

**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF NURSING AND MIDWIFERY
DEPARTEMENT OF NURSING**



**KNOWLEDGE AND SELF-REPORTED PRACTICE OF INSULIN
INJECTION DEVICE DISPOSAL AND ASSOCIATED FACTORS
AMONG DIABETES PATIENT IN TIKUR ANBESSA SPECIALIZED
TEACHING HOSPITAL ADDIS ABEBA , ETHIOPIA, 2020**

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I, the undersigned MSc student, declare that I have submitted my original work on a title of knowledge and self-reported practice of insulin injection device disposal and associated factors among diabetes patients in TASH, Addis Ababa, Ethiopia for the examination.

Submitted by:

Name of student

Signature

Date

This thesis work has been submitted for examination with my approval as an advisor.

Approved by:

1. _____

Name of Major Advisor

Signature

Date

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Date

Statement of declaration

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

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LISTS OF ACRONYMS AND ABBREVIATIONS

AAU:	Addis Ababa University
AOR:	Adjusted odds ratio
COR:	Crude odds ratio
CI:	Confidence interval
DM :	Diabetic mellitus
GURH:	Gondar University Referral Hospital
HBV:	Hepatitis B virus
HCV:	Hepatitis C virus
HCP:	Health care professional
HIV:	Human immune deficiency virus
IDF :	International Diabetes Federation
MOH:	Ministry of Health
WHO:	World Health Organization

Abstract

Background: Poor disposal practices of insulin injection device among diabetes patients causes gathering of sharps with in their home and which can result in personal injury and injuries to people in the household and general community. This can also results in the spread of blood born infections . .

Objectives: The aim of this study was to assess knowledge and self -reported practice of insulin injection device disposal and associated factors among diabetes patients in Tikur Anbessa Specialized Teaching Hospital, Addis Ababa, Central Ethiopia.

Methods: A hospital based cross-sectional study was employed among 182 diabetes patients on follow-up at Tikur Anbesa Specialized Hospital, Addis Ababa from March/ 17/2020- May/18/ 2020 . Data was collected using a pre-tested interviewer administered questionnaires and then coded and entered into Epi-data version 4.6 and then exported into SPSS version 25 for analysis. Descriptive data was presented using frequency, percentage and central tendencies was conducted to describe and summarize the characteristics of study subjects . Bivariable logistic regression analysis was carried out and variables with p-value <0.25 in this analysis was included in to the multivariable logistic regression analysis. Adjusted odds ratio with 95% confidence interval was estimated to identify the significant predictors. Finally, a p-value <0.05 used to declare statistical significance of the explanatory variables.

Results: More than half of participants (54%) had inadequate knowledge towards safe insulin injection waste disposal. Majority of respondents had poor practice and 92.3% of respondents unaware of how to dispose lancets after use and 69.2% of respondents threw sharps on street, flush down to toilet and river.

Conclusion and recommendation: Findings from presents study showed that knowledge and practice of the respondents were inadequate and poor towards safe insulin injection waste disposal in study area. The ministry of health should develop guideline on management of insulin injection device wastes generated at home.

Keywords: Addis Ababa, Diabetes Patient, Disposal, Injection device, Knowledge, Practice

CHAPTER I

INTRODUCTION

1.1. Background

Diabetes Mellitus (DM) is a group of metabolic diseases and its typical feature is increased blood glucose level in the body and leads to disturbances in the metabolism of carbohydrates, proteins and fats(1) and DM often results from destruction of beta cells of pancreases which in turn leads to defect in insulin secretion. DM often leads to organs dysfunction of organs such as eyes, kidneys, nerves, brain, heart and blood vessels (1). It is a serious long term condition with major impact on the lives and wellbeing of individuals, families, and societies worldwide. It is among the top 10 causes of death in adults, and was estimated to have caused four million deaths globally (2).

The International diabetes Federation (IDF) estimate that, a total of 463 million adults were living with diabetes in 2019 worldwide (2). This represents 9.3% of the global adult population (20–79 years) and if these trends continue the prevalence is expected to increase 700 million (10.9%) in 2045. From the 463 million adults living with diabetes in 2019 according to IDF, half (50.1%) were unaware of having the diseases. The IDF also indicated that both high-income (10.4%) and middle-income countries

(9.5%) had the highest diabetes prevalence compared to low-income countries (4.0%) though higher proportion of undiagnosed diabetes was found in low- and middle-income countries including African region(2).

Africa had 19 million adults (20-79 years old) living with diabetes in 2019 and this is projected to rise to 47 million in 2045 with the prevalence 4.4% but 3 in 5 people living with diabetes does not know they have the disease (2). The IDF further described that 3 in 4 deaths due to diabetes in Africa were in people under the age of 60 years in 2019.

Ethiopia is currently challenged by the growing magnitude of non-communicable diseases including diabetes. According to IDF 2019 estimate, Ethiopia is one of the top five African

countries having the highest number of people living with diabetes(2). According to IDF 2019, 1.7 million (3.1%) adults (20-79 years) in Ethiopia had diabetes in 2019, with age-adjusted prevalence of 4.3%while 68% of the populations were with undiagnosed diabetes.

For managing and controlling of diabetes mellitus patients administer insulin at their home and use different types medical instruments such as insulin pens, needles, and syringes As the World Health Organization (WHO)defined sharps as items that could cause cuts or puncture wounds and they include include needles, hypodermic needles, scalpel, and other blades, knives, infusion sets, saws, broken glass, and nail as”(3, 4).

Every time, for controlling and managing DM, patients measure their blood glucose and inject insulin daily at their home procedures constantly generate sharps within the household. Incorrect disposal of used sharps has the ability to cause many public health hazards (5). The problems related with unsafe disposal of used sharps include injury to the person and blood-borne infections via needle stick injuries to others (5, 6).

Self-administration of insulin and self-monitoring of blood glucose are very important for keeping blood glucose levels at target values, and these help to control diabetes and prevent complications (5).Safe disposal of used syringes and needles is important for the prevention of unintended injuries from unsafely disposed needles (6).

1.2. Statement of the problem

Improper needle disposal is a global public health problem in both developed and developing countries(7).Although diabetes-related technologies, like insulin pens and lancets made the management and control of diabetes more convenient in home settings, these technologies are also associated with arise in medical waste at the household level since diabetes patients receive at least four insulin injections and test their blood glucose levels 1-10 times daily (5).

According to recent estimates of WHO, nearly 16 billion insulin injections are administered annually worldwide (8). Even though proper disposal of the health care waste has become a global concern,needles and lancets used by diabetic patients are not always disposed in proper way and WHO further indicated that 10-25% health care wastes are hazards (8).

Proper disposal of used sharp medical wastes is the neglected component of essential measures to prevent health care hazards(3, 4, 7, 9).Poor disposal practices among diabetes patients lead to the accumulation of sharps within the household and can potentially result in personal injury and injuries to people in the household and general community. This can also results in the spread of blood born infections like hepatitis B virus (30%), hepatitis C virus (1.8%) and human immune deficiency virus (0.3%)(7).

The proportion of diabetic patients throwing sharps needles in household waste bin approximately ranges from 50% to 90% (3, 9). This report also indicate that needle-stick injuries are one of the top three injuries reported by waste management companies. Diabetes patients continuously use insulin injection devices as part of their daily diabetes care,however majority of them are unaware of how to properly dispose these injection devices. Moreover, some diabetic patients simply throw their used needles in the trash bins or flush them down the toilet and this poses a risk of injury or spread of infections(9).

Diabetes patients represent a significant population of injection material users their practice have implications for community health. The majority of insulin users inject themselves at home but there is no alternative safe disposal method for needles or lancets at house hold level even in developed countries (10). Diabetes patients commonly reuse Insulin needle this especially true in country with limited resource poor countries where public facilities that serve a majority of clients with diabetes typically provide few number of needles required by each insulin user and

where patients often do not have the financial resources to supplement the material they receive free of charge(10).

According to a finding from a multi-center study it was revealed that about 47% to 68% of various injection needles were thrown into the household bin and below 10% of cases specific containers were used to dispose insulin injection waste (3, 4). Studies findings from resource shortage countries have also showed poor disposal practices among 80–90% of diabetic patients (3, 4).In addition, over 90% and 84% of diabetic patients in Pakistan and India respectivelydiscarded injection devices into the household garbage bins(11, 12)

Even though, medical sharp handling and disposal in health care setting is well regulated, their no attention given for sharps produced in household level and community settings (7). A study form South Africashowed that that majority of patients (97%) disposed used needles directly into their household garbage bin and, 2.0% of diabetes patients took and disposed their sharps at health care facilities(13).

