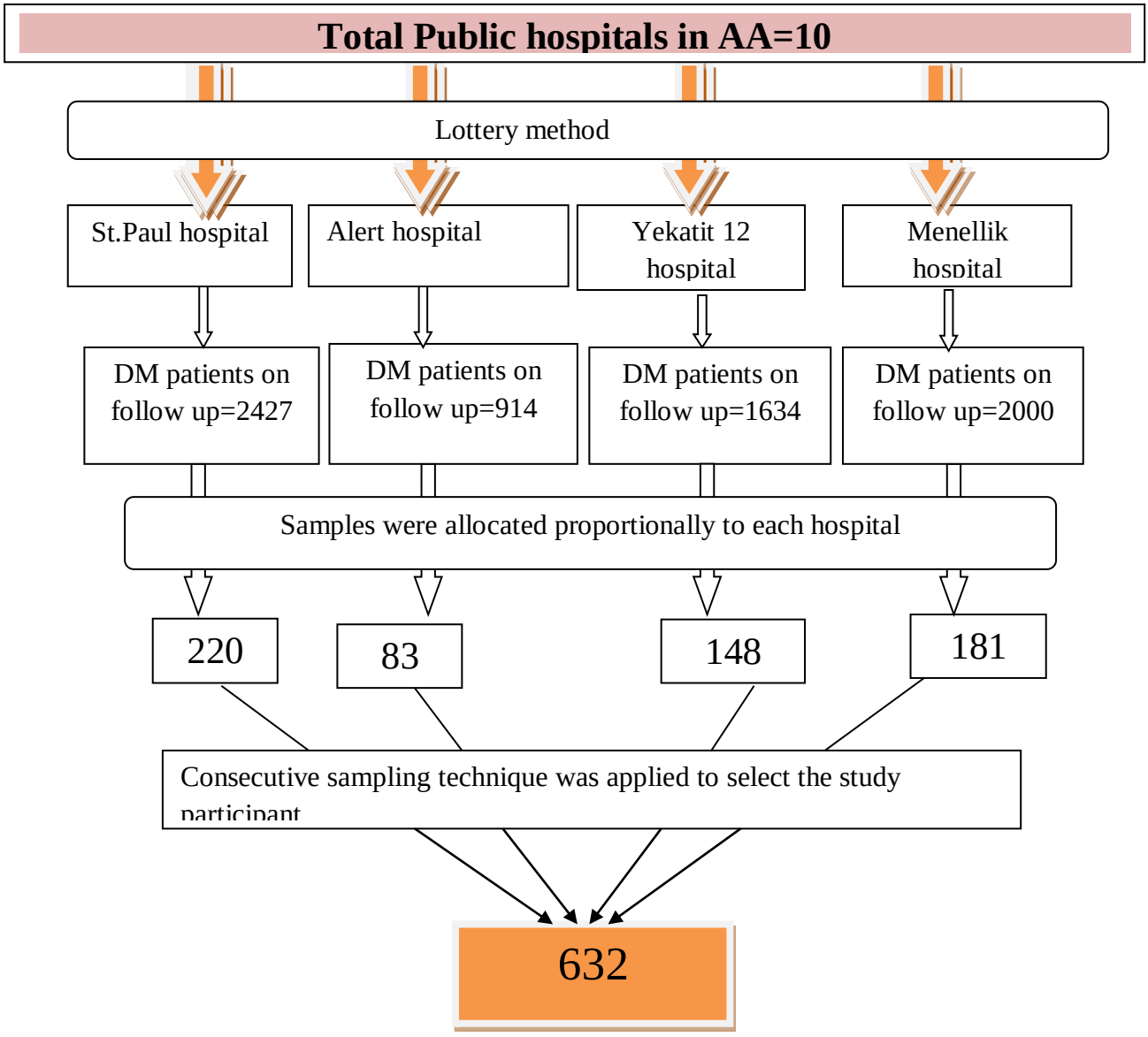

Figure 1 Schematic presentation of the sampling procedure of the study population at Addis Ababa public hospitals, AA, Ethiopia, 2023 GC.

4.6. Data collection tool and procedure

The data collection tool for the current study is a questionnaire. We got permission to use the already available "Amharic version SDSCA" tool for the current validation study from the author. It already passes all the translation procedures as per the SDSCA translation guidelines before publication. Therefore, we prefer to adopt it as it is instead of translating the English version ourselves.

The recently revised summary of diabetes self-care activity scale contains 11 main items and an additional 15 items for the expanded version of the Summary of Diabetes Self-Care Activities.

The 11 items do not include questions on diabetes medication taking because of the strong ceiling effect and lack of significant variability across respondents. Some of the items under the factor "diet" were reduced because of a lack of internal consistency. Six of the items in the expanded version of SDSCA are more self-care recommendations. There have been little or no reliability and validity data found on those items in the revised SDSCA version (12), and therefore they were not included in the factor analysis for the current study.

In addition to the SDSCA questions, we added socio-demographic, clinical characteristics, and the diabetes knowledge test after reviewing the literature. The socio-demographic characteristics contain nine items, while the clinical knowledge test and SDSCA instruments contain six, fourteen, and 26 items, respectively.

Three bachelor's degree nurses were used for the data collection. They were assigned one for each hospital, and finally the remaining Black Lion hospital was collectively performed. Patients were approached while in the waiting room while they were waiting for their turn or after they got treatment.

4.7. Measurement

The modified version of the SDSCA study yielded seven study findings illustrating the SDSCA to be a multidimensional measure of diabetes self-management with an acceptable

test-retest and internal reliability as well as indications of validity and change sensitivity. Diet and exercise validity estimates are calculated from a variety of self-reported information techniques, such as food records and self-monitoring. Significant relationships between SDSCA subscales and other criterion measures have been documented in prior research. When taken as a whole, these relationships support the validity of the self-report measure.

The revised SDSCA includes foot care and smoking sub scales. Respondents report on the frequency with which they performed various activities over the previous 7 days. They were recalled the specific date with which the 7 days starts by the data collectors. One diet related items is about the average number of days the diet taken per week over the previous month.

4.7. Data quality management

One day training was given to the data collectors about the purpose of the study, the nature of the questionnaire, and communication skills to approach study participants. They were well informed about the Open Data Kit (ODK) application during the orientation. The application was uploaded to everyone's mobile. A pre-test was conducted on 32 patients at Kebena Health Center. During the pretest misunderstanding of the concept of the items to be asked were observed among data collectors and feedback was given on the spot. The principal investigator supervised and monitored the data collection process every other day.

4.8. Operational definition

Acceptable the tools: the tools are said to be acceptable if the response rate is more than 80 %, and the average time needed to complete the questionnaire is below 25 minutes.

Overlap of a tool: if all correlation coefficients between tool scales and items and the SDSCA scales and items were greater than 0.4, an overlap is considered.

Convergent validity: is supported if the item domain correlation is at least 0.40. Additionally the Average variance extraction has to be ≥ 0.5

Discriminant validity: is satisfied if the value of correlation coefficients between the item and its domain is higher than other domains. On top of this The AVE has to be greater than the square of the highest factor correlation coefficient.

Construct validity: is assumed to be fulfilled if both the scales fulfill both convergent and divergent (discrminant) validity.

Diabetes Self-care Activity: Self-care practices refer to the taking of responsibility for one's behavior and well-being such as following a diet plan, increased exercise, appropriate blood glucose monitoring, medication taking, and foot care. Diabetes Self-Care Activity level will be assessed using the Expanded Version of the Summary of Diabetes Self-Care Activities (SDSCA). The SDSCA was originally developed from "The Summary of Diabetes Self-Care Activities Measure" which resulted from seven studies carried out by scholars from Oregon Research Institute, United States. The tool was pre-tested and adopted for the Ethiopian context, which documented a reliability coefficient α of 0.834 for the expanded version of SDSCA. The overall mean score will be calculated by summation of the mean score for diet, exercise, medication taking, blood glucose testing, and foot care divided by the sum of the number of questions under each scale.

4.9. Data analysis

After the data collection was conducted using the Open Data Kit (ODK) software, it was exported to Excel and finally to SPSS version 25 for analysis. Descriptive statistics were conducted to summarize the frequency distribution of socio-demographic and clinical variables. Frequency and percentage were used to summarize categorical variables, while median was used for continuous variables.

Both exploratory factor analysis (EFA) and confirmatory factor analysis were used as factor analysis methods with a sufficient separate sample. SPSS was used for the EFA, while Stata version 14.0 was used for the confirmatory factor analysis.

