Knowledge, Attitude, and Practice on Diabetes Management Among Patients with Diabetes Mellitus at Yekatit 12 Hospital, Addis Ababa, Ethiopia, May 2021: Cross-Sectional Analysis

Abeselom Tedla Gutta[1*], Dagmawi Dereje Wale[2*], Tewodros Kassahun Tarekegn[3*], Tilahun kebeba Balcha[4], Nardos yimer Aynalem[5], Hellina Kassahun Aboset[1], Yoseph Mitiku Amese[6], Dawit Lemecha Edo[2], Yonas Kifle Argaw[1], Firehiwot Yibrah Woldu[7], Selamawit Wehabe Tsega[2]

*Contributing Author

1. Department of Internal Medicine, Saint Paul Hospital Millennium Medical College, Addis Ababa, Ethiopia.
2. Department of Medicine, Hawassa University, College of Medicine and Health Science, Ethiopia.
3. Department of Medicine, Hayat Medical College, Addis Ababa, Ethiopia.
4. Jimma University, Institute of Health, Faculty of Public Health, Department of Health Policy & Management
5. Department of Medicine, Addis Ababa University, College of medicine and health science, Addis Ababa, Ethiopia.
6. Department of Medicine, Dire Dawa University, college of medicine and health science, Ethiopia.
7. Department of Pediatrics, Bahirdar University, College of Medicine and Health Science, Ethiopia.

Email address: mesiabeselom@gmail.com (Abeselom Tedla Gutta) or waledagmawi@gmail.com, (Dagmawi Dereje Wale) or tedikas19@gmail.com (Tewodros kassahun kassahun)

Corresponding author: To cite this article: Abeselom T Abeselom Tedla Gutta[1], Dagmawi Dereje Wale[2*], Tewodros Kassahun Tarekegn[3*], Tilahun kebeba Balcha[4], Nardos yimer Aynalem[5], Hellina Kassahun Aboset[1], Yoseph Mitiku Amese[7], Dawit Lemecha Edo[2], Yonas Kifle Argaw[1], Firehiwot Yibrah Woldu[7], Selamawit Wehabe Tsega[2],

Abstract

Background: *Diabetes Mellitus (DM) is characterized by elevated blood glucose levels due to insulin secretion or action defects. It necessitates comprehensive management strategies to mitigate its adverse health outcomes. It also represents a significant global public health challenge, particularly in developing countries, where it is a leading cause of morbidity and mortality.*

Objective: *This study aims to evaluate the Knowledge, Attitude, and Practice (KAP) related to diabetes care among patients with DM at Yekatit 12 Specialized Hospital, emphasizing the implications for diabetes management outcomes.*

Methods: *An institutional-based cross-sectional survey was conducted from May 23 to July 15, 2021, among patients attending the chronic follow-up clinics at Yekatit 12 Specialized Hospital. A total of 348 participants were systematically sampled to assess their KAP towards DM care. Data were collected via a structured questionnaire, with analysis employing SPSS version 20 for descriptive statistics to explore lifestyle modification practices among the participants.*

Results: *Among the surveyed patients, 68.7% (n = 240) were diagnosed with Type II DM, and 31.3% (n = 108) with Type I DM, indicating a higher prevalence of Type II. The demographic analysis revealed housewives (26.1%) and farmers (24.4%) as the most represented groups. Notably, a significant portion of participants displayed a profound interest in diabetes-related dietary practices (88.3%) and physical exercise (91.3%). However, gaps in essential diabetes care knowledge were evident, with misconceptions about insulin storage and injection practices.*

Conclusion and Recommendations: *The study underscores a critical need for enhanced educational interventions targeting DM patients at Yekatit 12 Specialized Hospital. Addressing the identified knowledge gaps and promoting evidence-based practices are imperative for improving diabetes care outcomes in Ethiopia. Future efforts should focus on developing tailored educational programs that bridge the existing knowledge-attitude-practice divide, thereby facilitating better disease management and quality of life for DM patients.*

