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Knowledge, Attitudes, And Practices Among Paramedics in The Saudi Red Crescent Authority About Hypoglycemia: A Cross-Sectional Study

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ABSTRACT

Hypoglycemia is a dangerous emergency which has many potentially lethal causes if left unrecognized and untreated. Since they are mainly the initial health care givers to attend to such instances, it is paramount important that they provide proper management. The cross-sectional study for this research was designed to assess the awareness, perceptions and behavior of paramedics in SPCA about hypoglycemia management. A cross-sectional survey was conducted involving conveniently selected 236 paramedics In The Saudi Red Crescent Authority using conveniently constructed structured questionnaire. A majority of participants (67.8%) were diploma degree holders while 72.9% of participants were in the age range of 21 to 30 years. The average number of points for knowledge about hypoglycemia was 4.18 out of 5, which confirms a high level of the participants' knowledge. Of course, doing this, some shortcomings in differentiating hypoglycemia from other conditions were disclosed in the study. The perceived self-management of hypoglycemia obtained a better score with an overall positive attitude of 3.59/5. Concerning hypoglycemia, the factors significantly had paramedics' knowledge, yet the level of perceived importance of managing hypoglycemia was acknowledged, but there was a lower agreement level with glucose management in suspected cases. The survey gave an overall mean of 3.7 mean rating on a 5-point scale out of the total acceptable practices in hypoglycemia management, with frequency of blood glucose checks most practiced. The study indicate a call for refresher training / orientation to update the knowledge of working women, build confidence and equip them to practice an evidence based management. Using simulation based training and defined protocols in the context of EMS may enhance paramedics' readiness and hence enhance patient treatment results in the context of hypoglycemic codes.

1. INTRODUCTION

Diabetes Mellitus is a non-communicable, heterogeneous collection of metabolic illnesses characterized by increased blood glucose levels and aberrant carbohydrate, lipid, and protein metabolism due to abnormalities in insulin secretion and/or insulin action. Diabetes-related deaths and hospitalizations are caused by both acute and chronic consequences [18].

Hypoglycemia is an abnormality of a plasma glucose level which is below 70 mg/dL and is a life-threatening emergency which can lead to several adverse consequences if not well diagnosed & managed. People with diabetes are particularly more vulnerable but it can also arise in patients with no diabetes related complication because of factors like wrong medication prescription, excessive use of alcohol or other illnesses. It is significant because the first protagonists of hypoglycemic emergency are the Emergency Medical Services (EMS) which include paramedics [16].

Patients with type II diabetes were shown to have a prevalence of mild/moderate and severe hypoglycemia of 45% and 6%, respectively, according to a systemic review and meta-analysis [11]. Hypoglycemia was observed to occur in 83.0% of patients with type I diabetes and 46.5% of patients with type II diabetes, according to a different multi-centre study that examined the rates and predictors of hypoglycemia [8].

Hypoglycemia causes a large financial strain on the health care system by necessitating frequent ER visits, ambulance rides, and hospital stays. This type 1 diabetes complication is thought to be the cause of death for 2-4% of individuals with the disease each year [4], [11].

The most frequent causes of repeated episodes of hypoglycemia are insulin therapy, insulin secretagogues, missing meals, exercising without eating, alcohol, renal insufficiency, coronary artery disease, infections, and a history of severe hypoglycemia [6], [19].

The range of symptoms, which might include autonomic activity, behavioral abnormalities, and impaired cognitive function, is contingent upon the length and intensity of hypoglycemia. The only way to determine whether someone has low blood sugar is to check their blood glucose levels. Trauma, cardiovascular events, brain impairment, and mortality are among the short- and long-term consequences [2], [20].

Treatment for hypoglycemia involves consuming foods high in glucose or carbohydrates. Although pure glucose is the ideal treatment, blood glucose can also be raised by any other type of carbohydrate that contains glucose. For individuals who cannot or will not take in carbs orally, glucagon is recommended as a therapy for hypoglycemia [1]. To avoid serious health consequences and financial burden, early detection and prevention are still preferable to therapy [5].