The person correlation coefficient was used to see for inter-item correlation. The consistency of a questionnaire was evaluated using its internal consistency. Internal consistency is commonly estimated using the coefficient alpha, also known as Cronbach’s alpha. Cronbach’s alpha ranges from 0 to 1 (when some items are negatively correlated with other items in the questionnaire, it is possible to have negative values of Cronbach’s alpha). Cronbach's alpha = 0 indicates no internal consistency (i.e., none of the items are correlated with one another), whereas alpha = 1 reflects perfect internal consistency (i.e., all the items

are perfectly correlated with one another). In practice, Cronbach's alpha of at least 0.70 has been suggested to indicate adequate internal consistency.

In addition to this the composite reliability of the factors and the overall construct was calculated. The AVE and composite reliability were calculated as follow (see the formulas below).

Average variance extracted (AVE) = $\frac{\sum \lambda^2}{n}$

Composite reliability= $\frac{(\sum \lambda)^2}{(\sum \lambda)^2 + (\sum \varepsilon)}$

Where:

Λ= factor loading

N= number of factors

ε=Error variance (1)

The number of factors for the new construct was determined based on their eigen value. A factor having an eigen value greater than one was included in the new construct. A scree plot was performed to see the point where the graph starts to go down sharply. Those factors above that point will be taken as part of the factor structure of the new construct.

We used the principal axis factoring method for the exploratory factor analysis. Regarding the rotation type used, we first conducted the oblique rotation methods to check in the rotated component correlation matrix whether any correlation b/n factors is <-0.32 or >0.32. If there is such correlation we will use either of the oblique rotations, if not the orthogonals such as the varimax rotation.

We used structural equation modeling (SEM) using stata to show the diagrammatic relationship between the latent variable (factor) and indicators (items) during the confirmatory factor analysis. Structural equation modeling is not a one statistical technique. It integrates a number of different techniques into one model fitting framework. It is an

integration of measurement theory, factor (latent variable) analysis, path analysis, regression and simultaneous equations. Since most factors of diabetes self care practice are hypothetical (latent) constructs which needs to be measured through observable indicators (items); SEM using stata could act as a path analysis.

4.10. Ethical consideration

Ethical approval was obtained from Addis Ababa University, the College of Health Science, ethical review board. Permission letters from each selected hospital will be gained. Verbal informed consent for participation will be obtained before data collection.

Before data collection, the purpose of the study was explained to all participants and they were assured that their information would not be used for purposes other than scientific research. Participants will be informed that participation is voluntary and that they can withdraw from the interview at any time for whatever reason. Confidentiality was maintained by avoiding possible identifiers such as the names of the study participants. Only identification numbers will be used as a reference.

4.11. Dissemination of the findings

The study result was shared for Addis Ababa University College of Health Science School of Public Health and the respective hospitals where the study was conducted. Finally, Publication in peer-reviewed journals will be attempted so that scholars can use the customized validated tool for research and clinical practice.

CHAPTER FIVE: RESULT

From 632 eligible samples, about 600 diabetes patients participated in this study, attaining a 95% response rate.

5.1. Socio_demographic characteristics of the participants

The age of the participants ranges from 26 to 83 years with a mean age (±SD) of the participants 54.5 ±15, and a median age of around 54yrs.

Around 102 (17.0%) participants were found to be housewives. There rest One hundred forty-two (23.7%), 147 (24.5%), 169 (28.2%), and 40 (6.7%) were found to be government employ, private sector employees, self employ, and other types of occupations respectively (see Table 4 for the other socio_demographic variables). The median monthly family income of the study participants was found to be 8000 Ethiopian birr with 50% of the participant's family income range between 4,000-13,000 birr.

Table 1 Socio_demographic characteristics of diabetes patients at Addis Ababa public hospitals, Addis Ababa, Ethiopia, 2023GC (n=600)

Variables	Category	Total (n=600)	Group 1 for EFA (N=300)	Group 2 for CFA (N=300)
		N (%) or Mean± SD		
Age		54.5 ±15	57±14	52±15.7
Sex				
	Male	281 (46.8%)	154 (51.3%)	140 (46.67)
	Female	319 (53.2%)	146 (48.7%)	160 (53.3%)
Marital status				
	Single	50 (8.3%)	27 (9.0%)	23 (7.0%)
	Married	373 (62.0%)	184 (61.0%)	189 (63.0%)
	Divorced	65 (10.8%)	34 (11%)	31 (10.0%)
	Widowed	89 (14.8%)	45 (15.0%)	44 (14.0%)
	Separated	23 (3.8%)	10 (3.0%)	13 (4.0%)

Religion				
	Orthodox	254 (42.3%)	46 (15.3%)	208 (69.3%)
	Muslim	192 (32.0%)	153 (51.0%)	39 (13.0%)
	Protestant	85 (14%)	49 (16.3%)	36 (12.0%)
	Catholic	39 (3.2)	22 (7.3%)	17 (5.7%)
	Others	30 (0.5%)	30 (10.0%)	0 (0.0%)

5.2. Clinical conditions of patients

The mean duration of diabetes mellitus since diagnosis is 8.3 ± 6 years. A total of 395 (65.8%) participants are taking insulin as a diabetes medication, while the rest, 205 (34.2%), are on diabetes pills. The blood sugar level of around 462 (77.0%) participants was not controlled, while only 138 (23.0%) of them controlled their blood sugar at the time of the interview. Around 379 (63.2%) participants in the study had at least one diabetes complication, while the rest, 221 (36.8%), didn't have diabetes complications. Four hundred twenty-six (71.0%) of them didn't report a hypertension diagnosis, but 174 (29.0%) of them reported hypertension as an additional disease.

5.4. Factor analysis

5.4.1. Analysis of items

Finding items that effectively measure the underlying construct is the goal of the validity and reliability test. Therefore, items are assessed to find items with low variation, replies that are comparable to the item's bad performers, extremes in the mean score, which results in low reliability, and, finally, things that have low variance.

We planned to conduct factor analysis for the 21 items. But the three smoking-related questions that are added to the extended version have a ceiling effect; there is not much variability seen among cases. As a result, the iteration failed and couldn't reveal an

extraction. Because of this, we removed the three items and ran it again with 18 items using direct oblimin rotation to see the factor correlation coefficients.

In the factor correlation matrix, the maximum absolute value factor correlation coefficient was 0.29. Since this value is less than 0.32, we can conclude that there is no significant correlation between the factors. In this case, we preferred to use orthogonal rotations such as varimax instead of oblique rotations.

The mean score for each item under examination ranged from 0.04 to 4.94, with a standard deviation of 0.188 to 2.79. Next, the item-to-total correlations were assessed. A total of nine items were eliminated. Initially, all 18 items were included, and exploratory factor analysis (EFA) was executed. None of the items has had a factor loading less than 0.4; this is one criteria for the deletion of the items from further executions. Item #15 was loaded into two different factors. Therefore, we deleted it and re-executed it. Item #14 has been loaded into three different factors and deleted from the next execution. Item #17 also loaded into two factors and was therefore deleted and re-executed. Items #12, #13, #18, and #16, however, loaded into a different factor than expected and were deleted subsequently. Item #4 loaded into two factors and was deleted, and further execution was conducted. A slightly different loading happened with item #11. It doesn't load in any of the factors and was deleted. Finally, the final execution was conducted with nine different items, all of which significantly loaded into one factor and didn't load into any other factors.

5.4.2. Exploratory factor analysis (EFA)

We use EFA when we want to determine the underline factor structures that exist in certain variables. We use EFA to see whether any of the items are grouped together into a factor.

Before conducting the actual EFA, a normality test was conducted. It was found to violate the assumptions of the multivariate normality test. The principal axis factoring (PAF) method was preferred to conduct construct validity in the case of exploratory factor analysis. At the very beginning, the factorability of the SDSCA tool was assessed using an inter-item correlation greater than 0.3 for any two different items. There was no inter-item correlation >0.3 found.

Following this, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was performed to check whether it was possible to run factor analysis or not. The KMO was found to be 0.661, above the minimum standard (0.5), as well as greater than the usual recommended cut-off by the scholars (i.e., 0.6). In addition, Bartlett's test of sphericity was significant (chi-square = 359.3, df = 153, p-value <0.0001).

Principal axis factoring was performed, and five factors were identified with eigenvalues above one. Initially, eight factors were shown with an eigenvalue greater than one. Each factor explained 23.30%, 13.05%, 8.96%, 7.62%, 7.16%, 6.55%, 5.82%, and 5.07% of the original variance, respectively. All eight factors explained 77.53% of the variance.

After subsequent execution of the EFA, we finally had four factors with an eigenvalue greater than one. The KMO during the final execution was 0.595, a bit decrepit from the initial execution but still above the 0.5 cut-off point. Likewise, Bartlett's test of sphericity was significant (chi-square = 2387.59, df = 36, and p-value <0.0001) (see Table 2).