There are several factor associated with proper disposal of sharps used by diabetes patients such as, absence of information about how and where to dispose, proper advice from healthcare practitioners, awareness ,missperception about sharp disposal, and administration of insulin by diabetes patients by them selves and long duration of diabetes(3).

However, there is shortage of data concerning the knowledge and practice of the diabetes patients towards insulin injection device waste disposal at house hold level in the study area . The purpose of present study is therefore to assess the knowledge and self- reported practice of diabetes patients about insulin injection device disposal in TASH,Addis Ababa, Ethiopia

CHAPTER II

LITERATURE REVIEW

2.1. Knowledge of insulin injection device disposal

Despite proper disposal of used insulin injection devices play an important role in preventing infection, most of the study conducted showed that knowledge and practice of insulin injection device disposal was poor among diabetes patients.

A study done India showed that only 3.6 % of respondents had correct knowledge about safe disposal method of insulin injection devices(12). Furthermore, the same study showed that about two-thirds of the participants (65.9%) had moderate level of knowledge while less than one third of them (23.8%) had the high level for knowledge and (10.3%) respondents had low level of knowledge about household sharp waste disposal management. The study in Philippine further described that respondents appeared to have moderate knowledge towards the correct disposal of insulin syringes and needles but only 23.7% had acceptable disposal techniques techniques(14).

According to study reported from the United Arab Emirate, approximately 60% of patients know how to dispose used sharps and 70% are aware of the hazards of unsafe disposal of sharps(9). Nevertheless, slightly more than 50% of participants expressed satisfaction with their way of disposal of sharps by throwing in general household waste. Study conducted in Pakistan reported that 16% of patients knew transmission of hepatitis, and HIV (11). Knowledge about the transmission of hepatitis and HIV varied based on education level, with 22% of those who could not read/write having knowledge about the transmission of hepatitis/HIV through sharing previously used needles compared to 26% of those who could read/write.

According to study conducted in Gondar town North West Ethiopia, approximately half of the participants (49.5%) had poor knowledge, 29.5% had moderate level of knowledge, and the remaining 21% of respondents had good knowledge about insulin injection device disposal and majority of participants (63.3%) did not know how to dispose lancets(3).

2.2. Practice on insulin injection device disposal

According a study conducted in Pakistan, majority of the participants incorrectly disposed of syringes, needles and lancets in the household garbage collection bins even though half of the patients were educated about the proper disposal of used sharps, greater number of patients discarded their used sharps along with other household waste into the same garbage collection bin and small number of patients reported using a sharps disposal box to dispose of used devices (11).

A study reported from Brazil suggested presence of malpractice in insulin injection device disposal. This study showed that 57.1% of participants disposed used syringes, needles, lancets, insulin vials, cotton, reagent tapes and pens in their normal household waste and (63.8%) patients did not have appropriate container to discard the materials(1). Similarly, a study conducted in Turkey revealed that 80.6% of the patients in the study reported throwing their insulin pens and needles into the household trash and 86.1% of participants reported that they discarded their household waste into street trash receptacles (5). Likewise, 87.5% and 86.1%, respectively reported getting rid of the lancets used in measuring blood glucose levels and empty pens/vials by tossing them into street trash receptacles.

A study conducted in Pilipino described that greater number of patients do not practice acceptable sharps disposal methods in which below half (44%) of the respondents gave a positive response and almost two-thirds of the respondents were actually unwilling to bring their sharps to the hospital for disposal and below a quarter (25%) of patients dispose of their insulin syringes and needles properly (14). Similarly, a study in Sri Lanka, majority of asked patients, they handled household sharps unsafely and disposed sharps loosely or into the household common garbage bin (15).

A study conducted in Indian showed that majority of respondents improperly discard their sharps (84.4%) including disposal of their sharps in household garbage bins, but only 16.9% had informed their garbage handlers on the presence of sharps in garbage (12). Sharps were regularly discarded in household garbage as reported by majority of the respondents (84.4%) while a few (10.6%) collected their sharps. Likewise, study conducted in Virginia identified that a large percentage of individuals who incorrectly disposed of used insulin needles. Nearly half(46%) of

respondents reported that they threw needles directly into the trash when at home, and 22.5% reported discarding used needles directly into the trash when away from home(6).

According study conducted in South Africa, more than 97% of the study population discarded their sharps improperly, (88%) patients disposed of used needles directly into their household rubbish bins, (6%) flushed used needles down the toilet into the sewage system, (3%) used other methods like burying the needles and only (2.2%) patients returned their needles in puncture-resistant containers to the hospital for disposal (13). The same study conducted in Malaysia showed that only (11.5%) patients managed to dispose their used sharps at a health care facility, either at health clinics or hospitals(16).

According to a study conducted in Gondar town North West Ethiopia, majority of the participants (80.7%) reported poor practice of insulin device disposal(3) . The study also reported that about 40% study participants had flushed down insulin injection device in the toilet, 36.2% discarded of insulin injection device directly into household garbage bin and nearly below 75% of diabetic patients in this study do not recap insulin syringe during disposal.

2.3. Factors associated with knowledge and practice of insulin injection devices disposal

Proper insulin injection devices disposal are influenced by different factors such as absence of information about how and where to dispose, shortage of proper advice from healthcare practitioners, lack of awareness , miss perception about sharp disposal, and administration of insulin by diabetes patients themselves , long duration of diabetes and long duration of insulin use(3).Deficiency of information on how to carefully dispose of sharps is a problem that can be corrected by health care professionals providing diabetes patients with adequate information, education , advice and by developing awareness programs that target the public in general and diabetics in particular.

Study conducted in Indian reported that few number of respondents (14.2%) had received information on sharp waste management from their healthcare provider while (20.5%) had similar information through their needle seller, chemist and or friend(12). Similarly Study done Sri Lanka, reported that a small number of of the patients had got education concerning methods of correct disposal of sharps and majority of patients not received any education about

sharps disposal methods or transmission of blood-borne infection through a needle stick injury(15).

According to study done in Philippine factors that negatively impact on safe disposal used insulin injection devices includes longer duration of diabetes mellitus and longer duration of insulin and , greater than half of the respondents (59.7%) received advice regarding sharps disposal(14). The same study from Sri Lanka, reported that patients who got education about sharp disposal were more likely to dispose of them “safely and those who injected insulin for below 1 year had good sharp disposal practice than those who injected insulin for above 1 year(15).

In a study conducted in Turkey, the participants reported that they were uninformed about the need to dispose of the medical waste such as insulin needles, lancets and blood glucose test strips. In this study ,greater than three-quarters (80%) of the patients had not received education about how household medical waste should be discarded and only 10% of the diabetes reported obtaining medical waste receptacles from their municipalities (5). Likewise a study done in Virginia, USA, below half (40.0%) of respondents recalled being educated about how to dispose of their used needles (6).The same study shows that 50% of the participants received information safe disposal of insulin injection device in physician office, 25% in the pharmacy, and 60% from nurses.

According to a study done in Malaysia, the duration of diabetes is one of the known influencing factors for diabetes self-care practices and there is a significant association between duration of diabetes and sharp return at healthcare facilities was observed(16). Patients who had diabetes for less than five years had almost three times higher chance to return the sharps at health care facilities, as compared to those with diabetes for greater than five years as well as patients who ever received advice on sharp disposal were six times more likely to bring their used sharps at health care facilities to be properly disposed, as compared to those who never received any advice before .The same study conducted in South Africa showed that less than 4% of patients had received any counseling about correct sharps disposal practice (13).

Study conducted in Gondar town North West Ethiopia, showed that type of DM and duration of insulin use also affects knowledge and practice of patients.patients with type 1 DM and those

use insulin for greater than 5years had good knowledge and practice than those who had type 2 DM and used insulin for below 1 year and the knowledge and practice of patients who took information from their physician was higher than those do not received information (3).

Conceptual frame work

After review of many literatures (1, 3-7, 9-17) the researcher developed a conceptual framework (Figure 1) to show the potential relationship of knowledge and self-reported practice of insulin injection device disposal with factors. This is to show how the particular variables in the study are related to each other and identify the variables required in the research investigation.