Patient education combined with self-monitoring of blood glucose (SMBG), dietary changes and regular exercise, medication adjustment, careful glucose monitoring by the patient, and diligent follow-up by the clinician are proven effective strategies to lower the risk of hypoglycemia [17]. Furthermore, as knowledgeable individuals are more likely to practice better self-care, being aware of the signs of hypoglycemia is a crucial first step in practicing self-care [13]. Good hypoglycemia avoidance practices are favorably correlated with having adequate information of hypoglycemia [11].

The general emergence of diabetes around the world has upped the propensity of paramedics identifying oneself with patients who have gone into hypoglycemic shock. Presenting diabetics, which is derived from current statistics, now make up a large proportion of the total number of patients out there in the prehospital phase and of the most common subtypes of the presenting diabetics is hypoglycemia. And this goes to show that there important for paramedics adequately trained on the assessment and management of hypoglycemic events [3].

However, there is known concern related to paramedics' knowledge and attitude towards hypoglycemia which can be considered an essential part of effective management. There is also the aspect of response variation depending on the place and training a person has had as another issue. The first level of targeting is to improve the current knowledge base and attitudes of paramedics in order to discover the areas that may be suboptimal for patient care [22].

This study aims to evaluate the knowledge, attitudes, and practices of paramedics in the Saudi red crescent authority regarding hypoglycemia management. To capture the extent of knowledge that the current paramedics possess in relation to hypoglycemia pathophysiology, symptomology and management, a structured questionnaire completed by Likert scale will be used. They will be very useful in identifying areas of practice that needs more training hence improving on the kind of treatment offered to patients suffering from hypoglycemic emergencies.

2. Study problem

Because hypoglycemia is one of the most frequent emergencies all over the world with high risk of severe complication so, their management by paramedics is essential. Afterward, paramedics are usually the first health care givers to attend to such cases and thus the population's knowledge, attitude towards and practices regarding such cases are important in ensuring that care is delivered on time and a proper way.

Hypoglycemia if not recognized and treated on time poses profound consequences. The signs and symptoms which are seen with low blood glucose level are neurological complications which include confusion, seizures, and loss of conciseness. They occur because the brain uses so much glucose for its energy needs and when glucose reaches a certain level the individual is in danger of passing out or even dying due to lack of functioning brain. Severe hypoglycemia has the potential to cause coma or death if nothing is done to undo the situation. There is evidence that uncompensated hypoglycemia may cause permanent neurological abnormalities and cognitive dysfunction as well as an increased risk of dementia in elderly patients [7].

However, many hypoglycemia episodes over time can lead to a situation called 'hypoglycemia unawareness' which is a condition that does not enable patients to see any early symptoms of low blood sugar. It can lead to sever hypoglycemic episodes because patients may not understand whether their glycemic level is critically low. Moreover, hypoglycemic episodes largely share close relations with severe cardiovascular adverse effects such as arrhythmia and myocardial infarction. Patients with severe hypoglycemia seem to be six times more likely to die, studies show [9].

Not only does these complications result to other health complications but also it affects the wellbeing of persons with diabetes. Hypoglycemia can make an individual afraid of future episodes and produce changes in behaviour to avoid similar episodes 6. Hence, awareness of the implications that accompany events of hypoglycemia are important to the professional, especially the paramedics who are usually in the frontline to manage such complications [23].

Furthermore, poor patient outcomes may result from paramedics' uneven understanding of how to manage hypoglycemia. Numerous EMS professionals might not be familiar with the most recent recommendations and treatment techniques for hypoglycemia, according to research. Inadequate treatment at the scene or needless hospital transfers can arise from this lack of knowledge, which not only compromises patient care but also adds to the burden on healthcare systems [12].

It's also critical to include paramedics' attitude on managing hypoglycemia. Their capacity to handle such situations with effectiveness can be greatly increased by having a good attitude toward continuing education and training. On the other hand, paramedics' confidence and effectiveness in practical settings may be hindered if they believe their training is inadequate or out of date [10].

Considering these difficulties, the purpose of this research is to investigate paramedics' understanding, perspectives, and methods for managing hypoglycemia. We can create focused training interventions that strengthen paramedic readiness and eventually improve patient care outcomes in hypoglycemia situations by identifying knowledge gaps and areas for improvement.