Table 2 Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's test of sphericity for the DM patients at Addis Ababa public hospitals, AA, Ethiopia, 2023 GC (n=300).

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.595
Bartlett's Test of Sphericity	Approx. Chi-Square	2387.588
	Df	36
	Sig.	.000

The four factors explained 26.97%, 20.90%, 19.66% and 15.08% of the variance separately compared to the cumulative variance explained by the maximum possible number of factors which is nine. The four factors collectively could explain about 82.61% of the variance. The rest potential five factors could only explain around 17.4% of the variance collectively (See Table 3).

Table 3 The explained variance contribution among the four extracted factors and the rest potential factors among diabetes mellitus patients in Addis Ababa public hospitals, AA, Ethiopia (n=300)

Total Variance Explained									
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.486	38.733	38.733	3.357	37.301	37.301	2.427	26.971	26.971
2	1.956	21.734	60.468	1.782	19.801	57.102	1.881	20.902	47.873
3	1.483	16.483	76.950	1.350	14.997	72.099	1.769	19.656	67.530
4	1.171	13.012	89.962	.946	10.511	82.609	1.357	15.080	82.609
5	.372	4.128	94.090						
6	.322	3.577	97.668						
7	.122	1.355	99.023						
8	.056	.627	99.651						
9	.031	.349	100.000						
Extraction Method: Principal Axis Factoring.									

The scree plot shows a clear break after the fourth factor assuring the justification of four factors. (See figure 2 below).

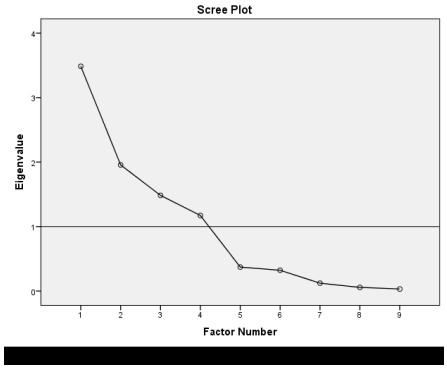

Figure 2 Scree plot for the nine possible factors with their eigen value among DM patients at Addis Ababa public hospitals; Addis Ababa, Ethiopia, 2023G.C (n=300).

In addition to the eigenvalue and scree plot, we conducted parallel analysis using parallel analysis engine (www.analytics.edu/prallelengine/) to generate the number of possible factors. We included a total of 13 items; the PCA generated a sample of 300. We used both the 13 items and sample of 300 on the parallel engine website to see the randomly generated factors. The dataset eigenvalues of the first four factors exceeds those randomly generated eigenvalues. However starting from the factor five the data set eigenvalue became less than the randomly generated eigenvalues at which point a clear break is observed. Therefore we maintained the four factors and drop the rest factors. The number of factors (4) is similar by using eigenvalue criteria, scree plot and parallel analysis.

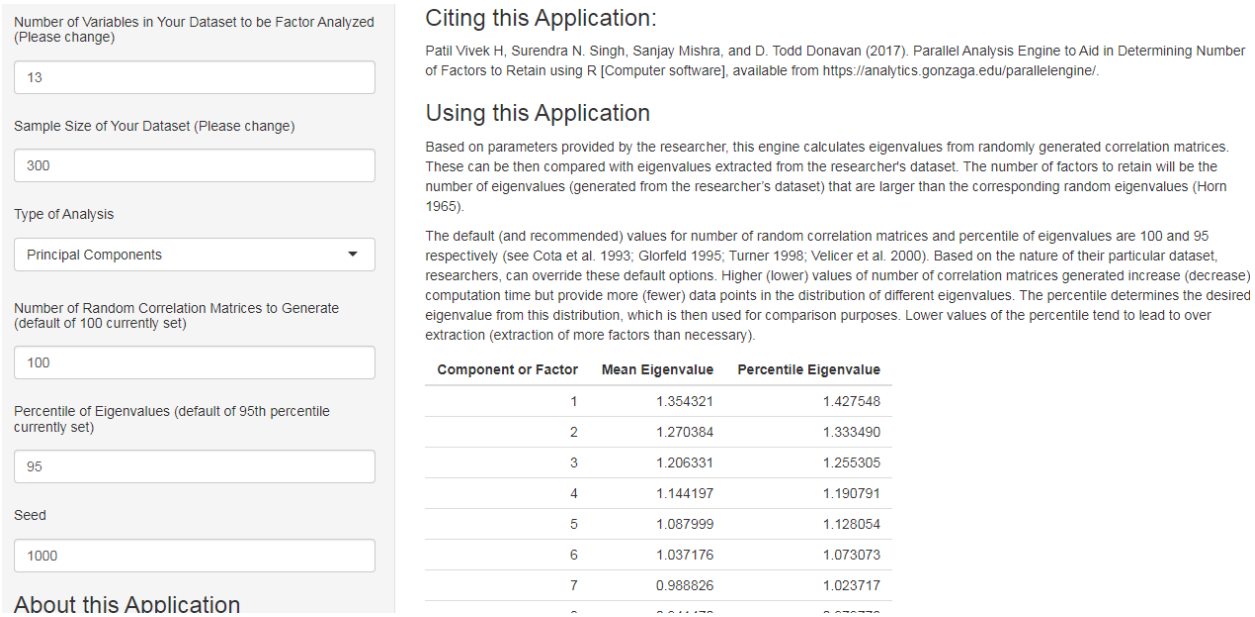

Figure 3: Parallel engine; a website for the random generation of factors in the exploratory factor analysis, Addis Ababa public hospitals, AA, Ethiopia (n=300).

Regarding the naming of the four factors; the names given in the Amharic version SDSCA translators are adopted used for this paper. The first factor encompasses three different items mainly explaining healthful eating plans over the week prior to the data collection period, average eating plan over a month just prior to the data collection and fruit and vegetable intake practices. The internal consistency of the items under the factor "diet" is 0.92. The Average variance extracted (AVE) and composite reliability are 0.76 and 0.90 respectively.

The factor loadings of the items are 0.937, 0.958 and 0.697 respectively. The factor is labeled as diet (የአመጋገብ ሁኔታ), directly adopted from the Amharic translation.

The second factor contains two items is namely thirty-minute physical activities in day-to-day life and any specific physical activities. The internal consistency of the items is 0.79 while the AVE and composite reliability are 0.65 and 0.783 respectively. The factor is named as physical activity (የአካል ብቃት እንቅስቃሴ).

The third one, with two items included, is all about blood glucose testing practice and recommended blood glucose testing practice. The internal consistency of the items, the AVE nad the Composite reliability are 0.93, 0.842 and 0.853 respectively. The name of the factor is blood glucose testing (□□□ □□□ □□□).

The fourth factor contains two items that states about inspecting the inside of the shoe and checking for the feet. The internal consistency of the items is 0.97. The AVE and composite reliability are 0.906 and 0.95 respectively. The name of the factor is foot care (የእግር እንክብካቤ) (see table 4).

Table 4 Final Rotated factor matrix with significant item loadings among DM patients in Addis Ababa public hospitals, AA, Ethiopia, 2023 GC (n=300)

Item	**Diet**	Physical activity	**Blood glucose testing**	Foot care
1. How many of the last seven DAYS have you followed a healthful eating plan?		.937		
2. On average over the past month, how many DAYS PER WEEK have you followed your eating plan?		.958		
3. On how many of the last SEVEN DAYS did you eat five or more servings of fruits and vegetables?		.697		
4. On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity? (Total minutes of continues activity, including walking).			.799	

5. On how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?	.812		
6. On how many of the last SEVEN DAYS did you test your blood sugar?		.915	
7. On how many of the last SEVEN DAYS did you test your blood sugar the number of times recommended by your health care provider?		.920	
8. On how many of the last SEVEN DAYS did you check your feet?			0.952
9. On how many of the last SEVEN DAYS did you inspect the inside of your shoes?			0.952

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

5.4.2.1. Construct validity of the SDSCA tool

The construct validity of the SDSCA tool was evaluated using both convergent and discriminant validity. Convergent validity loading of greater than 0.5, discriminate validity and no cross-loading can affirm construct validity.

5.4.2.1.1. Convergent validity

It assesses the degree to which two different measures of the same concept are correlated to each other. The presence of a large correlation is an indication that the 9-item new construct can approximates the 21 item extended SDSCA versions to a larger extent.

On top of these; the Average variance extraction (AVE) is a good measure of convergence between the items and its new construct. AVE is calculated by squaring each of the factor loadings; adding them together and finally dividing it by the number of items (i.e. 9). By doing so the AVE becomes 0.78 with composite reliability of 0.97. Since the AVE is greater than 0.5 and composite reliability is >0.7 we can say that there is convergence between the items and the new construct.