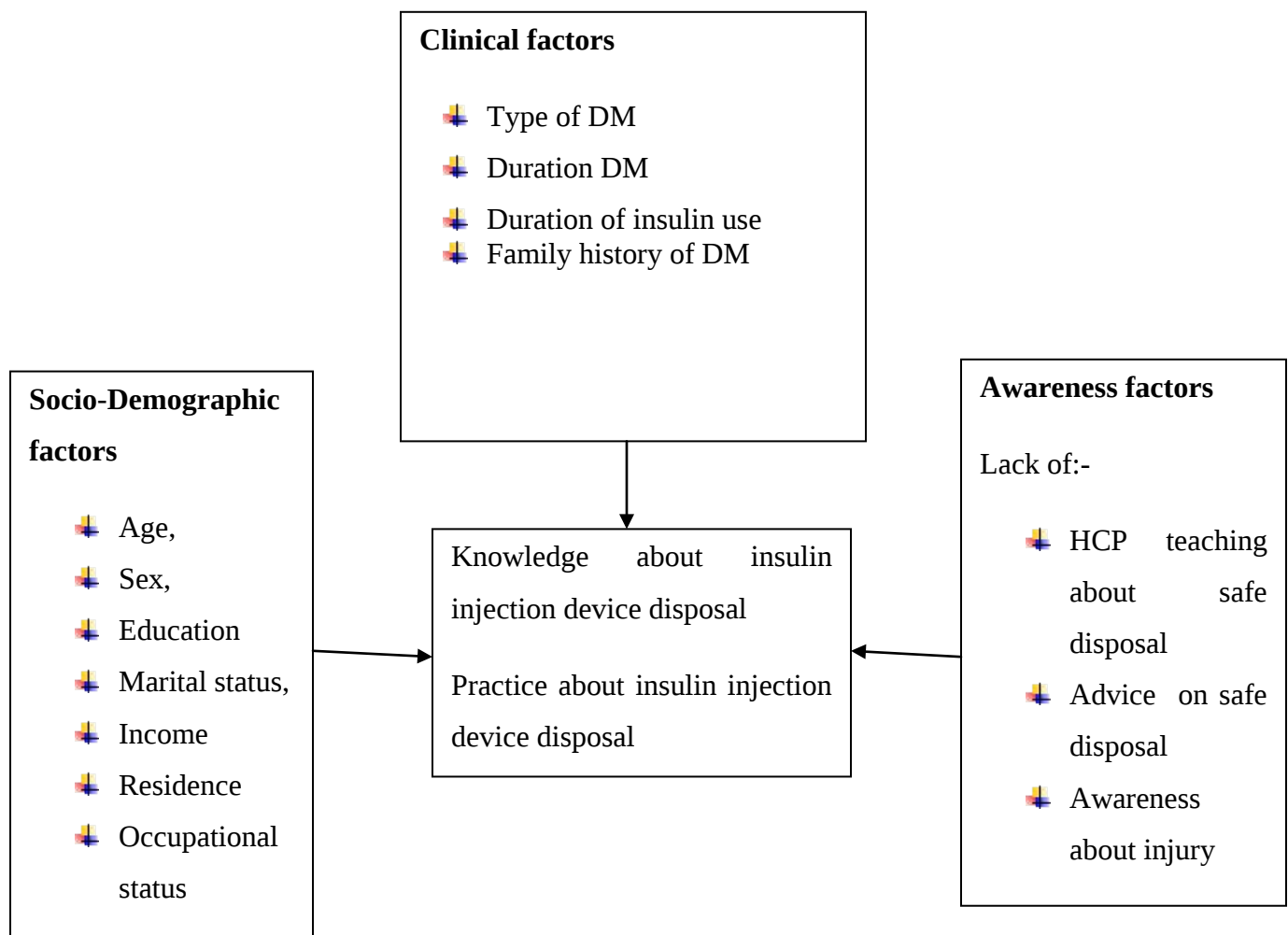


Figure1. Conceptual framework for the study of knowledge and self-reported practice of insulin injection device disposal and associated factors among diabetes patients.

2.4. Justification of the study

Ethiopia is one of the developing countries where there is an increasing magnitude of diabetes mellitus. A large number of patients also use insulin injection device for their daily administration of insulin but there is no research done in study area before on knowledge and self-reported practice of insulin injection devices disposal among diabetes patients and their associated factors were not well known. The researcher had intended to fill the knowledge as well as practice gap on insulin injection devices disposal and associated factors among diabetes patients in study area.

2.5. Significance of the study

The findings from the study will benefit patients, health care worker, researchers, policy makers and other stakeholders as outlined below.

- ✓ It provides information to identify level of Knowledge and practice among diabetes patients and factors contributing to non compliance with insulin injection device disposal management guidelines.
- ✓ The study also provides information for policy makers and stakeholders about existing situations of insulin injection device disposal to plan measures to mitigate improper waste management.
- ✓ The study may identify gaps for researchers who would like to conduct detailed and comprehensive studies in future
- ✓ Study will serve as a baseline for future studies that develop and implement interventions that support patients in safe disposal of insulin injection devices.
- ✓ The findings will also provide scientific evidence required to guide policy design in diabetes care concerning safe disposal of injections wastes.

CHAPTER III

OBJECTIVES

3. 1. General objective

To assess knowledge and self-reported practice of diabetes patients toward insulin injection device disposal and associated factors in Tikur Anbesa Specialized Teaching Hospital, Addis Ababa, Central Ethiopia from March /17/2020-May/18/2020 .

3.2. Specific objectives

- 1) To measure knowledge of diabetes patients about insulin injection device disposal in Tikur Anbesa Specialized teaching Hospital .
- 2) To assess practice of diabetes patients about insulin injection device disposal in Tikur Anbesa Specialized teaching Hospital.
- 3) To identify factors associated with the knowledge and practice of diabetes patients about insulin injection device disposal in Tikur Anbesa Specialized teaching Hospital

CHAPTER IV

METHODOLOGY

4.1. Study Area and Period

The study was conducted in Tikur Anbessa Specialized Teaching Hospital in Addis Ababa Ethiopia. Addis Ababa is the capital city of Ethiopia has an estimated population of closer to 4 million(18) and boasts the highest concentration of industry, commerce and social services in Ethiopia. It has the very best highest concentration of healthcare facilities and trained healthcare practitioners with in the country. The city is almost at the geographic center of the nation, covering an area of 527 ansquare kilometer and the population density is estimated to be near 5,165 individuals per square kilometer available.

The study was conducted in the diabetes clinic of Tikur Anbessa Specialized Teaching Hospital in Addis Ababa Ethiopia from March/17/2020 – May/18/2020 G.C . Tikur Anbessa Hospital is the single largest referral hospital in Ethiopia. Diabetes clinic is one of the various specialty clinics hosted by Tikur Anbessa Hospital and it serves diabetes patients that come from all corners of the country through the referral system.

4.2. Study design

Hospital based cross-sectional study design was conducted to asses knowledge and practice of insulin injection devices disposal and associated factors among diabetes patients in Tikur Anbessa Specialized Teaching Hospital Addis Ababa Ethiopia.

4.3. Population

4.3.1 Source population

All diabetes patients attending diabetes clinic in Tikur Anbessa Specialized Teaching Hospital.

4.3.2. Study population

Adult patients with Type 1 and type 2 diabetes adults patients who are on insulin injection and on follow up care at the diabetes clinic of Tikur Anbessa Specialized Teaching Hospital.

4.4. Inclusion and Exclusion criteria

4.4.1. Inclusion criteria

Diabetes patients with the following characteristics included in this study:

- ✚ Both male and female insulin using type 1 and type 2 diabetes mellitus patients
- ✚ Age ≥ 18 years old
- ✚ Diabetes patients taking insulin for $\geq$ one month
- ✚ Patients willing to give consent and participate

4.4.2. Exclusion criteria

Diabetes patients with the following characteristics excluded from study

- ✚ Critically sick patients
- ✚ Patients with gestational DM

4.5. Sample size determination and Sampling technique

4.5.1 Sample size determination

Sample size is calculated using single population proportion formula by considering 21% (for the first objective) and 19% (for the second objective) proportion of adequate knowledge and good practice about insulin injection device disposal among diabetic patients taken from a study done in Gondar University Referral Hospital (GURH) (3), 95% level of confidence, 5% margin of error and 10% non-response rate. Finally, the researcher had taken the largest sample size (254) for representativeness.

$$n = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2}$$

$$n = \frac{(1.96)^2 0.21(0.79)}{(0.05)^2}$$

$$n = 254$$

$$n = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2}$$

$$= \frac{(1.96)^2 0.19(0.89)}{(0.05)^2}$$

$$n = 236$$

n=Sample size

z= Standard for 95%confidence interval=1.96

d=Marginal error (0.05%)

P=Proportion of subjects who have knowledge and practice on insulin injection device disposal

q=Proportion of subjects who do not have knowledge on insulin injection device disposal

N=Total population

Since the total population is below 10,000 the sample size has been adjusted using the following reduction formula. $NF = \frac{n}{1+n/N} = \frac{254}{1+254/600} = 178$. By adding 10% non response rate the desired sample size was 196.