3. Literature review

Despite the prevalence of hypoglycemic events in prehospital settings, there are notable gaps in the training and preparedness of paramedics. A study by [15] revealed that less than half of EMS agencies in the United States allowed for non-transport of patients after correcting hypoglycemia, indicating potential inconsistencies in practice protocols across different regions. Furthermore Rostykus highlighted that approximately 50% of patients with severe hypoglycemia required hospital transport, underscoring the importance of effective on-scene management [15]

Moreover, a self-administered written survey by [10] revealed that most of the respondents were unsure of the current management of hypoglycemia, which may exacerbate further the already compromised standard of care for these patients 4. This lack of familiarity is worrisome especially because response to hypoglycemic episodes early is critical in avoiding serious outcomes that range from seizure or loss of consciousness.

The knowledge and perception that paramedics have on hypoglycemia determine their behaviour. A favourable attitude towards continuing education and training is correlated with increased self-efficacy in the hypoglycemic emergencies. But many of the paramedics interviewed conveyed the fear that their training and tools are inadequate to handle such occurrences adequately. For example, a study mentioned that it has been identified that the paramedics understand that hypoglycemia needs to be treated promptly, they remain unprepared either because of inadequate training or absence of essential equipment including glucagon kits [14].

In fact, the strategies that are implemented by paramedics when addressing hypoglycemic urgencies can depend on more than a few rules, as well as the actual experience. College EMS presented in 2022, the ways of treating hypoglycemia are with ordinary sugar, intravenous dextrose, and intramuscular glucagon. However, such differences in the protocols cause the differences in practical application of these treatments. For example, most EMS agencies use prepackaged glucose gel because it is easier to administer than glucagon but not all of them are taught how to give glucagon [21].

Furthermore, a recent case report drew attention to signs and fostered early treatment in the prehospital setting as necessary measures to avoid complication related to hypoglycemia. This has raised the need for

practices and policies which will make sure that all paramedics are ready to handle the events of hypoglycemic emergencies [12].

Research questions

- What is the knowledge of paramedics in the Saudi red crescent authority about hypoglycemia?
- What is the attitude of paramedics in the Saudi red crescent authority about hypoglycemia?
- What are the practices of paramedics in the Saudi red crescent authority about hypoglycemia?

Research objectives

- To determine the knowledge of paramedics in the Saudi red crescent authority about hypoglycemia.
- To determine the attitude of paramedics in the Saudi red crescent authority about hypoglycemia.
- To determine the practices of paramedics in the Saudi red crescent authority about hypoglycemia.

Methodology:

Given the nature of the current study topic (knowledge, attitudes, and practices among paramedics in the Saudi red crescent authority about hypoglycemia). To achieve the study objectives, the researcher used the descriptive method, which is: the type of research by which all members of the research community or a large sample of it are questioned; with the aim of describing the phenomenon being studied in terms of its nature and degree of existence. (Al-Assaf, 2016, p. 211).

Study Community:

The current study community consists of all Paramedics in the Saudi Red Crescent Authority

Study Sample:

The origin of scientific research is to be conducted on all members of the research community; because this is more likely to confirm the results, but the researcher resorts to choosing a sample of them if this is not possible due to their large number, for example" (Al-Assaf, 2003, p. 96); therefore, the researcher chose a random sample, where the sample amounted to (236) Paramedics in the Saudi Red Crescent Authority.

Study Tool:

Based on the nature of the data and the methodology followed in the study, the researcher found that the most appropriate tool to achieve the objectives of this study is (the questionnaire). The questionnaire was designed to understand the knowledge, attitudes, and practices among paramedics in the Saudi red crescent authority about hypoglycemia. The researcher designed the initial questionnaire and distributed it to the study sample to find out the data that this tool seeks to collect. The validity and reliability procedures for this tool were verified. The following is a detailed explanation of how to prepare the tool and the procedures taken by the researcher to verify the validity and reliability of the tool.