5.4.2.1.1. Discriminant validity

In order to affirm whether discrminant validity is fulfilled or not we compared the average variance extracted (AVE) between the four factors and the square of the highest correlation between the factors. As stated above the AVE is calculated to be 0.78. The highest correlation between the factors was found to be 0.29. The square of 0.29 became 0.084. Since the AVE (0.78) is greater than the square of the factor correlation (0.084) we can say that discriminant validity is fulfilled for the construct.

On top of this there is no cross-loading in the new 9-item construct. Since all the convergent validity, discriminant validity and absence of cross-loading are fulfilled we can conclude that construct validity is fulfilled.

5.5. Reliability of the Amharic version of the SDSCA tool

To see the reliability (internal consistency) of the 9-item SDSCA construct, Cronbach's alpha and composite reliability was calculated. The overall composite reliability is 0.853 which is much higher compared to the 0.7 minimum cut-off points. As displayed in Tables 5 below all of the items except two had a Cronbach's alpha of greater than 0.7. Even the rest two has approximately closer to 0.7 cronbach's alpha.

Table 5 The reliability of the 9-item Amharic version SDSCA construct among DM patients in Addis Ababa public hospitals, AA, Ethiopia, 2023 GC (n=300)

Items	Cronbach's Alpha if Item Deleted
1. How many of the last seven DAYS have you followed a healthful eating plan?	0.695
2. On average over the past month, how many DAYS PER WEEK have you followed your eating plan?	0.697
3. On how many of the last SEVEN DAYS did you eat five or more servings of fruits and vegetables?	0.724
4. On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity? (Total minutes of continues activity, including walking).	0.768
5. On how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?	0.781
6. On how many of the last SEVEN DAYS did you test your blood sugar?	0.739

7. On how many of the last SEVEN DAYS did you test your blood sugar the number of times recommended by your health care provider?	0.748
8. On how many of the last SEVEN DAYS did you check your feet?	0.748
9. On how many of the last SEVEN DAYS did you inspect the inside of your shoes?	0.746

5.6. Confirmatory factor analysis (CFA)

Based on the exploratory factor analysis done in the above sections; confirmatory factor analysis was done using the 9 items with a 300 randomly allocated sample which gives rich evidence regarding the stability of the scale. Here we did not use the traditional inductive method to come up with a latent variable; we initially specify all the four latent variables. CFA assumes latent variable causes the indicators (items) and arrows always point from latent variable to indicators. Unlike EFA in which it assumes a factor has relationship with all of the items, in CFA we considered that there is no relationship with the rest of the items other than those significantly loaded ones while conducting EFA. No arrow was placed b/n a factor and uncorrelated items. We are constraining the rest of the items to zero. Fixing parameters over-identifies the model, can test the fit of our prior model.

A latent variable (factor) has no inherent metrics. In order to fix the scale for each of the latent variables (factors) we made the factor loadings of one of the items of each factor to one. That item is the reference item and the scale of each of the factors will automatically retain the scale of the reference item (see figure 3 and table 6 below).

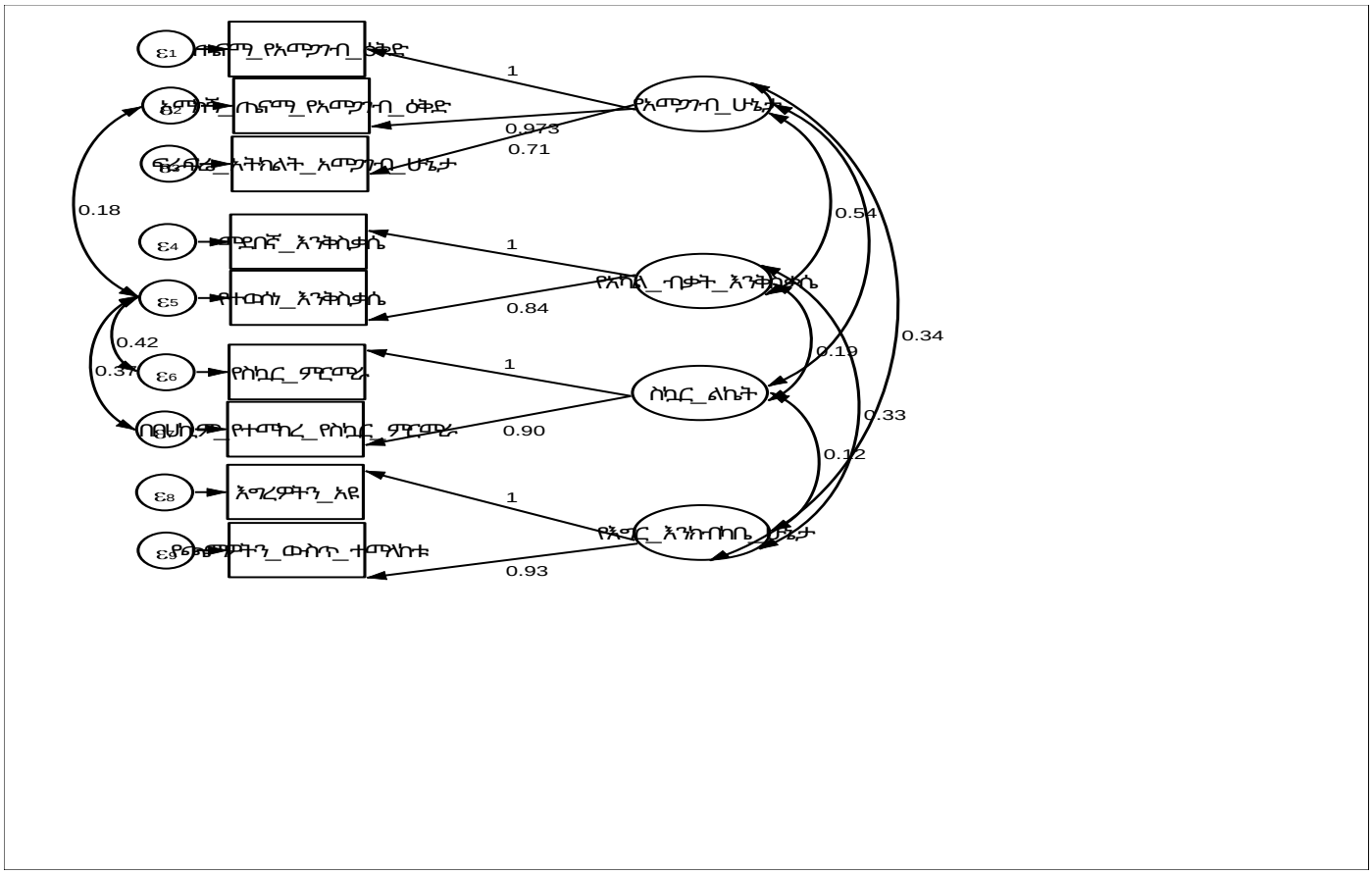

Figure 3 CFA diagrammatic illustration of the four-factor structure of the Amharic version (SDSCA) among diabetes patients at Addis Ababa public hospitals, AA, Ethiopia, 2023 GC (n=300).

Let us present the factor loadings of each of the indicator variables with their significant value (see table 6). As is shown in the table below, all factor loadings are statistically significant (all p's <0.001). Therefore we can say that all indicator variables significantly related to their respective factors.

Table 6 Factor loading of the ten items with their respective reference using confirmatory factor analysis among diabetes patients at Addis Ababa public hospitals, AA, Ethiopia,2023 GC. (N=300)

Items name	Un standardized Factor loading	p-value
Healthy diet plan over a week		
diet	1.00	
_constant	2.95	<0.0001
Average healthy diet plan over a month		
Diet	0.97	<0.0001
-constant	3.78	
Fruits and vegetable intake		
Diet	0.92	<0.0001
-constant	3.56	
Thirty minute exercise		
Physical activity	1.00	0.001
_Constant	3.13	
Specific exercise		
Physical activity	0.84	<0.0001
_Constant	1.89	
Blood glucose testing by yourself		
Blood glucose testing	1.00	0.003
-constant	2.88	
Recommended blood glucose testing days		
Blood glucose testing	0.90	<0.0001
-constant	4.12	
check your feet		
Foot care	1.00	0.004
_constant	1.89	
Inspect the inside of your shoes		
Foot care	0.93	0.001
_constant	1.56	

The covariance between diet (□□□□□□ □□□) and physical activity (የአካል ብቃት እንቅስቃሴ)፣ between diet (□□□□□□ □□□) and foot care (የእግር እንክብካቤ); diet (□□□□□□ □□□) and blood glucose testing (□□□ □□□ □□□ □□□) were all found to be non-significant with covariance and p-value of (cov=0.06: p-value=0.064), (cov=0.082; p-value=0.054) and (cov=0.033; p-value=0.068) respectively.