Introduction

1.1 Background

Diabetes Mellitus (DM), a complex and multifaceted metabolic disorder, is marked by chronic hyperglycemia due to disruptions in insulin secretion, insulin action, or both. This disruption affects carbohydrate, fat, and protein metabolism, leading to long-term damage, dysfunction, and failure of various organs (1). DM is classified into several categories, including Type 1 Diabetes Mellitus (T1DM), Type 2 Diabetes Mellitus (T2DM), gestational diabetes, and other specific types, each with distinct pathophysiological features. These classifications are crucial for tailoring patient-centered care and management strategies. The risk factors for diabetes mellitus include raised blood pressure, tobacco use, alcohol consumption, physical inactivity, poor dietary patterns, and being overweight (2). Type I is not genetically predetermined, but increased susceptibility to the disease may be inherited. The causes of type I diabetes are other immune factors, genetics, and environmental factors. For type II genetic factors and other risk factors, including obesity and ethnic group (2).

Globally, DM poses a significant public health challenge, particularly in developing countries, where it is a leading cause of morbidity and mortality. Type 2 diabetes mellitus (T2DM) is the most common form of diabetes mellitus worldwide, accounting for more than 90% of cases (3,4). The World Health Organization (WHO) estimates highlight an alarming increase in DM prevalence, projecting a rise from 19.4 million individuals living with T1DM to 57.2 million by 2025. This trend underscores the urgent need for effective disease management and prevention strategies.(3,5)

In Ethiopia, the DM burden reflects a society of the global epidemic, with prevalence rates escalating rapidly. Recent studies indicate a prevalence of up to 6.5% in urban areas such as Addis Ababa, with varying rates observed across different regions and demographic groups (6,7). Despite these figures, a significant portion of the DM population remains undiagnosed, with an estimated number of undiagnosed cases reported to be 1.39 million people in 2013, contributing to the disease's socioeconomic and healthcare burden, killing more than 4.9 million adults per year (4).

DM management is challenging, requiring a holistic approach that encompasses medical treatment, lifestyle modification, and continuous patient education. Effective self-management practices, including blood glucose monitoring, adherence to dietary recommendations, and regular physical activity, are pivotal in mitigating the risk of complications. However, achieving optimal disease management is often hindered by a lack of comprehensive knowledge, unfavorable attitudes, and inadequate practices among patients (8–10). As such, control of type I diabetes is difficult and impossible to control by diet alone, so it is treated with insulin, so-called insulin-dependent diabetes

mellitus (IDDM). In the case of T2DM, it is possible to control it through diet and weight loss(1).

Moreover, DM's psychological impact, characterized by feelings of helplessness, denial, and acceptance, further complicates disease management. The condition's chronic nature demands sustained emotional and practical support from healthcare providers and family members alike (11). Despite advancements in DM care and an increasing focus on patient-centered approaches, the need for community-level studies to understand and bridge the KAP gap remains pressing, particularly in settings like Ethiopia, where DM has emerged as a major public health concern. (11,12)

This backdrop of escalating DM prevalence, compounded by the intricate interplay of genetic, environmental, and behavioral risk factors, sets the stage for this study. By exploring the KAP related to DM care among patients at Yekatit 12 Specialized Hospital, this research aims to contribute valuable insights toward enhancing DM management outcomes in Ethiopia, reflecting a critical step toward addressing the global DM epidemic.

1.2 Statement of the problem

Diabetes Mellitus (DM) presents as a global public health crisis, characterized by persistent high blood glucose levels due to impaired insulin production or action, leading to both acute and chronic complications that are largely preventable with effective management(1). The global burden of type 2 diabetes (T2DM) has been escalating, with incidences rising from 15.1 million in 2003 to projections of 36.6 million by 2030(5). In 2007 alone, 23.6 million individuals, or 7.8% of the United States population, were diagnosed with T2DM, reflecting a diverse impact across different racial and ethnic backgrounds. This increasing trend underscores a growing demand for improved diabetes management approaches to meet both individual and societal expectations.(1,13)

Ethiopia, significantly affected by this epidemic, records approximately 268,100 diabetes cases, positioning it among the top African countries grappling with this condition. Approximately 40% of Ethiopians with diabetes are reliant on insulin for survival, highlighting a critical gap in diabetes care and education. Despite recognizing diabetes's substantial burden, including the risk of foot ulcers, nephropathy, eye diseases, and neuropathy, there remains a notable deficit in structured health education and management strategies, exacerbating the risk of severe complications and premature mortality (6,7).