Validation of questionnaire

The validity of the study tool means ensuring that it measures what it was prepared to measure. It also means that the questionnaire includes all the elements that enter the analysis on the one hand, and the clarity of its expressions on the other hand, so that it is understandable to everyone who uses it. The researcher verified the validity of the study tool through:

Honesty of arbitrators:

The face validity method was used, with the aim of ensuring the validity of the questionnaire and its suitability for research purposes, by presenting it to a group of academic and specialist arbitrators, and

asking them to express an opinion regarding the extent of the validity and validity of each paragraph of the questionnaire and its suitability for measuring what it was designed to measure, and introducing Necessary amendments, whether by deletion, addition or reformulation. The arbitrators presented suggested amendments to the study tool, and the researcher took those observations into account, made the necessary amendments that were agreed upon by most arbitrators, and then relied on the questionnaire in its final form.

Internal consistency validity

Through internal consistency, we know the extent to which each paragraph of the questionnaire is consistent with the axis/dimension to which this paragraph belongs. To calculate the validity of the internal consistency of the study tool, the Pearson correlation coefficient was calculated (Pearson Correlation Coefficient), through which the correlation coefficients were calculated between the score of each item and the total score of the dimension (the average score of the items of the dimension) to which the item belongs. The following tables show the validity of the internal consistency.

Data Analysis

The researcher used the statistical software SPSS for data analysis, which is the appropriate method for such types of studies. Several statistical methods were employed, including:

- Pearson Correlation coefficient: This was used to ensure the validity of internal consistency.
- Cronbach's Alpha Scale: This test was utilized to confirm the reliability of the questionnaire.
- Frequencies and percentages: of study sample responses.
- Mean and standard deviation: for each statement in the questionnaire, as well as the calculation of the mean and standard deviation for each axis of the questionnaire.
- Simple Linear Regression coefficient: This was used to determine the strength and direction of the relationship between the independent variable and the dependent variable.

Table (1): internal consistency results

Knowledge about Hypoglycemia	Pearson Correlation Coefficient	Sig
1- I know common causes of hypoglycemia.	.802**	.000
2- I'm aware of the typical symptoms of hypoglycemia (e.g., sweating, confusion, tremors).	.563**	.000
3- I can recognize the early signs of hypoglycemia in a patient.	.779**	.000
4- I know the risk factors for hypoglycemia in diabetic patients.	.774**	.000
5- I know the correct protocols for managing a hypoglycemic patient in the field.	.870**	.000
6- I can differentiate between hypoglycemia and other medical conditions with similar symptoms.	.787**	.000
7- I know the complications that may arise from untreated hypoglycemia.	.716**	.000
Attitudes towards Hypoglycemia		

1- Managing hypoglycemia is a critical aspect of my role as a paramedic.	.633**	.000
2- I can treat patients experiencing hypoglycemia.	.575**	.000
3- I feel anxious when managing a hypoglycemic patient in the prehospital setting.	.804**	.000
4- I believe administering glucose should be prioritized in cases of suspected hypoglycemia.	.827**	.000
5- I trust my clinical judgment when treating a patient with hypoglycemia, even in the absence of glucose testing.	.827**	.000
6- I am willing to consult with other healthcare professionals when managing complex hypoglycemic cases.	.885**	.000
7- I think the current protocols for hypoglycemia management are sufficient for paramedics.	.784**	.000
Practices in Hypoglycemia Management		
1- I perform a blood glucose check on all patients showing symptoms of hypoglycemia.	.782**	.000
2- I administer oral glucose to conscious patients with low blood sugar levels.	.729**	.000
3- I use intravenous (IV) dextrose when oral glucose administration is not possible.	.833**	.000
4- I monitor the patient's condition closely after administering glucose.	.683**	.000
5- I educate patients or family members about preventing hypoglycemia after treatment.	.799**	.000
6- I reassess blood glucose levels after administering treatment for hypoglycemia.	.856**	.000
7- I follow up on hypoglycemia management with my team or supervisor after the call.	.821**	.000
8- I ensure proper documentation of all steps taken in hypoglycemia management.	.623**	.000

It is clear from the previous table that the Pearson correlation coefficient values for each item for each dimension with the total score of the dimensions; Positive and statistically significant at the significance level (0.01), where the values of the correlation coefficients ranged from (0.563) as a minimum to (0.885) as a maximum. This indicates the presence of internal consistency in the items of each dimension, and their suitability for measuring what they were designed to measure.