Maximum likelihood ratio (MLR) was used for the estimation of factor loading. Regarding the overall goodness of fit (Gof) test the root mean square error of approximation (RMSEA) became 0.084 above the 0.08 acceptable limit. The close turned out non-significant showing the stability of the model. Similarly the CFI and TLI became above the 0.9 assuring for the model fitness (see table 7).

Table 7 Goodness of fit (GoF) test of the model using the indicators MLR and RMSEA among diabetes patients at Addis Ababa public hospitals, AA, Ethiopia, 2023 GC.

Indicator	Estimate
MLR	
Chi_square	24.36
The P-value for the MLS	0.002
RMSEA	0.084 (0.051-0.097))
Close	0.074
CFI	0.92
TLI	0.95

CHAPTER SIX: DISCUSSION

The current study evaluated the validity and reliability of the Amharic version of the SDSCA tool in the Ethiopian population. The result will be useful to use a new SDSCA tool with a validated factor structure in a more culture-sensitive way. It is necessary to validate a tool in different languages and cultures to have approximately similar results.

The objective of the study was to determine the construct validity and reliability of the Amharic version of the SDSCA tool.

The revised SDSCA factor structure has five factors with 11 main items. The current study finding, both exploratory and confirmatory factor analysis, showed a factor structure of 4 with a total of 9 items. The only factor structure that didn't have loadings from items was "smoking". This might be due to the very nature of the study participants of the current study. As the mean age of the participants is around 52, most of them are beyond the adolescent and early adulthood period. Smoking among such population categories in Ethiopian context is much lower. On top of this higher proportion of the study participants are female who are also less likely to be smokers in Ethiopian context compared to males. Because of the above reasons we could not reveal much variation by using the item "smoking".

In both the EFA and CFA, the factor loading is on the same factor as the original factors, except for some items that loaded on either different factors or on two or more factors that were finally deleted. Item 4 is loaded into two factors, namely "diet" and "physical activity". Because of this, we removed it from the model. Item #4 has been reported as a problematic word by previous studies (17, 18). This item was also a problematic item in the Moroccan version study; it loaded on a different factor other than "diet" (19). The final Malay version replaced item #4 with another item from the expanded version. Findings from Ghana revealed that item #4 loaded only 0.16 on diet and was removed from the model, after which the power improved (21).

Both exploratory factor analysis and confirmatory factor analysis produced a 4-factor structure with 9 items. A study conducted in Morocco also reported a more or less similar

finding with a 4-factor structure and 8 items (19). Likewise, a study from Ghana reported a 4-factor structure with 10 items (21). Similarly, the Arabic version reported a 4-factor structure with 8 items (22). The 4-factor structures, namely "diet," "physical activities", "foot care," and "blood glucose test," are similar in the current study, the Morocco, Ghana, and Arabic studies.

The highest variance explained is by the factor "diet," which is around 26.97%. The other three factors explained 20.90%, 19.66%, and 15.08% of the variance. It is in line with the reports from the Arabic version, where the highest share of variance explained (34.4%) is due to the factor "diet" (22). In the current study, diet, exercise, and blood glucose testing collectively explained a variance of around 67%. In the Spanish version, the three factors (diet, exercise, and blood glucose testing) explained a variance of 61%, more or less similar to the current finding (13). In the current study, the cumulative variance explained by the four factors is 82.61%. The finding from the Moroccan version has an explained variance of 89.6% (18), a bit higher compared to the current study finding. The Arabic version, however, reported a bit lower explained variance, which is around 77.1% (22).

The average variance extracted (AVE) for the 9-item construct was 0.78 beyond the acceptable limit, indicating the fulfillment of the convergence validity of the construct.

The internal consistency of most of the domains is acceptable, greater than 0.7. One of the subscales of the factor "diet" has a little bit lower internal consistency compared to the acceptable standard level (item #3). However, it is in line with the original Spanish version, which also reported lower internal consistency on some of the subscales of diet (17). Similarly, the Malaysian version of SDSCA encountered a similar problem. It could be due to the very nature of the original construction (20).

Strengths of the study

We used a much larger sample size than the minimum adequate sample size. Performing the tool validation using both EFA and CFA with a separate sample makes the evidence stronger than merely doing it with either of them.

Limitations of the study

Test-retest reliability was not conducted, as we only interviewed the participants once. It will be better if test-retest reliability is tested in future studies.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

The construct validity of the Amharic version of SDSCA was evaluated using both exploratory and confirmatory factor analysis with a randomly selected, adequate sample size. As it fulfilled convergent validity, discrminant validity, and the absence of cross-loading of items to factors, we can conclude that the construct validity is met. The internal consistency of the construct in general was found to be in the acceptable range, suggesting the reliability of the construct. Overall, the reliability of the 9-item Amharic version of the SDSCA scale is reliable. Finally, we can conclude that this 4-factor structure with a 9-item scale is highly valid and reliable. From now on, the new SDSCA construct from the current study is called "the validated Amharic version of SDSCA".

Regarding the diabetes self-care activity scale in the Ethiopian context, researchers are highly recommended to use this validated tool. It is also recommended for clinicians to use the new construct to assess the self-care practices of their patients. It is recommended to validate it in the other local languages of the country to customize the application of the SDSCA tool to the local culture.

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Annex 1

1.1 Participant Information Sheet (English version)

Introduction

My name is …… I am working as a data collector for a master of public health student project in Addis Ababa University. We are conducting research entitled "Validation of the Amharic version of the summary of diabetic self-care activity scale (SDSCA) and assessment of self-care practice and associated factors among type 2 diabetic patients in Addis Ababa public hospitals".

Purpose of the study: - This study will examine the validity of the Amharic version of the summary of the diabetic self-care activity scale (SDSCA) among type 2 diabetic patients in Addis Ababa public hospitals**.**

Benefit: - There will be no direct benefit to you but based on the information you provide us, we will get a validated tool to assess diabetic self-care practice.

Risk: - I may ask you about your disease which may be personal information and may not be comfortable. However, the information you provide will have paramount importance in conducting
this research.

Procedures: - If you agree to participate in the study, you will be asked to answer some questions about research-related questions and yourself. The interview will take 25 minutes.

Your participation will be voluntary: - Your participation is purely based on your willingness and you have the right to choose not to take part in this study. If you choose to take part, you have the right to stop the interview at any time. If you are willing to participate or refuse or decide to withdraw later, you will not be subjected to any problems.

Confidentiality: - The information that you provide will be kept confidential by using codes and locking the data. No one will have access to the non-coded data except the investigators. The data will not be used for purposes other than the study.

Whom to Contact- If you have any questions, you may contact the person stated below.
Molla Gashu - Tele: +251912905618

1.2 Consent form

I understand the purpose of the study. The study has been explained to me in the language that I understand. I have had the opportunity to ask questions and the questions I asked have

been answered to my satisfaction. I consent voluntarily to be part of the study and understand that I

have the right to withdraw from the study at any time.

Participant

Signature_____ Date_____

Interviewer

Name_____ Signature_____

Questionnaires number_____

Date of interview_____ Starting time_____ Completed_____

Annex 2

Questionnaire (English version)

Part I: Socio-demographic characteristics of the respondents

S.No	Question	Response	Answer
101	Age	_____yrs	
102	Sex	• Male • Female • Not determined	
103	Marital status	• Single • Married • Divorced • Widowed • Separated	
104	Religion	• Orthodox • Muslim • Protestant • Catholic • Others (Specify_____)	
105	Educational status	• No formal education • Can't read and write • Read and write • Complete primary education • Complete Secondary education • Certificate/Diploma • Degree and above	

106	Occupational status	• Housewife • Gov't employee • Private sector employee • Self-employed/trader • Other (specify_____)	
107	Family income	_____birr	
108	Number of children	_____	
109	Resident	• Urban • Rural	

Part II: Clinically related variables

S.No	Question	Response	Answer
201	Duration of type 2 DM		
202	Current medication	• PO • Injection • Both	
203	Blood sugar	• Controlled • Not controlled	
204	Presence of diabetic complications	• Never • Had one complication • Had 2+complication	
205	Hypertension	• Yes • No	
206	Other chronic illness	• Yes (Mention_____) • No	

Part II: Revised Diabetes Knowledge Test (Note: answers will be removed during data collection)

S.No	Question	Response	Answer
301	The diabetes diet is:	• the way most Ethiopian people eat • a healthy diet for most people • too high in CHO for most people • too high in protein for most people	
302	Which of the following is highest in carbohydrates?	• Meat • Enjera • Sweet Potato • Bread	
303	Which of the following is highest in fat?	• Butter • Orange juice • Corn • Honey	
304	Which of the following is a healthy diet	• Any food that is "sugar-free" • Any food that has "fat-free" • Any unsweetened food	