4.5.2. Sampling technique

In order to identify the number of patients to be included in this study, the researcher obtained the total number of diabetic patients using insulin on follow-up in diabetic clinic of TASH. Total number of patients on two months follow up was 600 then; the total number of patients on follow-up was divided to the sample size (196) in order to obtain “K” value. The calculated “K” value was 3 every third person was selected by a systematic random sampling technique to draw study participant from the patients on follow-up.

4.6. Study variables

4.6.1. Dependent variables

-  Practice of diabetes patients about insulin injection devices disposal
-  Knowledge of diabetes patients about insulin injection device disposal

4.6.2. Independent variables

Socio-demographic data: Age, sex, educational status, marital status, residence, occupation and monthly income.

Awareness factors :Lack of education form HCP, failure to seek advice and a lack of awareness about injury.

Clinical factors :Duration of DM, duration of insulin use, type of DM and family history of DM.

4.7. Operational definitions of variables and measurement instrument

4.7.1. Socio-demographic variables: Includes 7 questions each was analyzed individually.

Age: How old(in years) participant at the time of data collection

Sex: Refers to the biological sex (male and female)

Educational level: Refers to the level of education participant completed at the time of data collection

Marital status: Refers to civil status of participant at the time of data collection

Occupational status: Refers to occupation of the participant at the time of data collection

Income: Average monthly income in Ethiopian Birr.

4.7.2. Awareness factors: Covered with 3questions each questions had yes /no response and the score was be added to arrive total awareness factors.

Education: Education given for the patient when he/she come for follow up.

Advice: Advice given for the patient when he/she come for follow.

4.7.3. Clinical factors: Has 4 multiple choice questions each was analyzed individually.

Duration of insulin use: The number of completed month being insulin used for management of DM.

Duration of DM: The year(s)since the participant was diagnosed for DM

Type of DM: Refers to either type 1 or type 2 DM of participant

Family history of DM: Presence or absence of previous history of DM in the family line (parental line).

4.7.4. Knowledge of insulin injection device disposal: The knowledge part question contains 12 dichotomous “true”/false questions. There were both negative and positive questions for the positive questions the respondent’s got 1 score for true answer and 0 score for false answer whereas in negative questions the respondents got 0 score for true answer and 1 score for wrong answer. Total knowledge scores were computed for each participant and possible composite knowledge scores for an individual could range from 0 to 12. Individual composite scores were summed up together and median scores were calculated. Higher score above the median is indicative of adequate knowledge of insulin injection device disposal.

4.7.5. Self-reported practice of insulin device disposal. The practice part questions covered with 9 dichotomous questions (yes/no) which contains both negative and positive questions. For positive questions the respondents were given 1 score for yes answer and 0 score for no answer whereas for negative questions they got 0 score for yes answer and 1 for no answer. The total practice score was computed and ranges from 0 to 9 and the median score was calculated. Higher score above the median shows good self-reported practice of insulin injection device disposal.

4.8. Data collection tools and procedures

4.8.1. Data collection tools

Data was collected using an interviewer administered standardized structured questionnaire adopted from previous studies (3, 12). The final questionnaire consisted of 34 items and divided into five parts. Data collection tool is prepared in English language and translated into Amharic language and then retranslated to the former version by another translator to check for logical and conceptual consistency. Two fourth year BSc nursing students of Addis Ababa University and two health professionals recruited for data collection and supervision respectively.

Part I: Consists 7 items questions related to the socio-demographic data such as age, sex, marital status, educational level, employment status, residence and income.

Part II: Contain 12 items questions concerning knowledge of insulin injection devices disposal. Patients' knowledge was measured using 12 dichotomous (true/false) questions about insulin injection device disposal.

Part III: Covered with questions about practice of insulin injection device disposal and patients' practices was assessed using 9 questions. These questions were answered as either "yes" or "no."

Part IV: Includes questions about awareness factors and has three items with yes or no answers such as advice on insulin injection device disposal, which is the source for advice and education on insulin injection devices disposal.

Part V: Contains 4 questions regarding clinical factors associated with knowledge and practice of insulin injection device disposal which focus on duration DM, duration of insulin use, type of DM, family history of DM and schedule for insulin use.

4.8.2. Data collection procedures

Data was collected using pretested structured questionnaire. The sample population invited to participate voluntarily by explaining the rationality of the study at the time of data collection. After obtaining an informed consent, questionnaire distributed as hard copies for the participants at their waiting time before taking service by data collectors. After participants completing the questionnaire the data collectors collect questionnaires and check each questionnaires for completeness.

4.9. Data quality management

All possible attempts was made starting from preparation of data collection tool up to data entry and cleaning to assure data quality. The questionnaire was pre-tested on 5% of the sample size in Zewditu Memorial Hospital to ensure consistency of the responses and clarity and understandability of the tool before the actual data collection. Two days training was provided for data collectors and supervisors on the data collection tool, procedures & ethical issues. The data collection process was overseen by supervisors and daily meetings held with data collectors to check the consistency of the collected data and completeness of the questionnaire. The principal investigator also make regular follow-up visits to monitor the data collection process

4.10. Data processing and analyses

The collected data was checked at the end of each data collection day for its completeness and consistency and edited, coded and entered to Epi data version 4.6. Finally, data was exported to SPSS version 25.0 for analysis. Descriptive analysis using frequency, percentage and central tendencies was conducted to describe and summarize the characteristics of study subjects. Bivariable logistic regression analysis was carried out and variables with p-value <0.25 in this analysis were included in the multivariable logistic regression analysis to adjust for possible confounders. Adjusted odds ratio with 95% confidence interval was estimated to identify the significant predictors. Finally, a p-value <0.05 was used to declare statistical significance of the explanatory variables.

4.11 .Ethical considerations

Ethical approval was obtained from the Institutional Review Board (IRB) of Addis Ababa University, College of Health Science, School of Nursing and Midwifery. Official letter of permission was received from the administration of Tikur Anbessa Specialized Teaching Hospital. In addition, written informed consent was obtained from each participant after explaining the procedures and purpose of the study. Information obtained was kept confidential through avoiding sharing patient information with the third party. Furthermore, participants assured that their participation is willingly, and they have right to withdraw or refuse to give information at any time in the study.

CHAPTER V

RESULTS

5.1. General Socio-demographic Characteristics

This part shows frequency distribution of the variables describing background characteristics of respondents. Table1 reveals general information such as sex, age, marital status, occupation, educational status, residence and level of monthly income. One hundred eighty two study participants (with 93%response rate) gave informed consent to participate and completed study questionnaire. Out of 182 study participants 104 (57.1%) were female, the mean age of the participants was 51.45 ± 14.8 with the age range of 18 to 82 years, and the majority (n = 136, [74.7%] were married.

Concerning occupation most of subjects were house wife (n = 66,[36.3%]), government servant (n = 30, [16.5%]), self- employed (n = 41, [22.5%]), and private company employee (n = 18, [9.9%]).Greater number of participants have attended secondary education (n = 61, [33.5 %]), almost all (90.7%) were urban residents, and 86 (47.3%) earn less than 1500 ETB monthly.

Table 1: General Socio-demographic characteristics of respondents

Variables		Frequency n (%)
Sex	Male	78 (42.9)
	Female	104 (57.1)
Age, in year	<25	10 (5.5)
	25-39	26 (14.3)
	40-59	80 (44)
	<u>> 60</u>	66 (36.3)
Marital status	Single	26 (14.3)
	Married	136 (74.7)
	Others (widowed, divorced)	20(11)
Occupation	House wife	66 (36.3)
	Government servant	30 (16.5)
	Student	6 (3.3)
	Self employed	41 (22.5)
	Private company worker	18 (9.9)
	Other	21 (11.5)
Educational status	Illiterate	27 (14.8)
	Primary	44 (24.2)
	Secondary	61 (33.5)
	College and above /	50(27.4)
Residence	Urban	165 (90.7)
	Rural	17 (9.3)
Monthly income	<15000 ETB	86 (47.3)
	1500-3000 ETB	51 (28)
	3000-4500 ETB	11(6)
	4500-6000 ETB	24(13.2)
	>6000ETB	10(5.5)

5.2. Knowledge toward insulin injection devices disposal

Questions were asked to explore respondent's knowledge about insulin injection devices disposal including 12 questions for knowledge which consisted of both negative and positive question. For positive question respondents got 1 score for true answer and 0 score for false answer. For negative questions, they got 1 score for false answer and 0 score for true answer.