This backdrop sets the stage for our study, driven by the urgent need to address the knowledge, attitude, and practice (KAP) gap among diabetic patients at Yekatit 12 Hospital, Addis Ababa, Ethiopia. We aim to elucidate the extent of this gap and identify the underlying factors contributing to poor diabetes management outcomes. The study seeks to empower diabetic patients with essential knowledge and skills for effective disease management, promoting positive

lifestyle changes and adherence to treatment plans to mitigate the risk of complications (7,14).

1.3. Significance of the study
The significance of this research cannot be overstated, as DM, despite being a lifelong condition, offers opportunities for the prevention of its acute and chronic complications through informed and proactive management. This study promises to bridge the critical knowledge gap among diabetic patients, providing actionable insights that could revolutionize clinical care, patient counseling, and public health strategies in Ethiopia. By fostering a deeper understanding of diabetes care requirements and encouraging a shift towards positive self-care behaviors, this research stands to significantly reduce the diabetes-related burden on the healthcare system. Furthermore, the findings will serve as a vital resource for future research, aiding healthcare professionals, policy-makers, and educators in devising targeted interventions for diabetes care improvement. In doing so, this study not only addresses an immediate health challenge but also contributes to the broader effort to enhance health outcomes and quality of life for individuals living with diabetes in Ethiopia and beyond.

Literature Review
The global challenge of managing Diabetes Mellitus (DM) is exacerbated by significant gaps in patient knowledge and self-management practices, with variations observed across different regions. In the United States, a community-based study highlighted the vulnerabilities of insulin-dependent elderly patients, showing that a substantial portion experienced frequent hypoglycemia, lacked awareness of its symptoms, and were uncertain about appropriate responses to such episodes. This points to a critical need for comprehensive education on hypoglycemia management among diabetic patients, particularly the elderly (5,11).

In Egypt, a study assessing diabetic knowledge and management behaviors found a concerning overall poor knowledge level among participants, which was inversely related to age, indicating older patients were more likely to be uninformed about diabetes complications and management. This lack of awareness was linked to demographic factors such as sex, age, and educational level, emphasizing the role of socio-demographic determinants in diabetes management (5,15)

A Nigerian study further underscored the knowledge gap, with only 66% of patients displaying adequate awareness of hypoglycemia symptoms, suggesting a need for improved educational interventions focusing on hypoglycemia and its management(16).

In Ethiopia, a study at Jimma University Hospital, revealed that only 13.8% of diabetic patients had adequate dietary knowledge related to their condition, with a noticeable discrepancy between knowledge and actual dietary practices. This finding underscores the essential role of dietary education in diabetes management (14).

The prevalence and management of DM also vary by gender and geography, with some developing countries showing lower prevalence rates in men compared to women, and urban areas having higher rates than their rural counterparts. These differences reflect the complex interplay between cultural, socioeconomic, and environmental factors in diabetes prevalence and management (11,17).

Empowerment through education emerges as a crucial theme, suggesting that providing patients with knowledge, skills, and responsibility can promote better health outcomes and self-management practices. Despite these insights, life expectancy and the impact of DM in Ethiopia remain under-researched, with available data indicating a dire need for enhanced care and education to extend the lives of those diagnosed with DM (7, 14).

In conclusion, the literature underscores a widespread knowledge and practice gap in DM management across diverse contexts, emphasizing the need for tailored educational strategies that consider demographic, cultural, and regional specificities. Empowering patients through targeted education offers a pathway to improve self-management practices and health outcomes, making it imperative for healthcare providers and policymakers to prioritize diabetes education as a cornerstone of diabetes care.

