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Research Article

Knowledge, Attitude and Practice of Diabetic Patients About Symptoms of Hypoglycaemia in Atbara Teaching Hospital, December 2022 – October 2023

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Abstract

Introduction: Diabetes mellitus (DM) is a chronic metabolic disease characterized by hyperglycemia, which can increase the risk of micro and macro vascular complications. Hypoglycemia strongly associated with increase mortality in diabetic patients. The American Diabetes Association defines the hypoglycaemia as "any abnormally low plasma glucose concentration that exposes the subject to potential harm", and proposes a threshold of <70 mg/dl. Prevention of hypoglycaemia can occur if much efforts spent in patient education regarding risk factors, food & physical activity, warning signs, and treatment of hypoglycaemia at an early stage. Objective: To identify Knowledge, Attitude and Practice of Diabetic patients about symptoms of Hypoglycaemia at Atbara teaching hospital. Method: A descriptive cross-sectional hospital-based study done in Atbara teaching hospital, River Nile state, Sudan. From December 2022 – October 2023. The study population were all diabetic patients who presented to the hospital during the period of the study. Exclusion criteria was severely ill patient or those who refuse to participate in the study. With total coverage sample size was 200. The data was collected by interviewing the respondents through close ended questionnaire. The collected data was analyzed by using SPSS. Result: The male to female ratio equal one. With the predominant age between 20 to 35. Most of the participants HBA1c were between 7%-10%. The duration of diabetes was not exceeding 10 years in 44% of the participants. Majority were on oral hypoglycemic drugs with good adherence to it. Tremor is the most reported symptoms of hypoglycemia. With most of the participants deal with the symptoms by them self. Conclusion: Over all the participants show acceptable level of knowledge toward hypoglycemia. Expressed through that most of them deal with the symptoms immediately by them self. Attitude of the participant need to be more investigated in the future with further studies.

Keywords

Hypoglycemia, Diabetes Mellitus, Insulin

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1. Introduction

1.1. Background

Hypoglycemia is a well-known complication of Diabetes mellitus (DM). which is a chronic metabolic disease characterized by hyperglycemia. That increase the risk of micro and macro vascular complications [1]. The classical symptoms of DM are; polyuria, polydipsia, polyphagia with or without weight loss [2]. Many DM complications have proven to be a consequence of hyperglycemia. However, this hypoglycemia is much more life threating than the complications of hyperglycemia. Due to it is direct effect on brain [3].

DM is one of the major leading causes of morbidity and mortality worldwide [4]. According to WHO statistics, there are 422 million people affected, with a projected increase to 552 million by 2030 [5]. It is responsible for 1.5 million deaths per year, making it the seventh leading cause of death by 2030 [6]. Hypoglycemia strongly associated with increase mortality in diabetic patients [7-10].

The American Diabetes Association defines the hypoglycemia as "any abnormally low plasma glucose concentration that exposes the subject to potential harm", and proposes a threshold of <70 mg/dl. Level 1 hypoglycemia when blood glucose (BG) <70 mg/dl but equal or more than 54 mg/dl. Level 2 hypoglycemia defined as BG <54 mg/dl. Level 3 hypoglycemia when BG <40 mg/dl. The spectrum of symptoms depends on the duration and severity of hypoglycemia and varies from autonomic activation to behavioral changes to altered cognitive function to seizures or coma and even death in sever hypoglycemia [11]. the tachycardia, sweating and other symptoms occurring due to hypoglycemia could be masked by drugs like beta blockers. However, this up to 44% of hypoglycemic cases could be asymptomatic [12]. Advance age, skipping meals, Erratic eating patterns, Heavy exercise, Weight loss, Using the same injection site too frequently, Cognitive dysfunction and Underlying kidney damage are all significant risk factors of developing hypoglycemia [13, 14].