The obtained score is converted in terms of score level and classified in to two levels (inadequate and adequate knowledge). Possible scores ranges between 0-12 points. A median score of 8 used to classify subjects into two groups as follows.

Table 2: Level of knowledge of respondents toward insulin injection device disposal

Level of knowledge	Frequency	Percentage
Adequate knowledge	84	46
Inadequate knowledge	98	54

In order to summarize knowledge distribution of respondents towards insulin injection device disposal was shown table 2. More than half of participants (54%) had inadequate knowledge. Majority of the participants (n = 168, [92.3%]) do not aware about how to dispose lancets after use.

5.3. Practice towards insulin injection device disposal

For practice on insulin injection device disposal, all respondents' practices were asked nine question which consisted of both positive and negative questions. For positive questions, respondents got 1 score for yes answer and 0 score for no answer. For negative questions, they got 0 score for yes answer and 1 score for no answer.

The obtained practice score converted in terms of score level and it is classified into two levels (good practice and poor practice). Possible scores ranges between 0-9. A median score of 7 used to classify groups in to two as follows.

Table 3: Level of practice on insulin injection device disposal

Level of practice	Frequency	Percentage
Good practice	49	26.9
Poor practice	133	73.1

The distribution of level of practice towards insulin injection devices disposal is shown in table4. Majority of respondents (73.1%) had poor practice of insulin injection device disposal. About 72% of respondents place insulin injection devices in their house hold garbage bag and 69.2% did not bring used insulin injection devices back to home when they traveling outside and they threw it on street, toilet and river.

5.3. Factors associated with knowledge score of study participants

In the bivariate analysis, sex, income, injury from insulin device waste, duration of DM and previous family history of DM were not associated with knowledge whereas age group, marital status, educational status, occupation and residence, advice from HCP, information from pharmacist/friends, duration of insulin use, and type of DM have showed statistically significant association with knowledge score of study participants (Table 4).After adjustment of possible confounders age group <25 year ($P = 0.002$), 25-39($P=0.02$), marital status single($P =0.003$), education secondary ($P =0.009$), college and above education ($P =0.017$), residence($P = 0.015$), duration of insulin use($P=0.014$), type of DM ($P =0.02$)and information from pharmacist/friends ($P =0.036$) have shown significant association with knowledge score of study participants in multivariable logistic regression analysis at p-value <0.05 and 95% CI(Table4).

Table 4: Bivariate and multivariate logistic regression of factors associated with knowledge scores

Variables		Knowledge				
		Inadequate	Adequate	COR(95% CI)	P-value	AOR(95% CI)
Age group	<25	4(40)	6(60)	1	0.002	1
	25-39	7(26.9)	19(73.1)	1.8(0.390,8.386)	0.02	8.012(2.168,29.6)
	40-59	47(58.8)	33(41.2)	0.47(0.122,1.79)	0.170	0.23(0.036,1.44)
	≥60	40(60.6)	26(39.4)	0.43(0.111,1.685)	0.108	0.213(0.033, 1.373)
Marital status	single	8(30.8)	18(69.2)	1	0.003	1
	Married	73(53.7)	63(46.3)	0.384(0.156,0.94)	0.014	0.382(.152,0.95)
Education	others	17(85)	3(15)	0.078(.0018,0.346)	0.01	0.071(.016,0.32)
	Illiterate	18(66.7)	9(33.3)	1	1	1
	Primary	33(75)	11(25)	0.667(0.23,1.908)	0.363	0.567(0.16, 1.926)
	Secondary	31(50.8)	30(49.2)	1.935(0.753,4.97)	0.009	0.193(0.056,0.66)
	College & above	16(32)	34(68)	4.25(1.569,11.51)	0.0174	2.38 (0.75,7.57)
Residence	Rural	14(82.4)	3(17.6)	1	1	1
	Urban	84(50.9)	81(49.1)	4.50(1.23,16.246)	0.015	19.12(3.12,22.14)
Type of DM	Type 2	74(60.7)	48(39.3)	1	1	1
Information from pharmacist/friend	Type 1	24(40)	36(60)	2.31(1.230,4.348)	0.02	2.14(1.12,4.0)
	No	80(60.6)	52(39.4)	1	1	1
	Yes	18(36)	32(64)	2.72(1.39,5.371)	0.036	2.16(0.921,5.09)
Duration of insulin use	1mon-5yeas	32(74)	11(26)	1	1	1
	>5years	66(47.5)	73(52.5)	3.218(1.502,6.89)	0.014	3.187(1.29,7.87)

5.4. Factors associated with practice score of study participants

In bivariate analysis, sex, residence, monthly income, information from pharmacist, duration of DM, previous family history and injury from insulin injection devices waste did not showed significant association but age group, marital status, occupation, educational level, duration of insulin use, advice from health care provider (HCP), type of DM and knowledge score were showed significant association. After adjustment of possible confounders, age group of <25 (P=0.022), 25-39 (P= 0.007) marital status of single(P =0.001),Married(P=0.000) educational level at college and above(P =0.044), advice from HCP(P =0.046), duration of insulin use (P =0.011), type of DM (P = 0.035), and knowledge score (P =0.044)have shown statistically significant association with practice score of study participants in multivariable logistic regression analysis at p-value <0.05 and 95% CI (Table5).

Table 5: Bivariate and multivariate logistic regression of factors associated with practice scores

Variables		Practice				
		Poor	Good	COR(95%CI)	P-value	AOR(95% CI)
Age group	<25	3(30)	7(70)	1	0.022	1
	25-39	16(61.5)	10(38.5)	.268(0.56,1.28)	0.007	0.101(0.019,0.5)
	40-59	63(78.8)	17(21.2)	0.116(0.027,0.4)	.389	0.093(.017,0.523)
	≥60	51(77.3)	15(22.3)	0.126(0.029,0.55)	.306	0.131(.024,0.716)
Marital status	Single	9(34.6)	17(65.4)	1	0.001	1
	Married	107(78.7)	29((21.3)	0.143(0.058,0.355)	0.000	0.141(0.049,0.406)
	Other	17(85)	3(15)	0.093(0.021,0.406)	0.563	0.624(.127,3.07)
Education	Illiterate	24(88.9)	3(11.1)	1	0.215	1
	Primary	35(79.5)	9(20.5)	2.057(.504, 8.393)	0.183	2.9(0.596,15.04)
	Secondary	45(73.8)	16(26.2)	2.844(.753, 10.743)	0.212	2.72(0.564,13.15)
	College & above	29(58)	21(42)	5.793(1.5, 21.1)	0.044	5(1.043,23.81)
Advice from HCP	No	66(81.5)	15(18.5)	1	1	1
	Yes	67(66.3)	34(33.7)	2.23(0.42,4.12)	0.046	2.393(1.01,5.7)
Duration of insulin use	1mon-5yr	39(90.7)	4(9.3)	1	1	1
Type of DM	>5year	94(67.6)	45(32.4)	4.67(1.57,13.9)	0.035	5.74(1.49,22.5)
	Type2	96(78.7)	26(21.3)	1	1	1
Knowledge score	Type 1	37(61.7)	23(38.3)	2.3(1.16,4.51)	0.035	2.1(1.054,4.2)
	Inadequate	83(84.71)	15(25.3)	1	1	1
	Adequate	50(59.5)	34(40.5)	3.76(1.87, 7.6)	0.044	2.5(1.026,6.3)

CHAPTER VI

DISCUSSION

The current study assessed the knowledge and self-reported practice of diabetes patients toward insulin injection device disposal and associated factors in TASH, Addis Ababa, Ethiopia. The issue of insulin injection device disposal has not been widely addressed by researchers, practitioners, and policy-makers in this country so far. Disposal of syringes in the absence of effective waste disposal system opens a new portal of transmission of blood borne pathogen from patients to general community(3). Un safe disposal of used injection materials at open field in rural areas could increase the risk of transmission to children, who play with syringes and can get pricked, and this related with transmission of blood-borne infection such as HIV, HBV, and HCV to community(11).

6.1. Knowledge of study participants

In this study the overall adequate knowledge score was 46% and inadequate knowledge score was 54%. This finding was better than the study conducted in Delhi, India and Gondar University Referral hospital (GURH) in Ethiopia those who had high level knowledge on insulin injection devices disposal were 23.8% and 21%(3, 12). This might be due to India is developing country and being home to a huge diabetes population, there is lack of awareness and education program remains a major issue.

Study form Indian also reported only 14% of patients received education from HCP about insulin injection device disposal compared with current study (54%) of study participants received education from HCP and the study concluded that Physicians in India either have no time or in doubt of how and what to counsel and educate to patients and there is no diabetes educators, no legislations, national guidelines or local municipality rules regarding disposal of home generated wastes in India.