Objective
3.1 General objective
 - To assess the knowledge, attitude, and practice of diabetic care among diabetes mellitus patients at Yekatit 12 Hospital in Addis Ababa, Ethiopia, in 2021.
3.2 Specific objectives
- To characterize the socio-demographic distribution of diabetic patients at Yekatit 12 Hospital, Addis Ababa, Ethiopia, in 2021.
- To assess the level of knowledge in the lifelong self-management of diabetes in Addis Ababa, Ethiopia, in 2021.
- To outline the attitudes towards diabetes self-care among the patients at Yekatit 12 Hospital.
- To determine if there is an association between the patient's knowledge, attitude, and practice and educational status in Addis Ababa, Ethiopia, in 2021.
4.1. Study Setting
4.1.1. Study Area
 Yekatit 12 Hospital was established in 1923 as one of the most modern medical service delivery centers in the country. One of the hospitals under the Addis Ababa city administration health bureau has been providing routine health service for Addis Ababa and other referral cases from different regional states of Ethiopia. The hospital provides service for a population of approximately 4 million people.

It has 9 departments, 6 units and 265 beds. It has been the main referral hospital for the treatment of burn patients for many years. The burn unit has 19 beds, 12 of them for adults and 7 for pediatrics.

4.1.2. Study period
The study was conducted from May 23/05/2021 to July 15/2021

4.2. Study design
A cross-sectional study design was used to assess knowledge, attitude, and practice of diabetic care among diabetic mellitus patients at Yekatit 12 Hospital.

4.3. Study Population
4.3.1 Source Population
All diabetic patients who were examined and underwent treatment at Yekatit 12 Hospital diabetic clinic

4.3.2 Study Population
All diabetic patients who have had follow-ups during the study period

4.4   Study variables
4.4.1   Independent variable
- Age
- Sex
- Religion
- Marital status
- Educational status
- Occupation
- Type of diabetes
- Duration of diabetes since diagnosis

4.4.2   Dependent variable
- **KAP of diabetic care**

4.5 Sampling method and sample size
The sample size was determined using the Cochran formula for sample size calculation in cross-sectional studies, considering a 95% confidence level, a 5% margin of error, and an estimated prevalence rate of diabetes management knowledge at 50% for the maximum sample size requirement. This calculation yielded an initial sample size of 384 patients. Given the finite population of patients attending the clinic and anticipating a 10% non-response rate, a final sample size of 348 was established. This rigorous sample size calculation ensures sufficient power to detect significant differences in KAP aspects across the study population.

$$ni = \frac{(Z_{\langle/2})^2 \, P \, (1-P)}{d^2}$$

$$= \frac{(1.96)^2 0.5 \, (1-0.5)}{(0.05)^2}$$

$$= \underline{384}$$

Since the total population is less than 10,000 the following correction sample size formula is used

$$n_f = \frac{ni}{(1 + \frac{ni}{N})}$$

$$= 1 + 384/1610$$

= 310+ 10% for non-respondents

$$n_f = \underline{348}$$

Where ni = initial sample size

P = Expected prevalence of diabetes mellitus which is 0.5

d = Margin of sampling error to be tolerated 0.05

$Z_{\langle/2}$ = Standard distribution for normal variables of 95% confidence interval which is 1.96.

N = total no of diabetes mellitus follow-up patients at Yekatit 12 Hospital.

n_f = corrected sample size.

To address potential biases arising from non-response, the study employed several strategies. Firstly, participants who were initially unavailable or unwilling to participate were approached up to three times at different intervals to maximize response rates. Secondly, an analysis comparing the demographic characteristics of respondents and non-respondents was conducted to identify any significant differences that might impact the study's findings.

Sampling Technique and Procedure
A systematic random sampling technique

4.6 Data collection
4.6.1 Data collection instrument
A structured questionnaire was used.

4.6.2 Data collection methods
The data were collected by data collectors composed of general practitioners and nurses who were able to speak and write the local language. The data collectors were given one-day training about the study and the data collection process by the principal investigator. To ensure data quality, the questionnaire was standardized by 5% pretesting, and random supervision was done by investigators. The general practitioners made physical examinations for clinical conditions for consented individuals Before they were interviewed by trained nurses using a structured questionnaire in three categories: socio-demographic information, previous history of diabetes and hypertension, and family history of diabetes mellitus and hypertension. After the Interview, anthropometric parameters, and random blood glucose were measured for each participant. The random blood glucose was determined by using the glucometer-strip method by finger puncture. According to the American Diabetes Association's guidelines, random blood glucose levels <140 mg/dl were considered normal, 140-199mg/dl as impaired glucose regulation, and ≥200mg/dl defined as diabetes. Whenever a random blood glucose level indicates a case of diabetes (≥200mg/dl) and impaired glucose regulation (140-199mg/dl), it is confirmed by measuring fasting blood glucose levels. Participants who were unaware that they had diabetes before the study were linked to Yekatit 12 hospital. All the necessary data was collected through face-to-face interviews with the respondents.