The fear of hypoglycemia constitutes a barrier that impairs the patient's ability to reach good glycemic control [15]. To prevent hypoglycemia, much effort must be invested in patient education regarding risk factors, food & physical activity, warning signs, and treatment of hypoglycemia at an early stage, together with setting personalized goals for glycemic control [16]. this study aims to assess the knowledge, attitude and practice of Diabetic Patients About Symptoms of Hypoglycemia. And to identify the main associated risk factors. The study will give more details about the hypoglycemia issue. Which will help augment the efforts for reducing its incidence.

1.2. Objectives

General objective:

To identify the Knowledge, Attitude and Practice of Diabetic patients about symptoms of Hypoglycemia at Atbara teaching hospital.

Specific objectives:

1. To determine the way of Dealing with Symptoms of Hypoglycemia.
2. To Assess Attitude about Seriousness of Hypoglycemia Among the study group.

2. Methodology

2.1. Study Design and Setting

A descriptive cross-sectional hospital-based study done in Atbara teaching hospital, River Nile state, Sudan. From December 2022 – October 2023.

2.2. Sampling and Study Population

The study population were all diabetic patients who presented to the hospital during the period of the study. Exclusion criteria was severely ill patient or those who refuse to participate in the study. With total coverage sample size was 200.

2.3. Data Collection and Analysis

The data was collected by interviewing the respondents through close ended questionnaire. The collected data was analyzed by using statistical computerized program SPSS using descriptive statistics, descriptive data presented as frequency, proportion tables, and charts.

2.4. Ethical Consideration

A formal letter from department of community medicine to the medical director of Atbara teaching hospital from whom we received a written consent to conduct the research, also we took verbal consent from patients.

3. Results and Discussion

Table 1. *Distribution of study group according to gender: Demonstrate that male to female ratio is equal.*

Gender	Frequency	Percent
Male	100	50%
Female	100	50%
Total	200	100%

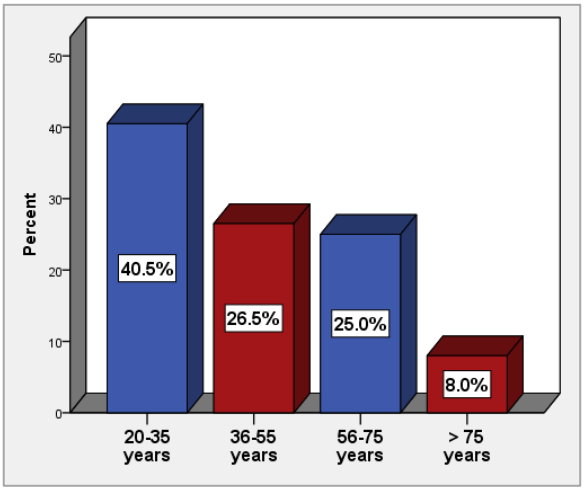

Figure 1. *Distribution of study group according to age: 40% of participants aged from 20-35 years.*

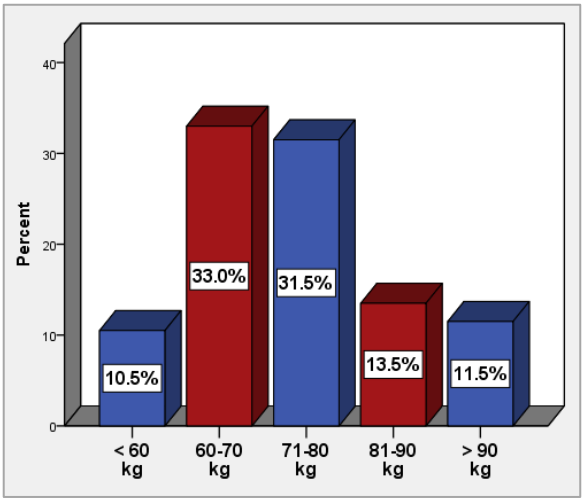

Figure 2. *Distribution of study group according to weight: 33% weight from 60 to 70 kg.*