Since, current study conducted in TASH in Addis Ababa, Ethiopia, even if their lack of awareness program and national guidelines for diabetes patients about insulin injection device

disposal at their home in Ethiopia, patients from Addis Ababa have different access to learn about waste management through mass media as well as social media compared with Gondar town.

In this survey, majority of respondents (92.3%) did not know how to dispose lancets after use. This finding slightly lower than a study done in India 96.4%(12) but higher than study done in United Arab Emirates 50% and GURH in Ethiopia 63.3% did not know how to dispose lancets or other sharps after use(9). This is due to in United Arab Emirates; Health care providers are trained on how to properly educate diabetes patients about safe use and disposal of diabetic devices and sharps. Both the physician and the pharmacist have important roles to play in this respect. They are the front line of contact with the diabetes patient and their duty necessitates informing their patients on such important issues. 56.7% received information about insulin injection device disposal; approximately 60% of patients know how to dispose of their used sharps and 70% are aware of the hazards of unsafe disposal of sharps.

The results from present study indicated that a lack of proper advice from health care professionals with regard to both the proper use of diabetes devices and disposal of used sharps. However, in our study 27.5% of patients received information compared those with United Arab Emirates 56.7% and GURH 72.5% of respondents received information about safe disposal of insulin injection devices.

6.2. Practice of study participants

The present study showed that majority of respondents had poor practice of insulin device disposal. This finding was higher than study conducted Indian 63.9 % of participants had poor practice on insulin injection devices disposal(12). This may be due to the fact that Ethiopia has low social media coverage in health sector and suffers from lower health education on safe disposal injection devices, and less attention given by the health system to address proper insulin injection waste disposal.

The finding was better than study done in South Africa more than 97% of study participants had poor practice of insulin injection device disposal as well as report from study done GURH in Ethiopia showed that 80.7% respondents had poor practice(3, 13). This is due to deficiencies in diabetic education and counseling provided to diabetic patients in South Africa and less than 4%

of patients had received any counseling about correct sharps disposal practices. Study from GURH majority of respondents comes from rural area and there is absence contact time for counseling and safe disposing method in rural area.

In the present study, majority of respondents place insulin injection devices in their house hold garbage bag. This findings from this study showed that in the study area there is poor practice of disposing insulin injection waste .Similarly, the majority of the study participants did not bring used insulin injection devices back to home when traveling outside and they threw it on street, toilet and river. This finding was lower than study conducted in Pakistan, Turkey, Indian and South Africa 90%, 80.6%, 84.4% and 88% (5, 9, 11, 13) but higher than the studies conducted in Brazil and GURH 57% and 36.2%.(1, 3). This due to there is no designed law for medical waste management at house hold level especially for insulin injection device disposal for diabetes patients.

6.3. Factors associated with Knowledge and practice of study participants

In this study, being in age group < 25 years and 25-39 years were more likely to contribute for adequate knowledge score($P=0.002$, $P=0.02$)and good practice($P=0.022$, 0.007)than those in age greater than 40 years . Probably this may be due to < 25 years and 25-39 age groups might be active learners compared to those who are 40 years and older . The respondents who were single had 69.2% of adequate knowledge ($P=0.018$) and 65.4%of good practice ($P=0.001$) compared with married and others (divorced and widowed).

Education level directly associated with knowledge level as respondents who joined college and above with 2.38 times more likely to contribute adequate knowledge score ($P =0.017$) and 5 times good practice ($P =0.044$) than others. This is because the respondents who joined college and universities had better chance to learn from courses and social media than those who are not joined. This finding was in agreement with study done in GURH respondents who join college or university had significantly higher overall score of knowledge than those who were not joined (3).However, study from South Africa revealed that there were no significant associations between education level and correct disposal of insulin injection waste(13).

The present study also showed there is the significant difference in knowledge among urban and rural residents to ward insulin injection waste disposal. The urban residents 19 times(60.6%)

more likely to contribute adequate knowledge score than rural residents. This might be due to low contact time for counseling and absence of safe disposing method for the patients who are came from rural area and healthcare providers in rural area had malpractice. This finding was in agreement with a study done in Murree, Pakistan and GURH which showed that 60% of rural health practitioners disposed of insulin injection needle at an open place(3, 11).

This study also revealed that there is knowledge and practice gap between patients who received advice and information from HCP as well as pharmacists /friends. Respondents who received information and advice from HCP had 2 times (64%) more likely adequate knowledge and 2.4 times (33.7%) of good practice compared with those who were not informed and not got education from HCP. This finding was in consistent with a study done in GURH in Ethiopia(3). Education from HCP played vital role in disposal of insulin injection waste disposal and is necessary for diabetes patients to practice safe disposal of insulin injection waste. This finding was also in agreement with studies done in India and USA showing that education received from healthcare providers played very important role. (12).

Current study showed, duration of insulin use significantly associated with knowledge and practice of respondents. In this study patients who were used insulin for more than five years 3.18 times(52.5%) more likely adequate knowledge and 5.7 times(32.4%) good than those used insulin for 1month to 5years. This study consistent with study done in Philippine and GURH(3, 14). However, study conducted in Malaysia and, patients who had used insulin for less than five years had almost three times higher knowledge and good practice compared to those who used insulin for greater than five years(16) and other similar study done in Indian, the knowledge and practice of insulin injection device disposal were low for the who used insulin more than years(12).

Present study, showed that type DM significantly associated with knowledge and practice of study participants. In this study, type1 DM patients were 2 times more likely to have adequate knowledge and good practice on insulin injection device disposal compared to type 2 DM patients and knowledge is significantly associated with practice the respondents with adequate knowledge 2.5times more likely contribute good practice than respondents inadequate knowledge.

STERENGTH AND LIMITATION OF THE SUDY

Strength of the study

- ✚ Findings from this study addressed the gap that the researcher intended.
- ✚ High response rate of study participants.
- ✚ The data collection tool for this study was standardized, validated and adopted from similar previous studies.

Limitation of the study

- ✚ The study is done in one diabetic center; the results found about insulin injection devices waste disposal may not be representative of all Ethiopian diabetes patients.
- ✚ As the study design is cross-sectional and depends on self-reported assessment, under- or over reporting is very likely.

CONCLUSION AND RECOMMENDATION

1. Conclusion

Health care professionals understand that improperly discarded needles and sharps present potential health concern for anyone who may come in contact with them. These improperly discarded needles and sharps can spread pathogens and infectious diseases can also injury to children, rag pickers, solid waste workers, recycling employee and neighbors.

Present study showed the knowledge and practice of diabetic patients were inadequate and poor towards insulin injection device waste disposal in study area. The study also showed that knowledge and practice of diabetic patients toward insulin injection device disposal association with age, marital status, occupation, residence, education level, and education received from healthcare practitioners, type of DM and duration of insulin use.

2. Recommendation

The awareness on safe disposal of insulin injection device wastes at home, including health care professionals and local government body is low which is the reason for no education and informational program for health care professional and sharp manufacturers.

To achieve the goal of safe disposal practice of insulin injection wastes at house hold level:

- ✚ The ministry of health should develop guideline on management of insulin injection device wastes generated at home.
- ✚ This sever problem which needs critical attention from the government to ensure the presence of safe disposal system and that the sharps are no longer disposed in the open fields and household bin..
- ✚ Health care providers should also be aware of safe disposing system and counsel and educate patients on appropriate disposal of used syringes.
- ✚ Awareness creation training should be given for home insulin users about safe disposal and hazard of insulin injection wastes.
- ✚ Insulin injection devices waste management guideline and related documents should be prepared and given for the patients.

✚ It's better for researcher to conduct further studies, since there is a need for doing more and more researches at the national level aimed at since there is inconsistency among knowledge and self-reported practice of insulin injection device disposal and associated factors among diabetes patients to resolve series shortage of literatures in Ethiopia.

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Annex I: Subject Information Sheet (English Version)

Title of the research: Knowledge and self- reported practice of insulin injection device disposal and associated factors among diabetes patient in Tikur Anbessa Specialized Teaching Hospital Addis Abeba Ethiopia 2020

Principal investigator: Aynalem Loha

I am Aynalem Loha graduate student in Adult Health nursing at Addis Ababa University. The approval to carry out this study was given by Institutional review Board of School of Nursing and Midwifery A.AU

Objective: The objective of this study is to assess knowledge and self-reported practice of insulin injection device disposal and associated factors among diabetes in Tikur Anbessa Specialized Teaching Hospital

Perceived benefits and risk: The result may benefit clients, researchers, policy makers and other stakeholders as appropriate. Being involved in this study does not induce any risk you will face.