4.6.3 Data collectors
Data collectors were nurses and general practitioners.

4.6.4 Data Quality Control

For data quality, a pretest was done among 21 (10%) diabetes patients. The questionnaire was translated from English to Amharic for the sake of better understanding for study participants. Then it was translated back to English by language experts to retain the original meaning. Data clearance was done at every point during collection time. Its completeness, accuracy, and consistency were checked before entry. That was performed at Yekatit 12 Hospital.

4.7 Data analysis

The collected data was cleaned and sorted. Data analysis was performed by using SPSS software and the result were presented using tables.

4.8 Ethical Concerns

Ethical considerations were paramount throughout the study, beginning with obtaining written consent from the review panel at Yekatit 12 Hospital. Prior to conducting interviews, participants were fully informed about the study's purpose and procedures, ensuring their informed consent was obtained, thereby respecting their autonomy to voluntarily decide on their participation.

To safeguard confidentiality, personal identifiers, including names and any information that could potentially reveal the identity of the participants, were deliberately omitted from the study records.

Each participant was assigned a unique code number to ensure anonymity, with questionnaires crafted to exclude any identifying markers.

Furthermore, to protect privacy, interviews were conducted privately, emphasizing the commitment to ethical research practices and the protection of participant data.

4.9 Operational definitions

1. Knowledge

- Understanding of something related to diabetes or a range of information about diabetes care.
- Awareness about factors or situations
- When they answer at least 65% of knowledge questions correctly, they are considered knowledgeable.

2. Attitudes

- Favor (positive attitude):- support the continuation of diabetes mellitus practice, then answer positively with more than 70% of the equation.

3. Practices

The act or the habit the diabetic patients take regarding control of Diabetes mellitus

4. Good control of blood glucose in diabetic patients who have a record of fasting blood glucose 126 mg/dl.

5. Poor control of blood glucose: diabetic patients who have a record of fasting blood glucose less than 50 mg/dl and or greater than 126 mg/dl.

Result

This comprehensive cross-sectional analysis at Yekatit 12 Hospital offers an in-depth look at the demographics, knowledge, attitudes, and practices concerning diabetes management among 348 patients. The study cohort, predominantly affected by Type II Diabetes Mellitus (68.7%), highlighted a notable susceptibility within the 50-59 age group (24.4%), with housewives (26.1%) and farmers (24.4%) being the most represented occupations, suggesting lifestyle influences on diabetes prevalence (Table 1).

Interest in diabetes-related dietary practices was high, with 88.3% of patients expressing a keenness to learn, alongside a strong inclination towards physical exercise (91.3%, Table 7). Despite this, gaps in essential diabetes care knowledge, particularly in insulin storage and injection practices, were evident (Table 5), signaling a critical need for educational interventions.

The patient demographic profile showcased a male majority (59.7%, Table 1) with Oromo (50%) being the predominant ethnic group, followed by Amara (31.3%, Table 1). The duration of treatment predominantly fell within 5-10 years (62.7%, Table 2), with nearly equal reliance on insulin (50.5%) and oral hypoglycemic agents (49.5%, Table 3) for disease management. Education on diabetes care was universal, with all respondents reporting exposure to dietary management and medication information (Table 8).

A detailed knowledge assessment revealed an 88.2% awareness rate regarding diabetic food, yet significant gaps in practical care aspects like insulin storage and injection sites persisted (Table 5). Chi-square analysis unveiled a significant association between educational status and awareness of diabetes complications, underscoring education's role in enhancing self-care efficacy (Table 6).

Moreover, gender-based analysis of self-care skills indicated males (30.7%) demonstrated superior skills compared to females (25.3%, Table 10), highlighting gender as a determinant in diabetes self-management success.