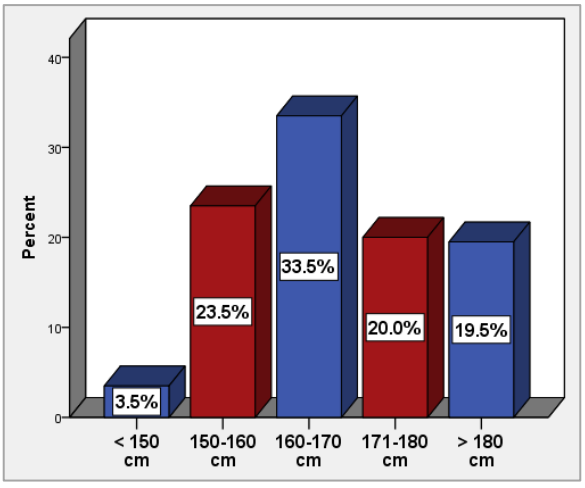

Figure 3. *Distribution of study group according to height: 33.5% height from 160-170 cm.*

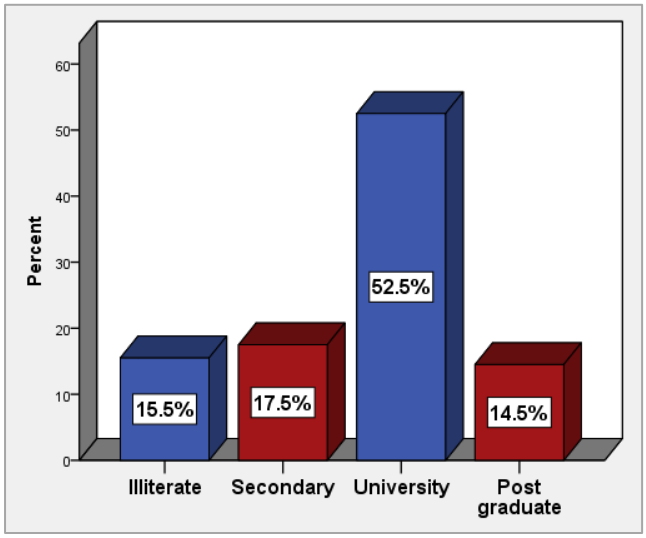

Figure 4. *Distribution of study group according to educational level: Most of the participant reached the university.*

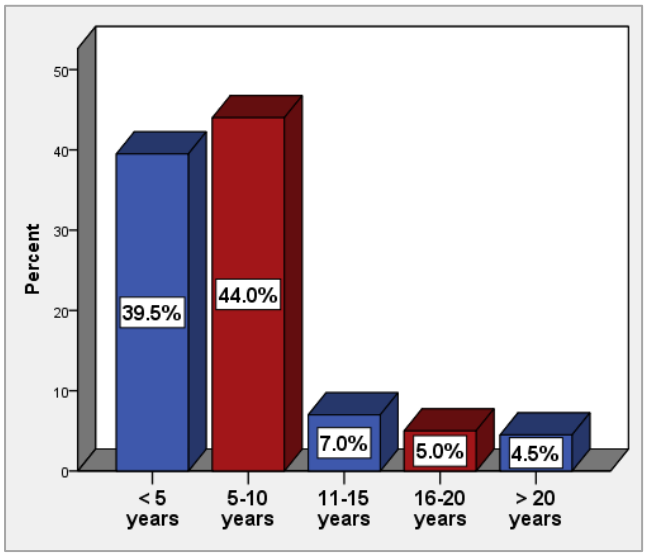

Figure 5. *Distribution of study group according to duration of DM: Majority had DM for 5 to 10 years.*

Table 2. *Distribution of study group according to medication: 41.5% on oral hypoglycemic drugs.*

Medication	Frequency	Percent
Oral hypoglycemic drugs	83	41.5%
Insulin	65	32.5%
Insulin + Oral hypoglycemic drugs	52	26.0%
Total	200	100%