		• All are correct	
305	A1C is a measure of your average blood glucose level for the past:	• Day • Week • 6-12 weeks • 6 months	
306	Which is the best method for home glucose testing?	• Urine testing • Blood testing • Both are equally good	
307	What effect does unsweetened fruit juice have on blood glucose	• Lowers it • Raises it • Has no effect	
308	Which should not be used to treat low blood glucose?	• 3 hard candies • ½ cup orange juice • ½ cup diet soft drink • 1 cup skim milk	
309	For a person in good control, what effect does exercise have on BG?	• Lowers it • Raises it • Has no effect	
310	What effect will an infection most likely have on blood glucose?	• Lowers it • Raises it • Has no effect	
311	The best way to take care of your feet is to:	• look at and wash them each day • massage them with alcohol each day • soak them for 1 hour each day • buy shoes a size larger than usual	
312	Eating foods lower in fat decreases your risk for:	• nerve disease • kidney disease • heart disease • eye disease	
313	Numbness and tingling may be symptoms of:	• kidney disease • nerve disease • eye disease • liver disease	
314	Which of the following is usually not associated with diabetes:	• vision problems • kidney problems • nerve problems • lung problems	

2.1. The summary of diabetes self-care activities

The question below asks you about your diabetes self-care activities during the past 7 days. If you were sick during the past 7 days, please think back to the last 7 days that you weren't sick.

	S.No	Think of the last 7 healthy days							
Diet	1	How many of the last seven DAYS have you followed a healthful eating plan?	1	2	3	4	5	6	7
	2	On average over the past month, how many DAYS PER WEEK have you followed your eating plan?	1	2	3	4	5	6	7
	3	On how many of the last SEVEN DAYS did you eat five or more servings of fruits and vegetables?	1	2	3	4	5	6	7
	4	On how many of the last SEVEN DAYS did you eat high-fat foods such as red meat o full-fat dairy products?	1	2	3	4	5	6	7
Exercise	5	On how many of the last SEVEN DAYS did you participate in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking).	1	2	3	4	5	6	7
	6	On how many of the last SEVEN DAYS did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work?	1	2	3	4	5	6	7
Blood sugar testing	7	On how many of the last SEVEN DAYS did you test your blood sugar?	1	2	3	4	5	6	7
	8	On how many of the last SEVEN DAYS did you test your blood sugar the number of times recommended by your health care provider?	1	2	3	4	5	6	7
Foot care	9	On how many of the last SEVEN DAYS did you check your feet?	1	2	3	4	5	6	7
	10	On how many of the last SEVEN DAYS did you inspect the inside of your shoes?	1	2	3	4	5	6	7
Smoking	11	Have you smoked a cigarette; even one during the past SEVEN DAYS?	0.No						
			1. Yes. If yes, how many cigarettes did you smoke on an average day? The number of cigarettes:_____						

Additional items for the expanded version of the summary of diabetes self-care activities.

S.No	Question	Response						
Diet								
12	On how many of the last SEVEN DAYS did you space carbohydrates evenly through the day?	1	2	3	4	5	6	7
Medications								
13	On how many of the last SEVEN DAYS, did you take your recommended diabetes medication?	1	2	3	4	5	6	7
14	On how many of the last SEVEN DAYS did you take your recommended number of diabetes spills?	1	2	3	4	5	6	7
15	On how many of the last SEVEN DAYS did you take your	1	2	3	4	5	6	7

	recommended insulin injections?							
Foot care								
16	On how many of the last SEVEN DAYS did you wash your feet?	1	2	3	4	5	6	7
17	On how many of the last SEVEN DAYS did you soak your feet?	1	2	3	4	5	6	7
18	On many of the last SEVEN DAYS did you dry between your toes after washing?	1	2	3	4	5	6	7

Self-care recommendations		
19	Which of the following has your healthcare team (doctor, nurse, dietician, or diabetes educator) advised you to do? Please check all that apply:	• Follow a low-fat eating plan • Follow a complex carbohydrate diet • Reduce the number of calories you eat to lose weight • Eat lots of food high in dietary fiber • Eat lots(at least 5 servings per day)of fruits and vegetables • Eat very few sweets (for example desserts, non-diet sodas, and candy bars) • Other(specify): • I haven't been given any advice about my diet by my healthcare team.
20	Which of the following has your health care team (doctor, nurse, dietician, or diabetes educator) advised you to do? Please check all that apply:	• Get low-level exercise (such as walking) on a daily basis. • Exercise continuously for at least 20 minutes at least 3 times a week. • Fit exercise into your daily routine (for example, take stairs instead of elevators, park a block away, and walk, etc.) • Engage in a specific amount, type, duration, and level of exercise • Other(specify):_____ • I haven't been given any advice about exercise by my healthcare team.
21	Which of the following has your healthcare team (doctor, nurse, dietician, or diabetes educator) advised you to do? Please check all that apply:	• Test your blood sugar using a drop of blood from your finger and a color chart. • Test your blood sugar using a machine to read the results. • Test your urine for sugar. • Other (specify):-------- • I haven't been given any advice either about testing my blood or urine sugar level by the healthcare team.
22	Which of the following medications for your diabetes has your doctor prescribed? Please check all that apply:	• Diabetes pills to control my blood sugar level. • Insulin • Other (specify): • I haven't been prescribed either insulin or pills for my diabetes.
Smoking		
23	At your last doctor's visit, did anyone ask about your smoking status?	1-No 2-Yes

24	If you smoked at your last doctor's visit, did anyone counsel you about stopping smoking or offer to refer you to a stop-smoking program?	1-No 2-Yes 3-Do not smoke.
25	When did you last smoke a cigarette?	• More than two years ago or never smoked • One to two years ago • Four to twelve months ago • One to three months ago • Within the last month • Today

1 . 4 . Amharic version questionnaire

ስለስኪር ህመም ግንዛቤ/እውቀት

ተ.ቁ	እውነት/ውሸት አይነት ጥያቄዎች	ምላሽ
301	የስኪር ህመም ምግብ ምንድን ነዉ	• ሀ.አብዛሃኛዉ ኢትዮጲያዊ የሚመገበዉ • ለ.ለአብዛኛው ሰው የሚሆን ጤናማ አመጋገብ ነው • ሐ ለአብዛኛው ሰው የሚሆን ሃይል ሰጭ ምግብ የበዛበት • መ.ለአብዛኛው ሰው የሚሆን ገንቢ ምግብ የበዛበት
302	ከሚከተሉት ከፍተኛ ሃይል ሰጭ ምግብ የትኛዉ ነዉ	• ሀ. የተጠበሰ ዶሮ ስጋ • ለ. ኤይቤ • ሐ. የተጠበሰ ድንች • መ. ለዉዝ እቤ
303	ከሚከተሉት ስብ የበዛበት ምግብ የትኛዉ ነዉ	• ሀ. ቅቤ • ለ. የብርቱካን ጭማቂ • ሐ. በቆሎ • መ. ማር
304	ጤናማ ምግብ የትኛዉ ነዉ	• ሀ. ስኪር ያልገባበት • ለ. ስብ ያልበዛበት • ሐ.ጣፋጭ ያልበዛበት • መ. ሁሉም ልክ ናቸዉ
305	ግላይኮሳይሌትድ ሄሞግሎቢን (HbA1c) የተባለው የደም ምርመራ የሚለካዉ የባለፈውን --- ጊዜ የስኪር መጠንዎትን ነው	• ሀ. 1 ቀን • ለ. 1 ሳምንት • ሐ. 6-12 ሳምንት • መ. 6 ወር
306	በቤትዎ የደም ስኪርን ለመለካት ተመራጩ መንገድ የተተኛዉ ነዉ	• ሀ. የሽንት ምርመራ • ለ. የደም ምርመራ • ሐ. ሁለቱም እኩል ጥሩ ናቸዉ
307	ስኪር ያልተጨመረበት የፍራፍሬ ጭማቂ የደም ስኪር መጠን ------ ያደርጋል	• ሀ. ይቀንሳል • ለ. ይጨምራል • ሐ. ለዉጥ አያመጣም
308	የወረደ የደም ስኪርን ለማስተካከል መጠቀም የለለብን የቱን ነዉ	• ሀ. ከረሜላ • ለ. የብርቱካን ጭማቂ

