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RESEARCH ARTICLE
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Assessing the Pharmacological Knowledge gap about insulin Therapy in Type 2 Diabetes Patients Attending General physician Clinics.

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ABSTRACT

Background: Type 2 diabetes is a chronic condition characterized by high blood sugar levels resulting from the ineffective use of insulin by the body. Insulin plays a crucial role in regulating blood sugar levels, and its proper administration is vital for managing the condition. However, the level of knowledge that patients have about insulin and its administration in these clinics remains largely unexplored. The knowledge of type 2 diabetes patients can also guide healthcare providers in delivering personalized care.

Objective: To assess the pharmacological knowledge gap of type 2 diabetes patients visiting general physician clinics regarding insulin.

Study Design: Observational multi-centers study

Place and Duration of Study: Al-Tibri Medical College, Isra University Karachi Campus, PWD DG Khan, Punjab and DHQ Civil Hospital, Ghotki from June 2023 to November 2023.

Methodology: One thousand and two hundred patients with type 2 diabetes, aged more than 20 years and receiving insulin more than 2 months were enrolled. The data was collected on a self-designed questionnaire.

Results: 83% peoples have knowledge regarding insulin, 84.6% peoples were hypertensive and 86.2% families have history of diabetes.

Conclusion: The current study showed that some patients had moderately adequate knowledge and fair practice levels on insulin storage and handling techniques. However, patients missed important insulin administration skills. This study highlights the need of regular public health education so as to enhance the patients' knowledge, skill and practice levels on insulin handling techniques.

A simple diabetes risk score can be used to identify high-risk groups for diabetes for timely intervention.

Keywords: Unhealthy living, Diabetes, Chronic, Physical inactivity, Insulin, glycemic control, Knowledge

INTRODUCTION

Type 2 diabetes is a chronic condition that affects millions of people worldwide. It is essential for individuals diagnosed with this condition to have a good understanding of their disease, including its management, potential complications and the importance of lifestyle modifications.[1] The primary goal of diabetes management is to achieve the blood sugar level within the target ranges. In an effort to meet this target, an appropriate delivery of insulin is essential[1]. Diabetic patients are very likely to benefit from good adherence, proper and specific recommendations. Assessing the knowledge of type 2 diabetes patients visiting a general physician clinic can provide valuable insights into the level of awareness and education surrounding the disease.[2] This assessment can help healthcare professionals identify gaps in understanding and tailor their approach to patient education and support.[3-7]By identifying areas where patients may lack knowledge or have misconceptions, healthcare providers can develop targeted education programs and interventions to bridge these gaps. Improved patient education can enhance self-management skills, increase medication compliance, and empower patients to make informed decisions about their health.[8]

Furthermore, assessing the knowledge of type 2 diabetes patients can also guide healthcare providers in delivering personalized care. By understanding the baseline knowledge level of each patient, healthcare professionals can tailor their explanations, provide appropriate resources, and address specific concerns. This individualized approach can lead to improved patient satisfaction and overall health outcomes.[9,10]

Overall, the purpose was to light on the knowledge of type 2 diabetes patients visiting a general physician clinic. By understanding the current level of patient awareness and identifying areas for improvement, healthcare providers can implement targeted interventions that promote better disease management and patient well-being.

MATERIALS AND METHODS

This observational multi-centers study was conducted at primary and tertiary care hospitals of Karachi, DG Khan and Ghotki from June 2023 to November 2023. One thousand and two hundred patients with type 2 diabetes, aged more than 20 years and receiving insulin more than 2 months were enrolled. All patients receiving only antidiabetic medication and receiving insulin less than 01 months as they have insufficient knowledge were excluded.

The informed consent was received from all the participants. Data was collected on a self-designed questionnaire comprised of demographic details of the participants. The data was entered analyzed through SPSS-25.

ETHICAL APPROVAL

The research protocol has reviewed and approved by institutional review board of college of family medicine Pakistan.

CONFILCT OF INTEREST

unremarkable

RESULTS

One thousand (83%) peoples have knowledge regarding insulin and 200 (16.6%) have no knowledge about insulin. One thousand and fifteen (84.6%) peoples were hypertensive and 185 (15.4%) were not hypertensive. One thousand and thirty-four (86.2%) families have history of diabetes and 166 (13.8%) families have no history of diabetes (Table 1). In Table 2, there are some factors which affect the knowledge about insulin of diabetic patients.