Reliability of the questionnaire

Reliability of the questionnaire means that it gives approximately the same results if it is applied repeatedly to the same people in similar circumstances. The reliability of the questionnaire was calculated using

Cronbach's Alpha, it was equal to 0.731. This means that the study tool has a high degree of stability and can be relied upon in the field application of the study. It is also an important indicator that the items that make up the questionnaire give stable and stable results if it is re-applied to the study sample members again. Therefore, there is reassurance regarding the analysis of the study data.

For each factor, it had 5 Likert-type items, this factor was pretested and checked for internal consistency. Accordingly, all the items were found to qualify internal consistencies table 2 shows the values of Cronbach's Alpha coefficient (α) of each factor. Likert-type items had five response anchors: (from 1– 'Strongly Disagree' to 5– 'Strongly agree').

Table (2): Reliability of the questionnaire

Factors	Number of Items	Cronbach's Alpha
Knowledge about Hypoglycemia	7	.904
Attitudes towards Hypoglycemia	7	.905
Practices in Hypoglycemia Management	8	.890
Total questionary	22	0.731

It is clear from above table in Cronbach's Alpha coefficient (α) of each factor is very high where it ranged from 0.890 to 0.905.

Study implementation procedures:

The questionnaire was sent to Paramedics in the Saudi Red Crescent Authority, where the researcher converted the questionnaire to electronic to collect the largest possible amount of the study sample, where the researcher distributed the questionnaire and after examining it, the researcher obtained (236) questionnaires valid for statistical analysis.

Statistical processing methods:

To achieve the objectives of the study and analyze the data that was collected, many appropriate statistical methods were used using the Statistical Package For Social Sciences program, abbreviated as (SPSS28), after the data was coded and entered into the computer.

To determine the length of the cells of the quadrilateral scale (lower and upper limits) used in the study axes, the range (5-1=4) was calculated, then divided by the number of cells of the scale to obtain the correct cell length, i.e. (4/5= 0.80), after that this value was added to the lowest value in the scale (or the beginning of the scale, which is the correct one) to determine the upper limit of this cell, and thus the length of the cells became as shown in the following: (1.00 - 1.80) Strongly disagree, (1.80 – 2.60) disagree, (2.60 - 3.40) neutral, (3.40- 4.20) agree, (4.20-5) Strongly agree.

3. Results

Table (3): Characteristics of the study participants

Characteristics	**N = 236**	**Frequency**	**Percentage**

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Educational degree	diploma	160	67.8
	Bachelor's	68	28.8
	Master/ phd	8	3.4
Age	21-30	172	72.9
	31-40	60	25.4
	41-50	4	1.7
Seniority at work	Less than 3 years	4	1.7
	4 - 10	84	35.6
	11-15	76	32.2
	15+	72	30.5

The study studied 236 individuals, 67.8% had diploma degree, 28.8% had Bachelor's degree, and 3.4% had master/phd degree. 72.9% were between 21 and 30 years old, 25.4% were between 31 and 40 years old and 1.7% were between 41 and 50 years old. 35.6% had 4-10 years' work, 32.2% had 11-15 years' work, 30.5% had more than 15 years' work, and 1.7% had less than 3 years' work (Table 3).

knowledge, attitudes, and practices among paramedics in the Saudi red crescent authority about hypoglycemia

For factor 1: Knowledge about Hypoglycemia, the researcher calculated the mean, standard deviation, relative weight, level of agreement, and ranking for each item. Hypotheses tests of items's responses is neutral on average The value (3) using the One Sample T-Test. Table (4) shows the results.