		• ሐ. ሚሪንዳ • መ. ወተት
309	የስኪር መጠንን በጥሩ ለተቆጣጠሩት ሰዎች የአካል እንቅስቃሴ ማድረግ ምን ተጽዕኖ ይኖረዋል	• ሀ. ይቀንሳል • ለ. ይጨምራል • ሐ. ለዉጥ አያመጣም
310	እንፌክሽን (እንደ ጉነፋን፣ ወባ፣የሳንባ ምች፣ ሌላ) በስኪር መጠን ምን ሊያደርጉ ይችላሉ	• ሀ. ይቀንሳል • ለ. ይጨምራል • ሐ. ለዉጥ አያመጣም
311	የእግረዎን ጤንነት ለመጠበቅ የተሻለዉ መንገድ የቱ ነዉ	• ሀ. በየቀኑ መታጠብ • ለ. በየቀኑ በአልኮል ማሸት • ሐ. ለ1ሰዓት በየቀኑ መዘፍዘፍ • መ. ሳፋ ያለ ጫማ ገዝቶ ማድረግ
312	አነስተኛ የቅባት መጠን ያላቸውን ምግብ መመገብ ለ----- ህመም ያለዎትን ስጋትን ይቀንሳል	• ሀ. ለነርቭ ህመም • ለ. ለኩላሊት ህመም • ሐ. ለልብ ህመም • መ. ለዓን ህመም
313	የሰውነት መደንዘዝና መጠዝጠዝ የምን ህመም ምልክት ሊሆኑ ይችላሉ	• ሀ. የኩላሊት ህመም • ለ. የነርቭ ህመም • ሐ. የዓይን ህመም • መ. የጉበት ህመም
314	ከስኪር ህመም ጋር ግንኙነት የሌለዉ የቱ ነዉ	• ሀ. የማየት ችግር • ለ. የኩላሊት ችግር • ሐ. የነርቭ ችግር • መ. የሳንባ ችግር

ለራስ የሚደረግ እንክብካቤ በ DSCA ስለመለካት

ተ.ቁ	**ጥያቄ** *(ባለፉት 7 ቀናት የታመሙ ከሆነ፣ እባኮትን ከዚያ በፊት ጤናማ የሆኑበትን 7 ቀናት ያስቡ)*	**ደረጃ**				
አመጋገብ						
1	ካለፉት 7 ቀናት ለስንት ቀናት ጤናማ የአመጋገብ ዕቅድ ተከተሉ?	0	1	2	3	4
2	በአማካኝ ባለፈው ወር ውስጥ በሳምንት ለስንት ቀናት ጤናማ የአመጋገብ ዕቅድ ተከተሉ?	0	1	2	3	4
3	ካለፉት 7 ቀናት ለስንት ቀናት ለ5 ወይም ከዚያ በላይ ጊዜ ፍራፍሬና አትክልት ተመገቡ?	0	1	2	3	4
4	ካለፉት 7 ቀናት ለስንት ቀናት ቅባት የበዛባቸዉ ምግብ እንደ ስጋ እና ያልተናጠ የወተት ምርት ወሰዱ?	0	1	2	3	4
የአካል እንቅስቃሴ						
5	ካለፉት 7 ቀናት ለስንት ቀናት በቀን ቢያንስ ከ20-30 ደቂቃ የአካል እንቅስቃሴ አደረጉ? (እርምጃን ጨምሮ በድምሩ ለተከታታይ እንቅስቃሴ ያደረጉበት).	0	1	2	3	4
6	ካለፉት 7 ቀናት ለስንት ቀናት የተወሰኑ የአካል እንቅስቃሴ (በቤት ውስጥ ወይም በስራ ምክኒያት ያደረጉትን ሳይጨምር) እንደ በእርምጃ መሄድ፣ ዋና፣ ብስክሌት መንዳት፣ እና ሌሎች ላይ ተሳተፉ?	0	1	2	3	4

የደምስኳር መጠን ልኬት						
7	ካለፉት 7 ቀናት ለስንት ቀናት የደም ስኳር መጠን ለክተዋል/ተለክተዋል	0	1	2	3	4
8	ካለፉት 7 ቀናት ለስንት ቀናት የደም ስኳር መጠን ለክተዋል/ተለክተዋል ሃኪም ባዘዘዎት መጠን	0	1	2	3	4
የእግር እንክብካቤ						
9	ካለፉት 7 ቀናት ለስንት ቀናት እግረዎትን (የእግር መዳፍ ጨምሮ) አዩ?	0	1	2	3	4
10	ካለፉት 7 ቀናት ለስንት ቀናት የጫማዎትን ውስጥ ተመለከቱ?	0	1	2	3	4
ማጨስ						
11	ባለፉት 7 ቀናት አንድም ጊዜ ቢሆን ሲጋራ አጨሰዋል?	1. አዎ 2. የለም				
	ለጥያቄ 411 መልስዎ 'አዎ' ከሆነ በቀን በአማካኝ ስንት ሲጋራ አጨሱ? _____ ሲጋራ					

የራስን ጤና መጠበቅ በተመለከተ ተጨማሪ ጥያቄዎች/ምክሮች

አመጋገብ								
12	ካለፉት 7 ቀናት ለስንት ቀናትኃይልሰጪምግቦችን (እንደእንጀራ፣ዳቦ፣ፓስታ፣ሩዝእናሌሎች) በማመጣጠንተመገቡ?	0	1	2	3	4	5	6	7
መድኃኒት									
13	ካለፉት 7 ቀናትለስንትቀናትየታዘዝልዎትንመድኃኒቶቸሁሉወሰዱ?	0	1	2	3	4	5	6	7
14	ካለፉት 7 ቀናትለስንትቀናትየታዘዝልዎትንየስኳርመቀነሻኪኒኒዎችወሰዱ?	0	1	2	3	4	5	6	7
15	ካለፉት 7 ቀናትለስንትቀናትየታዘዝልዎትንኢንሱሊንተወጉ?	0	1	2	3	4	5	6	7
የእግር እንክብካቤ									
16	ካለፉት 7 ቀናት ለስንት ቀናት እግርዎትን ታጠቡ?	0	1	2	3	4	5	6	7
17	ካለፉት 7 ቀናትለስንትቀናትእግሮትንበውኃዘፈዘፉ?	0	1	2	3	4	5	6	7
18	ካለፉት 7 ቀናትለስንትቀናትከታጠቡበኃላየእግርጣቶቸመካከልአደረቁ?	0	1	2	3	4	5	6	7

ስለ የራስን ጤና መጠበቅ ምክሮችን በተመለከተ		
19	የጤና ባለሙያዎች (ሐኪም፣ ነርስ ወይም የጤና መኮንን) ከሚከተሉት በየትኞቹ ላይ ምክር ለገሱዋቸሁ? ምክር ያገኛቸሁባቸው ሁሉ ላይ ምልክት አድርጉ:	• 1. ቅባት ያነሰው የአመጋገብ ዕቅድ መከተል • 2. የሰውነት ክብደት ለመቀነስ የሚወስዱትን የምግብ መጠን መቀነስ • 3. ጎመን፣ ገብስ፣ ባቄላ፣ አተር፣ ስንዴና ሌሎችን ከሌሎቹ በበለጠ መብላት • 4. ብዙ (በቀን ቢያንስ 5 ጊዜ) አትክልትና ፍራፍሬ መመገብ • 5. ጣፋጭ ምግቦች (እንደ ኬኮች፣ ማር፣ ከረሜላ) በጣም በትንሹ መመገብ • 6. ሌላ (ይገለጥ):_____ _____ • 7. በጤና ባለሙያዎች የኔን አመጋገብ በተመለከተ ምንም ምክር አልተሰጠኝም
20	የጤና ባለሙያዎች ከሚከተሉት በየትኞቹ ላይ ምክር ለገሱዋቸሁ? ምክር ያገኛቸሁባቸው ሁሉ ላይ ምልክት አድርጉ	• 1. በየቀኑ አነስተኛ የአካል እንቅስቃሴ (እንደ በእርምጃ መሄድ) ማድረግ • 2. በተከታታይ በቀን ቢያንስ ለ20 ደቂቃ በሳምንት ለ3 ጊዜ የአካል እንቅስቃሴ ማድረግ:: • የአካል እንቅስቃሴዎትን ከእለት ተለት ተግባራት (ለምሳሌ