Confidentiality: All personal identifiers and personal information will not be taken hence your responses will be kept confidential. Data will be accessed by the principal investigator and finally will be analyzed anonymously.

Participation and withdrawal: Your participation in this study which will take you about 5-10 minute is fully voluntarily. You will be free to withdraw from the study at any time or not to answer questions if you don't want to answer.

Coordinating organization: Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery.

Persons to contact: If you have questions/ concerns about this study you can contact;

Principal investigator: Ms. Aynalem Loha (Mob: +251993 648035, Email:

aynaalem069@gmail.com)

Advisors: Dr. Fikadu Agaa (Email: fiqaaduuagaa@yahoo.com)

Mrs. Tsion (Email: tsialemu@gmail.com)

Annex II: Consent form (English Version)

Dear participant You are among the study participants selected and it is your full right to participate in this study but if you are not willing to take part you can leave the questionnaire empty however; your honest answers to these questions will help me to get important data on insulin injection device disposal, so; you are kindly requested to give your honest responses and keep participation. It will take a maximum of 10 minutes to answer these questions. Would you willing to participate please? If your answer is yes encircle 1 and go to the next part.

1. Yes 2. No

Dear participant! For the sake of confidentiality please do not write your name or other personal identifier on the questionnaire.

Annex III: Questionnaire (English Version)

Please read the instruction and questions for each section before you answer, if you have

Unclear question or instruction you can ask the principal investigator.

Part I: Question related to Socio- demographic factors

1. Sex A. Male B. Female

2. How old are you now _____ Years

3. Marital status

A. Married

B. Single

C. Divorce

D. Widowed

4. Current occupation

A. House wife

D. Private company employee

B. Government servant

E. Others

C. Business/self employed

5. Educational status

A. Illiterate

D. college /university

B. Primary

E. post graduate

C. secondary

F. other (specify)

6. Residence A. Urban B. Rural

7. Monthly income _____

Part II: Questions related to knowledge on insulin injection devices disposal.

Instruction: Please mark in the box that you think the most correct

No	Statements	True	False
1	Sharp waste produced at home is infectious.		
2	One can reuse needles and lancets if they are still sharp and clean.		
3	The needle and lancets can be cleaned by spirit swab and reused.		
4	One can also use someone else needle for injecting insulin after cleaning with spirit.		
5	Needle should be recapped after use and before throwing away in bin.		
6	Needle should be broken away from syringe and collected in puncture proof bottles.		
7	Lancets should be recapped after use and before throwing in waste bin .		
8	One should bend the lancet tip after use and before throwing in waste bin		
9	Sharps like needles and lancets can cause injury if disposed in public places like parks, streets and so forth		
10	The sharps in household waste can never cause injury to rag pickers and garbage handlers		
11	Used needles and syringes can be misused by rag pickers		
12	Sharps like needles can be recycled like plastics		

Part III: Questions related to practice of insulin injection device disposal

Instruction: Please mark in the box that you think the most correct

No	Statements	Yes	No
1	I recap the needle after injecting insulin		
2	I throw away insulin needle and lancets into the household garbage bags		
3	I collect sharp waste in plastic containers or tin cans		
4	I sometimes re-use needle if the condition seems right to use it again		
5	If I got out I bring my used needles back to home		
6	I throw sharps on street if I am traveling outside or in party		
7	I bend the needle and sharps so that it cannot be reused by anyone else		
8	I keep my un used needles and lancets at place not reachable to children and others		
9	I collect all sharps and dispose one particular day		

Part IV: Questions related to awareness factors

1. Do you have any kind of advice from the healthcare provider on insulin injection devices disposal?

A. No B. Yes

If yes, write in few words_____

2. Do have any kind information from needle seller /pharmacist/ friends on insulin injection device disposal?

A. Yes B. No

3.. Are there any people in your house injured from insulin injection devices waste?

A. Yes B. No

Part V: Question related to clinical factors

1. How long have you been on insulin therapy?

A. 1month- 5 year

B. >5 years

2. How long have you had diabetes?

A. < 1year

B. 1year-5year

C. > 5year

3. What type of DM you diagnosed?

A. Type 1

B. Type 2

4. Do you have previous family history of DM?

A. Yes

B .No

Annex IV: Subject information Amharic version (የርዕስ ጉዳይ መረጃ ወረቀት)

የጥናቱ ርዕስ- በአድስ አበባ በጥቁር አንበሳ ስፈሻላይዝድ ሆስፒታል በስኳር ህመምተኞች ማዕከል የስኳር ህመምተኞች ኢንሱሊን የሚወጡበትን መሳሪያዎች አወጋገድ ላይ ያላቸው እውቀታቸው ራሳቸው ረፖርት የሚያደርጉትን ልምምዳቸውና ምክኒያቶች

አጥኚ- አይናለም ሎሀ

እኔ ተማሪ አይናለም ሎሃ በኢ.አ ዩኒቨርሲቲ ከአዋቂ ጤና ክብካቤ ትምህርት ክፍል ተመራቂ ስሆን ይህንን ጥናት ለማካሄድ ማረጋገጫ የሰጠኝ የኢ.አ ዩኒቨርሲቲ ነርሲንግ እና ሚድዋሪ ትምህርት ክፍል የሥነ ምግባር ግምገማ ኮሚቴ ነው።

አላማ- የዝህ ጥናት አላማው በጥቁር አንበሳ ስፈሻላይዝድ ሆስፒታል ስኳር ህመምተኞች ኢንሱሊን የሚወጡበትን መሳሪያዎች አወጋገድ ላይ ያላቸው እውቀታቸው ራሳቸው ረፖርት የሚያደርጉትን ልምምዳቸውና ምክኒያቶችን በተመለከተ ነው።

ጥቅምና እና ጉዳት- በዝህ ጥናት መሳተፍ ምንም ጉዳት አያመጣም። ውጤቱም ለደንበኞችን ፣ ለተመራማሪዎችን ፣ ለፖሊሲ አውጪዎችን እና ሌሎች ሊባለድርሻዎችን እንደ አስፈላጊነቱ ሊጠቅም ይችላል።

ምስጢራዊነት- ሁሉም የግል መለያዎች እና የግል መረጃዎች በዚህ ላይ አይወሰዱም ስለሆነም ምላሾችዎ በምስጢር ይያዛሉ። መረጃው በአጥኚ በኩል ይደርሳል በመጨረሻም ባልታወቀ ሁኔታ ይተነትናል።

ተሳትፎ እና መውጣት- በዚህ ጥናት ውስጥ የእርስዎ ተሳትፎ ሙሉ በሙሉ በፈቃደኝነት ስሆን የሚወስድዎም ከ5-10 ደቂቃ ብቻ ነው። በማንኛውም ሰዓት ጥናቱን መተው ወይም ለመመለስ የማይፈልጉ ከሆነ ለጥያቄዎ መልስ ላለመቀበል ይችላሉ።

ተባባሪ ድርጅት- ኢ.አ ዩኒቨርሲቲ ሕክምናና ጤነ ሳይንስ ኮሌጅ ነርሲንግና ሚድዋሪ ትምህርት ክፍል።

በጥናቱ ዙሪያ ማግኘት የምትችሉ ሰዎች-

1. አጥኚ : አይናለም ሎ ሃ (ስልክ 0993 648035፣ Email: aynalem069@gmail.com)

2 . አማካሪዎች: ዶ/ር ፍቃዱ አጋ (ስልክ 0911033684፣ Email: fiqaaduuagaa@yahoo.com)

3. ሲ/ር ፅዮን አለሙ (ስልክ 0910762654፣Email: tsialemu@gmail.com)

nnex V - Consent Amharic version (የፈቃድ ቅጽ)

ውድ ተሳታፊ እርስዎ ከተመረጡት የጥናቱ ተሳታፊዎች መካከል በዚህ ጥናት ውስጥ ለመሳተፍ ሙሉ መብትዎ ነው ነገር ግን ለመሳተፍ ፈቃደኛ ካልሆኑ መጠይቁን ባዶ መተው ይችላሉ። ለእነዚህ ጥያቄዎች ሐቀኛ የሆኑ መልስ ከሰጡኝ የኢንሱሊን የሚወጡበትን መሳሪያዎች አወጋገድ ላይ አስፈላጊ መረጃ እንዳገኝ ይረዱኛል። ስለዚህ ሐቀኛ ምላሽ እንዲሰጡ እና ተሳትፎዎን እንዲቀጥሉ በደግነት እጠይቃለሁ። ለእነዚህ ጥያቄዎች መልስ ለመስጠት ቢያንስ 10 ደቂቃዎችን ይወስዳል። እባክዎን ለመሳተፍ ፈቃደኛ ነዎት? መልስዎ አዎ 1 ከሆነ እና ወደሚቀጥለው ክፍል ይሂዱ።