Table 3. *Distribution of study group according to medication regularity: 58.5% were on regular medication.*

Medication regularity	Frequency	Percent
Regular	117	58.5%
Irregular	42	21.0%
Sometimes	41	20.5%
Total	200	100%

Table 4. *Distribution of study group according to blood sugar test: More than half of the participant 57% were checking blood sugar test.*

Blood sugar test	Frequency	Percent
Check	114	57%
Not check	86	43%
Total	200	100%

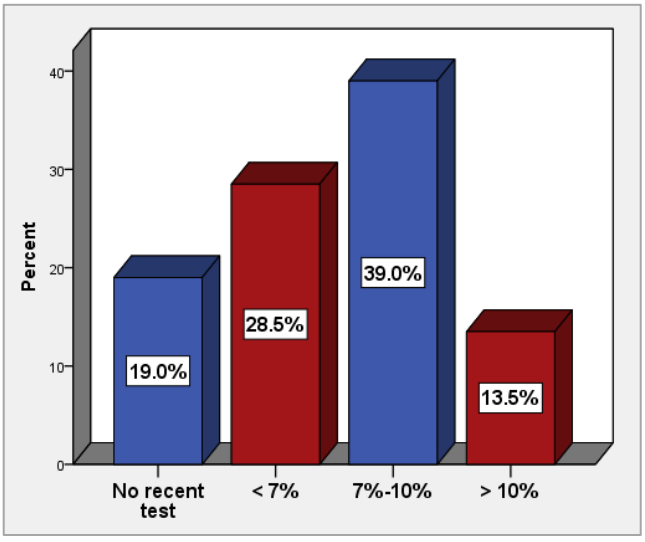

Figure 6. *Distribution of study group according to blood test result: Most of the participants HBA1c were between 7%-10%.*

Table 5. *Distribution of study group according to blood sugar test.*

Blood sugar test	Frequency	Percent
Check by my own	112	56%
Not by my own	88	44%
Total	200	100%

Table 6. *Distribution of study group according to symptoms of Low blood sugar: Almost all participant 80% felt the symptoms of hypoglycemia.*

Symptoms of Low blood sugar	Frequency	Percent
Felt	160	80%
Not felt	40	20%
Total	200	100%

Table 7. *Distribution of study group according to seriousness of hypoglycemic symptoms.*

Seriousness of hypoglycemic symptoms	Frequency	Percent
Serious	127	63.5%
Not serious	73	36.5%
Total	200	100%

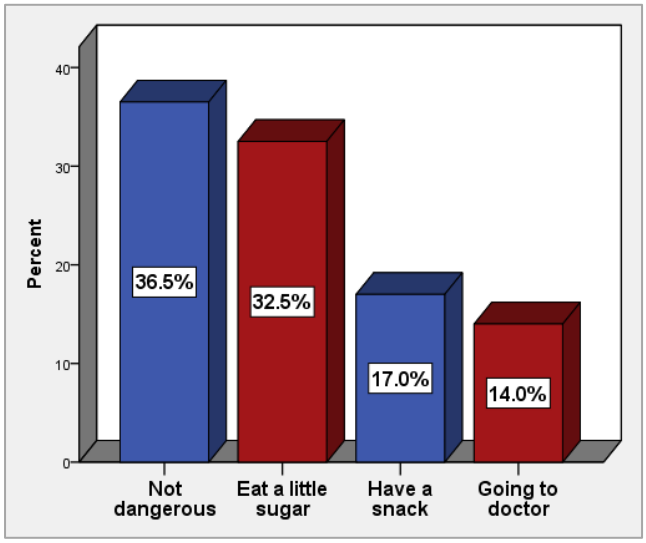

Figure 7. *Distribution of study group according to behavior towards this symptom: Most of them see symptoms as not dangerous.*

Table 8. *Distribution of study group according to taking action towards these symptoms: 69.5% take actions by them self.*

Tacking action	Frequency	Percent
By myself	139	69.5%
Helping another person (hospital/doctor)	61	30.5%
Total	200	100%

Awareness and knowledge of hypoglycemic symptoms can affect the life style of diabetic patients. Knowing the symptoms of hypoglycemia, how to deal with it is a live saving issue for the diabetic patients. Nowadays life style, patients' educations and attitude are being essential part of management. So, having the knowledge is the first step toward preventing hypoglycemia or at least lowering the mortality related to it.