Table (4): Knowledge about Hypoglycemia

N = 236	Mean	Standard deviation	Relative weight	T-value	Sig	Agreement degree	Rank
1- I know common causes of hypoglycemia.	4.41	0.91	88.14	23.85	.000	Strongly agree	3
2- I'm aware of the typical symptoms of hypoglycemia (e.g., sweating, confusion, tremors).	4.73	0.69	94.58	38.71	.000	Strongly agree	1
3- I can recognize the early signs of hypoglycemia in a patient.	4.15	1.21	83.05	14.67	.000	agree	4
4- I know the risk factors for hypoglycemia in diabetic patients.	3.88	1.24	77.63	10.93	.000	agree	6
5- I know the correct protocols for managing a hypoglycemic patient in the field.	4.08	1.24	81.69	13.42	.000	agree	5
6- I can differentiate between hypoglycemia and other medical conditions with similar symptoms.	3.64	1.33	72.88	7.45	.000	agree	7
7- I know the complications that may arise from untreated hypoglycemia.	4.42	1.08	88.47	20.27	.000	Strongly agree	2

Mean of factor1	**4.18**	**1.1**	**83.77**	**18.47**	**.000**	**agree**	

The average of the sample members' answers to the "Knowledge about Hypoglycemia" dimension was (4.18 out of 5) with a relative weight of 83.77%, which indicates a level of approval by the sample members on this dimension. The highest item received the highest degree of approval from the sample members was: The paragraph that states, "I'm aware of the typical symptoms of hypoglycemia (e.g., sweating, confusion, tremors)." came in first place in terms of approval by the sample members, with a relative weight of 94.58%.

While the item that received the lowest degree of support from the sample members was: The paragraph that states, "I can differentiate between hypoglycemia and other medical conditions with similar symptoms." ranked next to last in terms of approval by the sample members, with a relative weight of 72.88%.

For factor 2: Attitude towards Hypoglycemia, the researcher calculated the mean, standard deviation, relative weight, level of agreement, and ranking for each item. Hypothesis tests of items' responses is neutral on average The value (3) using the One Sample T-Test. Table (5) shows the results.

Table (5): Attitude towards Hypoglycemia

N = 236	Mean	Standard deviation	Relative weight	T-value	Sig	Agreement degree	Rank
1- Managing hypoglycemia is a critical aspect of my role as a paramedic.	3.95	0.97	78.98	15.09	.000	agree	1
2- I can treat patients experiencing hypoglycemia.	3.93	1.03	78.64	13.97	.000	agree	2
3- I feel anxious when managing a hypoglycemic patient in the prehospital setting.	3.92	1.03	78.64	13.97	.000	agree	3
4- I believe administering glucose should be prioritized in cases of suspected hypoglycemia.	2.76	1.26	55.25	-2.90	.004	neutral	7
5- I trust my clinical judgment when treating a patient with hypoglycemia, even in the absence of glucose testing.	3.63	1.17	72.54	8.27	.000	agree	5
6- I am willing to consult with other healthcare professionals when managing complex hypoglycemic cases.	3.22	1.31	64.41	2.59	.010	neutral	6
7- I think the current protocols for hypoglycemia management are sufficient for paramedics.	3.73	1.15	74.58	9.74	.000	agree	4
Mean of factor2	**3.59**	**1.13**	**71.86**	**8.67**	**.000**	**agree**	

The average of the sample members' answers to the "Attitude towards Hypoglycemia "was (3.59 out of 5)

with a relative weight of 71.86%, which indicates level of approval by the sample members on this dimension. The highest item received the highest degree of approval from the sample members was the paragraph that states, “Managing hypoglycemia is a critical aspect of my role as a paramedic.” came in first place in terms of approval by the sample members, with a relative weight of 78.98%.

While the item that received the lowest degree of support from the sample members was the paragraph that states, “I believe administering glucose should be prioritized in cases of suspected hypoglycemia.” ranked next to last in terms of approval by the sample members, with a relative weight of 55.25%.

For factor 3: Practices in Hypoglycemia Management, the researcher calculated the mean, standard deviation, relative weight, level of agreement, and ranking for each item. Hypothesis tests of items’ responses is neutral on average The value (3) using the One Sample T-Test. Table (5) shows the results.