1. አዎ 2. አይ

Annex VI - Questionnaire Amharic version (መጠይቅ በአማርኛ)

ክፍል አንድ- የተጠያቂው የግል መረጃ

1. ፆታ ሀ) ሴት ለ) ወንድ

2 . እድሜ _____

3 .የጋብቻ ሁኔታ

ሀ) ያገባ

ለ) ያላገባ

ሐ) የተፋታ

መ) የሞተበት(ባት)

4 .የስራ ሁኔታ

ሀ) የቤት እመቤት

ለ) የመንግስት

ሐ) ተማሪ

መ) የግል ስራ

ሰ) የግል ተቁዋም ሰራተኛ

ረ) ሌላ(ዘርዘር)

5 . የትምህርት ሁኔታ

ሀ) ያልተማረ

ለ) አንደኛ ደረጃ

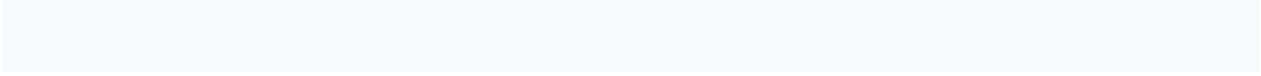
ሐ) ሁለተኛ ደረጃ

መ) ኮሌጅ/ዩኒቨርሲቲ

ሰ) ድህረ ምረቃ

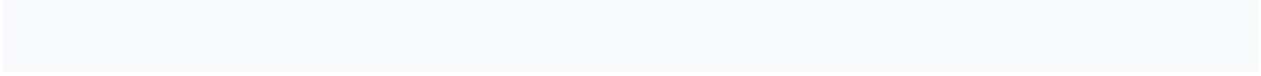
6. የመኖሪያ ቦታ ሀ) ከተማ ለ)ገጠር

7. የወር ገቢ መጠን _____



ክፍል ሁለት - ኢንሱሊን የሚወጡበት መሳሪያዎች አወጋገ ድ ላይ ከእውቀት ጋር የተዛመዱ ጥያቄዎች መመሪያ-እባክዎን በጣም ትክክል ብለው በሚያስበውትን ሳጥን ውስጥ ምልክት ያድርጉ

ተቁ	መግለጫዎች	እውነት	ሐሰት
1	በቤት ውስጥ የሚመረቱ ሹል ቆሻሻዎች ተላላፍ ናቸው		
2	አንድ ሰው መርፌዎችና መፍረጫዎች ገጹና ሹል ከሆኑ እንደገና መልሶ መጠቀም ይቻላል		
3	መርፌውና ማፍረጫውን በ sprit swab በማጽዳት እንደገና መጠቀም ይቻላል		
4	አንድ ሰው በ sprit swab ካፀዳ በኋላ ኢንሱሊን ለመውጋት የለላ ሰው መርፌ መጠቀም ይቻላል		
5	መርፌውን ከተጠቀሙ በኋላና በቆሻሻ መጣያ ውስጥ ከመጣልዎ በፍት መልሶ መክደን አለበት		
6	መርፌውን ከስረንጅ ሰብረው በጠረሙሶች ውስጥ መሰብሰብ አለበት		
7	ማፍረጫዎችን ከተጠቀምን በኋላና በቆሻሻ መጣያ ውስጥ ከመጣልዎ በፍት መልሶ መክደን የለበትም		
8	እንደ መርፌና ማፍረጫ የመሳሰሉ ሹሎች በመንገድ ላይ ከተጣሉ ጉዳት ሊያደርሱ ይችላሉ		
9	በቤት ውስጥ በሚመረቱ ቆሻሻዎች ውስጥ የሚገኙ ሹሎች በቆሻሻ ለቃሚዎችና ተሽካሚዎች ላይ በጭራሽ ጉዳት ሊያደርስ አይችልም		
10	አንድ ሰው ማፍረጫውን ከተጠቀመ በኋላና ከመጣሉ በፍት ማጠፍ አለበት		
11	ቆሻሻ ለቃሚዎች ያገለገሉ መርፌዎችና ስርንጅችን አለአግባብ ሊጠቀሙ ይችላሉ		
12	እንደ መርፌ የመሳሰሉ ሹሎች እንደ ፕላስቲክ እንደገና ጥቅም ላይ ሊውሉ ይችላሉ		



ክፍል ሶስት የኢንሱሊን መርፌ መሳሪያዎችን አወጋገድ ላይ ልምምድን የሚመለከቱ ጥያቄዎች
መመሪያ-እባክዎን በጣም ትክክል ብለው በሚያስበችን ሳጥን ውስጥ ምልክት ያድርጉ

ተ ቁ	መግለጫዎች	አዎ	አይ
1	ኢንሱሊን ከ ወጋው በኋላ መርፌውን እንደገና እክድናለሁ		
2	የኢንሱሊን መርፌውንና ማፍረጫውን በቤት ውስጥ ቆሻሻ መጣያ ውስጥ እጥላለሁ		
3	ሹል ቆሻሻዎችን በፕላስቲክ ኮንቴይነሮች ወይም ትናንሽ ጣሳዎች ውስጥ እስበስባለሁ		
4	ሁኔታው እንደገና መጠቀም የሚያስችል ከሆነ መርፌውን እንደገና እጠቀማለሁ		
5	ከቤት ውጭ ስሆን የተጠቀምኩበትን መርፌዎችን ወደ ቤት እመልሳለሁ		
6	ውጭ ወይም እየተጓዘኩ ከሆነ ሹል ቆሻሻዎችን በመንገድ ላይ እጥላለሁ		
7	መርፌውን እና ሹሎችን በማጠፍ ለሌላ ለማንም እንዳይጠቀም አደርጋለሁ		
8	ያገለገሉትን መርፌዎችንና መፍረጫዎችን ልጆችና ሌሎች በማይደርሱበት ቦታ አስቀምጣለሁ		
9	ሹል ቆሻሻዎችን አጠራቅመ በአንድ በተወሰነ ቀን አስወግዳለሁ		

ክፍል አራት-ከግንዛቤ ምክንያቶችጋር የሚዛመዱ ጥያቄዎች

1. የኢንሱሊን መርፌ መሳሪያዎችን ስለ መውገድ ላይ ከጤና ባለሙያ ምክር አግንተው ያውቃሉ?

ሀ. አዎ ለ. አይ

አዎ ከሆነ በጽሁፍ ይግለፅ_____

2. የኢንሱሊን መርፌ መሳሪያዎች አወጋገድ ላይ ከመርፌ ሻጭ / ከፋርማሲስት / ከጓደኞች ማንኛውንም ዓይነት መረጃ አለዎት?

ሀ. አዎ ለ . አይ

3. በኢንሱሊን መርፌ መሳሪያዎች ቆሻሻ ምክኒያት በቤትዎ ውስጥ የተጎዱ ሰዎች አሉ?

ሀ. አዎ ለ. አይ

ክፍል አምስት ከክልንካል ምክኒያቶች ጋር የተዛመደ ጥያቄ

1. በኢንሱሊን ሂክሚና

ለምን ያክል ጊዜ ቆይተዋል

ሀ. 1ወር- 5አመት

ለ. ከአምስት አመት በላይ

2. የስኳር በሽታ ከተገኘ ምን ያክል ጊዜ ሆነ _____

3. በቀን ስንተ ነው ኢንሱሊን የሚወስዱት?

ሀ. አንደ

ለ. ሁለተ

ሐ. ከሁለት በላይ

4. ምን ዓይነት ስኳር በሽታ ነው የተመረመሩት?

ሀ. ዓይነት 1

ለ. ዓይነት 2

5. በቤተሰቦ ውስጥ ከዝህ በፍት በስኳር በሽታ

የታመመ ሰው አለ? ሀ. አዎ

ለ. አይ

Annex VII Plagiarism report



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J	Knowledge and Self-Reported Practice of Insulin Injection Device Disposal among Diabetes Patients in Gondar Town, Ethiopia: A Cross-Sectional Study.(Research Article)(Report) URL: 3cf36402-a0a4-4591-990a-3e1bd2cf1a94 Fetched: 3/7/2019 7:52:33 PM		2
W	URL: https://www.sciencedirect.com/science/article/pii/S1876034112000263 Fetched: 6/12/2020 2:45:00 PM		1
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