		ባጃጅ/ፈረስ/ጋሪ/ታክሲ ከመጠቀም በእርምጃ መሄድ፣....ሌላ) ጋር ማስማማት • 3. በአይነት፣ በመጠን፣ በጊዜና በደረጃ የተወሰነ የአካል እንቅስቃሴ ላይ መሳተፍ • 4. ሌላ (ይገለጥ)፤_____ _____ • 5. በጤና ባለሙያዎች የኔን የአካል እንቅስቃሴ በተመለከተ ምንም ምክር አልተሰጠኝም
21	የጤና ባለሙያዎች ከሚከተሉት በየትኞቹ ላይ ምክር ለገሱዋችሁ? ምክር ያገኛችሁባቸው ሁሉ ላይ ምልክት አድርጉ	• 1. የደም ስኪር መጠን ከጣት ደም ላይ እንዲለካ • 2. የደም ስኪር መጠን በላብራቶሪ ማሽን እንዲለካ • 3. በሽንት ዉስጥ ያለ የስካር መጠን ስለመለካት • 3. ሌላ (ይገለጥ)፡ _____ • 4. ስለ ደም ስኪር መለካት ምንም ምክር አልተሰጠኝም
22	ከሚከተሉት መድኃኒቶች የትኞቹን ለስኪር ህመሞት ታዘዙላችሁ? የታዘዙላችሁ ሁሉ ላይ ምልክት ያድርጉ	• 1. የስኪር መቀነሻ ኪኒን • 3. ሌላ (ይገለጥ)፡ _____ • 4. ለስኪር ህመሜ ምንም መድኃኒት አልታዘዘልኝም
ሲጋራ ማጨስ		
23	በመጨረሻው ጉብኝቶት ከጤና ባለሙያ (ሐኪም፣ ነርስ፣ የጤና መኮንን) ስለ እርሶ የማጨስ ሁኔታ የጠየቅዎት ነበሩ?	1. አዎ 2. የለም
24	የሚያጨሱ ከሆነ በመጨረሻው የጤና ባለሙያ ጉብኝቶት ማጨስ እንዲያቆሙ የመከርዎት ነብሩ?	1. አዎ 2. የለም
25	ለመጨረሻ ጊዜ ሲጋራ ማጨስ ያቆሙት መች ነው?	• 1. በጭራሽ አጭሼ አላውቅም • 2. ከ2 ዓመታት በፊት • 3. ከ1 እስከ 2 ዓመት በፊት • 4. ከ4 እስከ 12 ወራት በፊት • 5. ከ1 እስከ 3 ወራት በፊት • 6. በ1 ወር ውስጥ • 7. ዛሬ

2.2. The validated Amharic version SDSCA

ክፍል	ጥያቄ	ቀን						
		1	2	3	4	5	6	7
1. የአመጋገብ ሁኔታ	1. ካለፉት 7 ቀናት ለስንት ቀናት ጤናማ የአመጋገብ ዕቅድ ተከተሉ?							
	2. በአማካኝ ባለፈው ወር ውስጥ በሳምንት ለስንት ቀናት ጤናማ የአመጋገብ ዕቅድ ተከተሉ?							
	3. ካለፉት 7 ቀናት ለስንት ቀናት ለ5 ወይም ከዚያ በላይ ጊዜ ፍራፍሬና አትክልት ተመገቡ?							
2. የአካል ብቃት እንቅስቃሴ	4. ካለፉት 7 ቀናት ለስንት ቀናት በቀን ቢያንስ ከ20-30 ደቂቃ የአካል እንቅስቃሴ አደረጉ? (እርምጃን ጨምሮ በድምሩ ለተከታታይ እንቅስቃሴ ያደረጉበት).							
	5. ካለፉት 7 ቀናት ለስንት ቀናት የተወሰኑ የአካል እንቅስቃሴ (በቤት ውስጥ ወይም በስራ ምክኒያት ያደረጉትን ሳይጨምር) እንደ በእርምጃ መሄድ፣ ዋና፣ ብስክሌት መንዳት፣ እና ሌሎች ላይ ተሳተፉ?							
3.የደም የስኳር መጠን ልኬት	6. ካለፉት 7 ቀናት ለስንት ቀናት የደም ስኳር መጠን ለክተዋል/ተለክተዋል							
	7. ካለፉት 7 ቀናት ለስንት ቀናት የደም ስኳር መጠን ለክተዋል/ተለክተዋል ሃኪም ባዘዘዎት መጠን							

4. የእግር እንክብካቤ ሁኔታ	8. ካለፉት 7 ቀናት ለስንት ቀናት እግረዎትን (የእግር መዳፍ ጨምሮ) አዩ?								
	9. ካለፉት 7 ቀናት ለስንት ቀናት የጫማዎትን ውስጥ ተመለከቱ?								

የራስን ጤና መጠበቅ በተመለከተ ተጨማሪ ምክሮች

ስለ የራስን ጤና መጠበቅ ምክሮችን በተመለከተ		
10.	የጤና ባለሙያዎች (ሐኪም፣ ነረስ ወይም የጤና መኮንን) ከሚከተሉት በየትኞቹ ላይ ምክር ለገሱዋቸሁ? ምክር ያገኛችሁባቸው ሁሉ ላይ ምልክት አድርጉ:	• 1. ቅባት ያነሰው የአመጋገብ ዕቅድ መከተል • 2. የሰውነት ክብደት ለመቀነስ የሚወስዱትን የምግብ መጠን መቀነስ • 3. ጎመን፣ ገብስ፣ ባቄላ፣ አተር፣ ስንዴና ሌሎችን ከሌሎቹ በበለጠ መብላት • 4. ብዙ (በቀን ቢያንስ 5 ጊዜ) አትክልትና ፍራፍሬ መመገብ • 5. ጣፋጭ ምግቦች (እንደ ኬኮች፣ ማር፣ ከረሜላ) በጣም በትንሹ መመገብ • 6. ሌላ (ይገለጥ):_____ _____ • 7. በጤና ባለሙያዎች የኔን አመጋገብ በተመለከተ ምንም ምክር አልተሰጠኝም
11.	የጤና ባለሙያዎች ከሚከተሉት በየትኞቹ ላይ ምክር ለገሱዋቸሁ? ምክር ያገኛችሁባቸው ሁሉ ላይ ምልክት አድርጉ	• 1. በየቀኑ አነስተኛ የአካል እንቅስቃሴ (እንደ በእርምጃ መሄድ) ማድረግ • 2. በተከታታይ በቀን ቢያንስ ለ20 ደቂቃ በሳምንት ለ3 ጊዜ የአካል እንቅስቃሴ ማድረግ:: • የአካል እንቅስቃሴዎትን ከእለት ተለት ተግባራት (ለምሳሌ ባጃጅ/ፈረስ/ጋሪ/ታክሲ ከመጠቀም በእርምጃ መሄድ፣....ሌላ) ጋር ማስማማት • 3. በአይነት፣ በመጠን፣ በጊዜና በደረጃ የተወሰነ የአካል እንቅስቃሴ ላይ መሳተፍ • 4. ሌላ (ይገለጥ)፤_____ _____ • 5. በጤና ባለሙያዎች የኔን የአካል እንቅስቃሴ በተመለከተ ምንም ምክር አልተሰጠኝም
12.	የጤና ባለሙያዎች ከሚከተሉት በየትኞቹ ላይ ምክር ለገሱዋቸሁ? ምክር ያገኛችሁባቸው ሁሉ ላይ ምልክት አድርጉ	• 1. የደም ስኳር መጠን ከጣት ደም ላይ እንዲለካ • 2. የደም ስኳር መጠን በላብራቶሪ ማሽን እንዲለካ • 3. በሽንት ዉስጥ ያለ የስካር መጠን ስለመለካት • 3. ሌላ (ይገለጥ): _____ • 4. ስለ ደም ስኳር መለካት ምንም ምክር አልተሰጠኝም
13.	ከሚከተሉት መድኃኒቶች የትኞቹን ለስኳር ህመሞት ታዘዙላችሁ? የታዘዙላችሁ ሁሉ ላይ ምልክት ያድርጉ	• 1. የስኳር መቀነሻ ኪኒን • 3. ሌላ (ይገለጥ): _____ • 4. ለስኳር ህመሜ ምንም መድኃኒት አልታዘዘልኝም
ሲጋራ ማጨስ		

14.	በመጨረሻው ጉብኝቶት ከጤና ባለሙያ (ሐኪም፣ ነርስ፣ የጤና መኮንን) ስለ እርሶ የማጨስ ሁኔታ የጠየቅዎት ነበሩ?	1. አዎ 2. የለም
15.	የሚያጨሱ ከሆነ በመጨረሻው የጤና ባለሙያ ጉብኝቶት ማጨስ እንዲያቆሙ የመከርዎት ነብሩ?	1. አዎ 2. የለም
16.	ለመጨረሻ ጊዜ ሲጋራ ማጨስ ያቆሙት መች ነው?	• 1. በጭራሽ አጭሼ አላውቅም • 2. ከ2 ዓመታት በፊት • 3. ከ1 እስከ 2 ዓመት በፊት • 4. ከ4 እስከ 12 ወራት በፊት • 5. ከ1 እስከ 3 ወራት በፊት • 6. በ1 ወር ውስጥ • 7. ዛሬ