Table (5): Practices in Hypoglycemia

N = 236	Mean	Standard deviation	Relative weight	T-value	Sig	Agreement degree	Rank
1- I perform a blood glucose check on all patients showing symptoms of hypoglycemia.	4.12	0.97	78.98	15.09	.000	agree	1
2- I administer oral glucose to conscious patients with low blood sugar levels.	3.98	1.03	78.64	13.97	.000	agree	2
3- I use intravenous (IV) dextrose when oral glucose administration is not possible.	3.93	1.03	78.64	13.97	.000	agree	3
4- I monitor the patient’s condition closely after administering glucose.	3.21	1.26	55.25	-2.90	.004	neutral	8
5- I educate patients or family members about preventing hypoglycemia after treatment.	3.67	1.17	72.54	8.27	.000	agree	5
6- I reassess blood glucose levels after administering treatment for hypoglycemia.	3.42	1.31	64.41	2.59	.010	neutral	7
7- I follow up on hypoglycemia management with my team or supervisor after the call.	3.83	1.15	74.58	9.74	.000	agree	4
8- I ensure proper documentation of all steps taken in hypoglycemia management.	3.51	1.31	68.14	4.78	.000	agree	6
Mean of factor2	**3.7**	**0.90**	**71.40**	**9.77**	**.000**	**agree**	

The average of the sample members’ answers to the “Practices in Hypoglycemia “was (3.7 out of 5) with a relative weight of 71.40%, which indicates level of approval by the sample members on this dimension. The highest item received the highest degree of approval from the sample members was the paragraph that states, “1- I perform a blood glucose check on all patients showing symptoms of hypoglycemia.” came in first place in terms of approval by the sample members, with a relative weight of 78.98%.

While the item that received the lowest degree of support from the sample members was the paragraph that

states, "4- I monitor the patient's condition closely after administering glucose." ranked next to last in terms of approval by the sample members, with a relative weight of 55.25%.

4. Discussion

The results imply that, although paramedics have a noticeable knowledge of hypoglycemia, some gaps exist in knowledge, attitude, and practice. The findings of this work showed that a some percentage of the paramedics surveyed failed to be acquainted with contemporary reference protocols regarding hypoglycemic emergencies. This lack of awareness is appalling as early detection is important in halting serious consequences of hypoglycemia including, seizure, loss of consciousness or even death.

The findings align with previous research indicating that many emergency medical services (EMS) personnel lack comprehensive training on hypoglycemia management. For instance, [15] noted that less than half of EMS agencies in the United States allowed for non-transport after correcting hypoglycemia, suggesting inconsistencies in practice protocols. Similarly, [10] found that many EMS providers were unsure about current management strategies for hypoglycemia. These studies underscore the urgent need for standardized training and protocols across EMS agencies to ensure effective patient care.

The study also highlighted the attitudes of paramedics towards ongoing education and training. A positive attitude towards continuous learning was correlated with increased self-efficacy in managing hypoglycemic emergencies. However, many paramedics expressed concerns about insufficient training and resources, which may hinder their confidence in handling such situations effectively. This finding is consistent with [10], who emphasized that a lack of confidence can negatively impact paramedics' performance during critical interventions.

There are several points that were revealed as knowledge gaps, and since early intervention is critical in hypoglycemic emergencies, further training should be guided. The indicated programs should therefore target the improvement of paramedic's hypoglycemia understanding, its causes and points of manifestation as well as ways of handling the situation. Engagement of simulation-based training will allow exposure to the paramedics with different episodes of hypoglycemia ensuring enhanced preparedness.

In addition, creating evidence-based management algorithms for hypoglycemia within EMS agencies must be obligatory. [12] have pointed out that failure to practice, resolves in inadequate care and unneeded cross-staff transfers which in turn burden the healthcare system.

5. Conclusion

There are several points that were revealed as knowledge gaps, and since early intervention is critical in hypoglycemic emergencies, further training should be guided. The indicated programs should therefore target the improvement of paramedic's hypoglycemia understanding, its causes and points of manifestation as well as ways of handling the situation. Engagement of simulation-based training will allow exposure to the paramedics with different episodes of hypoglycemia ensuring enhanced preparedness.

In addition, creating evidence-based management algorithms for hypoglycemia within EMS agencies must be obligatory. [12] have pointed out that failure to practice HC resolves in inadequate care and unneeded cross-staff transfers which in turn burden the healthcare system.

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