Table 1: Distribution of Socio-Demographic Characteristics of Diabetes Patients in Yekatit 12 Hospital May - July 2013 E.C

Age group	Frequency	Percent
-	42	12.07
0-19	54	15.17
-	52	14.94
0-29	51	14.6
-	85	24.4
0-39	37	10.6

- 0-49	27	7.7
- 0-59		
- 0-69		
- 69		
Total	348	100
Sex		
- ale	208	59.7
- emale	140	40.3
Total	348	100
Occupation		
- armer	85	24.4
- overnment	66	18.9
- ousewife	91	26.4
- mploy	24	6.8
- tudent	50	14.3
- erchant	25	7.1
- thers*	7	2.1
Total	348	100
Religion		
- rthodox	234	67.6
- rotestant	39	11.2
- uslim	53	15.2
- atholic	19	5.4
- thers **	2	0.6
Total	348	100
Ethnicity		
- romo	174	50
- mara	107	31.3
- uragie	6	1.7
- orze	24	6.8
- igre	34	9.7
- thers***	3	0.8
Total	348	100
Diabetic mellitus type		
- ype I	108	31.3
- ype II	240	68.7

	348	100
Total	348	100
Age at onset		
-	18	5.5
10	64	16.3
-	65	18.6
0-19	51	14.6
-	62	17.8
0-29	79	22.7
-	9	2.5
0-39		
-		
0-49		
-		
0-59		
-		
0-69		
-		
79		
Total	348	100

* House servants, Guards, Drivers ** Wakefta, only Jesus *** Kefa, Wolita

Table 2: Distribution of diabetic patients by total duration of treatment in Yekatit 12 Hospital, May – July 2013 E.C.

Total years on treatment	Frequency	Percent
-	103	29.6
5	218	62.7
-	27	7.7
-10		
-		
1-15		
Total	348	100

Table 3: Distribution of diabetic patients by type of medication they are taking, diabetic mellitus clinic of Yekatit 12 Hospital May – July 2013 E.C.

Type of treatment	Type I		Type II	
	Frequency	(%)	Frequency	(%)
Insulin	176	-	-	-
Oral hypoglycemic agent			172	49.5
Total	176	50.5	172	49.5

Table 4: Distribution of diabetic patients by education obtained about diabetic diet, and Diabetic mellitus clinic of Yekatit 12 Hospital May -July 2013 E.C. (n=348).

Education	Frequency	%
About diabetic food	348	100
How to take medication	348	100

Table 5: Distribution of diabetic patients by their knowledge about diabetic food, insulin, and storing and injection site at the diabetic mellitus clinic of Yekatit12 Hospital May- July 2013 E.C.

Knowledge about	Frequency	Percent
Diabetic food		
- Yes	307	88.2
- No	41	11.8
Total	348	100
Carry insulin by		
- Pocket	40	11.1
- Bag	55	15.8

- Others		77	22.1
Total		172	49.5
Store insulin			
- Refrigerator		33	9.4
- In a buried pot with water with leads in any container		143	41.5
- Others		0	50.5
Total		176	50.5
Injection site			
- Abdomen		44	12.6
- Thigh		55	15.8
- Arm		77	22.1
Total		1761	50.5

Table 6: Association between diabetic patients' knowledge about complications by their educational status, Diabetic mellitus clinic of Yekatit 12 Hospital May- July 2013 E.C.

Literacy status	Knowledge about complication				Total	X^2	P. Value
	Yes		No				
	Frequency	%	Frequency	%			
Illiterate	3	0.9	7	2.0	10 (2.9%)	85.6%	0.00%
Read & write	33	9.5	55	15.2	88 (25.3%)		
Grade 1-8	35	10.5	70	20.	105 (30.1%)		
Grade 9-12	48	13.8	33	9.4	81 (23.3%)		
Above grade 12	66	19	0	0	66 (19%)		
Total	185	53.7	163	46.3	348 (100%)		

Table 7: Distribution of diabetic patients by interest in food and exercise in Yekatit 12 Hospital May – July 2013 E.C.

Interest in diabetic patients	Interested		Not Interested	
	Frequency	Percent	Frequency	Percent
Diabetic Food(n=348)	307	88.3	41	11.7
Exercise (n=348)	318	91.3	30	8.7

Table 8: Association between knowledge about diabetic food and last fasting blood sugar record, Diabetic mellitus clinic of Yekatit 12 Hospital May – July 2013 E.C.