Gender wise, the distribution is equal in male and female. This is differed from Hyder study reported that female constitute 65.4% of the study population [17]. The majority of the participants 40.5% tend to age between 20 to 35 years old. This age group has a close contact with technologies and smart phones which may help inconsequence raising knowledge about hypoglycemia if used correctly. This all advantages decreases with increasing age [18]. However, young age is warring sign which need further studies and investigations regarding prevalence of DM.

Most of the participants were faculty college students or graduated from universities (52.5%). As much as the patient's education increase the adherence to medication, attitude and better utilization of medical advices will increase also. This goes in line with a study done in the Kaiser Permanente Northern California diabetes registry conducted in 2005-2006 that shows a high educational level of their respondents [19]. However, other studies demonstrate lower educational level than this [20]. patients with high educational level found to have low risk of developing hypoglycemic, due to increased awareness and knowledge about decreasing blood glucose level. [21]

Other than age, DM for 6- 10 years which is found in 44% of the participants. Is another factor favoring less frequent hypoglycemia. As hypoglycemia linked in many studies with prolonged DM duration [22].

The study demonstrates that patients taking tablets are much more predominant than those using insulin, which is associated with higher incidence of hypoglycemia [23].

Regarding to regularity, most of the participants answered yes, they are on regular treatment, and this reflects their knowledge about the effect of medications on lowering the incidence of hypoglycemic symptoms.

Most of the participants 39% HBA1c were between 7-10. This finding is lower when comparing with study that reported HBA1c more than 7 in more than half of the participant 85% of the population [24]. This attributed to long duration of DM (24). On our behalf the 39% can be explained by that, more than half of the participants have DM for 5- 10 years.

Regarding to blood sugar test, more than half of the participants answered yes, they test their blood glucose level. This indicates their awareness to the association between the blood glucose level and the symptoms.

Most of the participants chose Tremor as the most symptom to notice, showing an association between low blood levels of glucose and neurological symptoms of hypoglycemia. This will work as triggering factors to deal with the hypoglycemia [25]. In fact, half of the patients manage them self before reaching the hospitals.

4. Conclusion

Over all the participants show acceptable level of knowledge toward hypoglycemia. Expressed through that most of them deal with the symptoms immediately by them self. Attitude of the participant need to be more investigated in the future with further studies.

5. Recommendations

Enhance the Interprofessional approach to hypoglycemia.

Primary Health Care Worker should Increase the knowledge about the importance of taking the medications regularly and the correct dose and advice the patients to eat their meals regularly and don't skip a meal.

Doctors, health authorities and faculties of medicine should conduct health workshops and awareness campaigns about the dangers of hypoglycemia.

Advice the patients to Adjust their medication if they increase their physical activity.

Abbreviations

BG: Blood Glucose

DM: Diabetes Mellitus

Author Contributions

Mustafa Magbol: Conceptualization, Methodology, Formal Analysis, Writing—Review and Editing

Wael Mohammed Abd Alaziz: Conceptualization, Methodology, Writing—Original Draft Preparation

Ahmed Mohammed Osman: Software, Writing—Original Draft Preparation

Nosiba Awad Khalf Allah: Software

Nuha Osman Alkhowad: Resources

Ahmad Izzoddeen: Resources, Writing—Review and Editing

Shireen Abd Alraheem Alsugud: Supervision

Data Availability Statement

The data used in this study are available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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