Last record of blood sugar							
Dietary knowledge	Good control		Poor control		Total	X^2	P. Value
	Frequency	%	Frequency	%	Frequency		
Yes	152	43.7	155	44.6	307(88.2%)	0.455	0.500
No	18	5.2	23	6.6	41(11.8%)		
Total	170	48.8	178	51.2	348(100%)		

Table 9: Distribution of patients by attitude towards diabetic care, diabetic mellitus clinic of Yekatit 12 Hospital May – July 2013 E.C.

Attitude							
		Positive		Negative		Total	
Diabetic Care		Frequency	%	Frequency	%	Frequency	%
Oral Hypoglycemic agent	yes	102	29.3	70	20.2	172	49.5
	No	106	30.5	70	20	176	50.5
	Total	208	59.8	140	40.2	348	100
Diet		307	88.3	41	11.7	348	100
Exercise		318	91.3	30	8.7	348	100
Food Care		152	43.6	196	56.4	348	100

Table 10: Association between respondents' sex and skill in self-care Yekatit 12 Hospital May – July 2013 E.C.

Sex	Skill						X^2	P. V
	Good		Poor		Total	%		
	Frequency	%	Frequency	%	Frequency			
Male	107	30.7	101	29.1	208	59.7		
Female	88	25.3	52	14.9	140	40.3	4.43	0.035
Total	195	56	153	44	348	100		

Discussion

The Jimma and Yekatit 12 Hospital studies together paint a comprehensive picture of diabetes management in Ethiopia, focusing on demographic characteristics, risk factors, and patient engagement in disease management. The Jimma study identified a balanced distribution between Type 1 and Type 2 diabetes patients, with a slight predominance of Type 2 diabetes observed in the Yekatit study (68.7%). This suggests a substantial burden of diabetes within the country, with Type 2 diabetes appearing more prevalent, consistent with global trends (2).

Both studies reveal significant demographic insights, with Jimma highlighting a diverse patient base predominantly from urban areas (62.5%) and a considerable fraction from rural areas (37.5%). In contrast, the Yekatit study's demographic profile showed a majority male patient base (59.7%) with a notable representation of the Oromo and Amara ethnic groups. Interestingly, both studies identify farmers as a significant portion of the patient demographic, alongside a variety of other occupations. This underscores the widespread impact of diabetes across different societal sectors and geographic locations (2).

Another study done in Black Lion Hospital, Addis Ababa, underscores the critical risk factors of hyperglycemia, hypertension, obesity, and hypercholesterolemia, with a higher prevalence of these conditions among Type 2 diabetes patients compared to Type 1 (6). The study done in Jimma, while not focusing extensively on physiological risk factors, highlights the need for educational interventions to address gaps in diabetes care knowledge. The significant interest in dietary practices and physical exercise reported in this study contrasts with the high rates of poorly managed blood glucose levels and other health indicators in the Jimma study, suggesting a gap between knowledge/attitude and practice.

A key finding from this study is the universal exposure to diabetes care education among patients, juxtaposed with significant gaps in practical care aspects, such as insulin storage and injection practices. This aligns with the Jimma study's implicit call for enhanced patient education, as evidenced by the commonality of risk factors that could be mitigated through better self-management and lifestyle adjustments (2).

This study reveals that males demonstrated superior self-care skills compared to females presents an opportunity for targeted educational programs. This insight, combined with the Jimma study's broader risk factor analysis, suggests that interventions should be tailored to address the specific needs and challenges of different patient groups.

Conclusion and Recommendation

These studies illuminate the complexity of diabetes management in Ethiopia, marked by a high prevalence of risk factors, significant gaps in patient education, and varying degrees of self-management efficacy. The findings advocate for a multifaceted approach to diabetes care that includes:

- Enhanced patient education focusing on practical aspects of disease management.
- Targeted interventions addressing the needs of specific demographic groups, including rural populations and women.
- Continued research into the lifestyle and occupational influences on diabetes prevalence and management.
- Strengthening healthcare infrastructure to support comprehensive and accessible diabetes care services.

List of Acronyms

AIDS: Acquired Immune Deficiency Syndrome.
CBE: Community-Based Education
DM: Diabetes Mellitus
DOTS: Directly Observable Short-term Treatment
HIV: Human Immunodeficiency Virus
IDDM: Insulin Dependent Diabetes Mellitus
IDF: International Diabetic Federation
KAP: Knowledge Attitude and Practice
MDT: Multi-Drug Therapy
NIDDM: Non-Insulin Dependent Diabetes Mellitus
WHO: World Health Organization

References

1. Alberti KGMM, Zimmet PZ. Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: diagnosis and classification of diabetes mellitus. Provisional report of a WHO consultation. Diabet Med. 1998;15(7):539–53.
2. Kelemu T, Mengistu A, Mamo Y. Assessment of The Distribution of Risk Factors For Chronic Complications of Diabetes Among Patients Attending Jimma Hospital Diabetic Clinic. Ethiop J Health Sci. 2005;15(2).
3. Narayan KV, Williams D, Gregg EW, Cowie CC. Diabetes public health: From data to policy. Oxford University Press; 2010.

4. Hall V, Thomsen RW, Henriksen O, Lohse N. Diabetes in Sub Saharan Africa 1999-2011: epidemiology and public health implications. A systematic review. BMC Public Health. 2011;11:1–12.

5. Liu J, Ren ZH, Qiang H, Wu J, Shen M, Zhang L, et al. Trends in the incidence of diabetes mellitus: results from the Global Burden of Disease Study 2017 and implications for diabetes mellitus prevention. BMC Public Health. 2020;20:1–12.

6. Birhan S, Jemel A, Feshasion G, Bekele A. Analysis of diabetic mellitus patient admitted to Tikur Ambesa hospital over 8 years period. Ethiop Med J Health Dev. 1999;73(12):9–13.

7. Zekewos A, Loha E, Egeno T, Wubshet K, Merga Z. Prevalence of diabetes mellitus and associated factors in Southern Ethiopia: a community based study. Ethiop J Health Sci. 2018;28(4).

8. Pegg A, Fitzgerald F, Wise D, Singh B, Wise P. A community-based study of diabetes-related skills and knowledge in elderly people with insulin-requiring diabetes. Diabet Med. 1991;8(8):778–81.

9. Mohammadi S, Karim NA, Talib R, Amani R. Knowledge, attitude and practices on diabetes among type 2 diabetic patients in Iran: a cross-sectional study. Science. 2015;3(4):520–4.

10. Bizuayehu Wube T, Mohammed Nuru M, Tesfaye Anbese A. A comparative prevalence of metabolic syndrome among type 2 diabetes mellitus patients in Hawassa University Comprehensive Specialized Hospital using four different diagnostic criteria. Diabetes Metab Syndr Obes Targets Ther. 2019;1877–87.

11. Kamel N, Badawy Y, El-Zeiny N, Merdano I. Sociodemographic determinants of management behaviour of diabetic. 1999;5(5):967.

12. Weinger K, Beverly EA, Smaldone A. Diabetes self-care and the older adult. West J Nurs Res. 2014;36(9):1272–98.

13. Anderson RM, Funnell MM. Patient empowerment: Myths and misconceptions. Chang Obes Theor Facts Interv. 2010 Jun 1;79(3):277–82.

14. Kassahun T, Gesesew H, Mwanri L, Eshetie T. Diabetes related knowledge, self-care behaviours and adherence to medications among diabetic patients in Southwest Ethiopia: a cross-sectional survey. BMC Endocr Disord. 2016;16:1–11.

15. El-Khawaga G, Abdel-Wahab F. Knowledge, attitudes, practice and compliance of diabetic patients in Dakahlia, Egypt. Euro J Res Med Sci. 2015;3(1).

16. Muhammad FY, Iliyasu G, Uloko AE, Gezawa ID, Christiana EA. Diabetes-related knowledge, attitude, and practice among outpatients of a tertiary hospital in North-Western Nigeria. Ann Afr Med. 2021;20(3):222–7.

17. Lester FT. Hospitalization patterns of Ethiopians with diabetes mellitus. Diabetes Care. 1987;10(2):184–90.