Table 1: Demographic information of the participants (n=1200)

Variable	No.	%
Knows about insulin		
Yes	1000	83.4
No	200	16.6
Hypertensive		
Yes	1015	84.6
No	185	15.4
Family history of diabetes		
Yes	1034	86.2
No	166	13.8

Table2: Factors affecting knowledge about insulin of the participants (n=1200)

Variables	Sub groups	No.	%
Duration	<5 year	1080	90 %
	>5 years	120	10 %
Number of injection/ day	<2	130	10.73
	2	1001	83.09
	>2	7.6	766.27
Device	Syringe	863	71.2
	Pen	349	28.8
Use multiple Sites for injection	Yes	936	78%
	No	264	22%
Rotate injection site	Yes	912	76%
	No	288	24%
Type of Insulin	Premixed	939	77.48%
	Basal	159	13.12%
	Basal- bolus	115	9.49%
Pain at injection site	Yes	143	11.80%
	Sometime	263	21.7%
	No	806	66.3%
Size of needle (insulin syringe)	4 mm	503	41.50%
	5 mm	217	17.90%
	6 mm	493	40.68%
Angle of needle entry	90 degree	980	81.6
	Other than 90 degree	220	18.3
Needle reuse	<2	99	8.17%
	3-4	497	41.01%
	5-10	618	50.99%
Storage of insulin	Cold place	996	83%
	Other than cold place	204	17%
Skip injection of insulin	Yes	366	30.2%
	No	846	69.8%
Know how to increase or decrease the dose of insulin	Yes	289	23.84%
	No	923	76.16%
Awareness about symptoms of hypoglycemia	Yes	686	43.4
	No	526	56.6
Insulin storage	Cold place	885	73.02%
	Other than cold	327	26.98%
Education on injection technique	Yes	1000	83.4%
	No	200	16.6%
SMBG Frequency	At least 1/daily	696	58%
	At least /1 week	276	23%
	never	228	9%

DISCUSSION

Type 2 diabetes is a chronic condition that requires effective management to prevent complications

and maintain optimal health. Insulin therapy plays a crucial role in the treatment of type 2 diabetes, and its proper administration is essential for achieving glycemic control.[11] General practitioner (GP) clinics serve as primary healthcare providers for many individuals with type 2 diabetes. However, the level of knowledge that patients have about insulin and its administration in these clinics remains largely unexplored.

Insulin is a hormone produced by the pancreas that helps regulate blood sugar levels. In type 2 diabetes, the body either does not produce enough insulin or is unable to use it effectively. Therefore, patients require exogenous insulin to control their blood glucose levels. Assessing patients' knowledge in this area can help identify any misconceptions or gaps in their understanding, enabling healthcare providers to address these issues and improve patient education.[12]

Another crucial aspect of patients' knowledge of insulin therapy is their understanding of the different types of insulin available and their respective regimens. There are various types of insulin, including rapid-acting, short-acting, intermediate- acting, and long-acting insulin. Each type has a specific onset, peak, and duration of action. Patients need to be aware of the differences between these types and their proper use in order to effectively manage their blood sugar levels. Additionally, patients should have knowledge of the appropriate timing and dosing of insulin injections or the use of insulin pumps, depending on their prescribed regimen.[13]

Proper insulin administration is crucial for achieving optimal glycemic control. Patients must be aware of the correct techniques for injecting insulin and should receive proper education on needle size, injection site rotation, and injection depth. It is also important for patients to understand potential side effects associated with insulin therapy, such as hypoglycemia (low blood sugar) or allergic reactions. Knowledge in these areas is vital for patients' safety and adherence to their prescribed insulin regimens.[14]

In addition to knowledge of insulin administration, patients should be aware of proper storage and handling procedures. Insulin is a delicate medication that needs to be stored at appropriate temperatures to maintain its efficacy. Patients should understand the importance of refrigerating insulin and avoiding exposure to extreme heat or freezing temperatures.[15] They should also be educated on the proper disposal of used needles and insulin vials to ensure safety and prevent accidental injuries.

Demographic factors, such as age, education, and duration of diabetes, can influence patients' knowledge of insulin therapy. Older patients may have different levels of understanding compared to younger individuals, and education level can affect patients' ability to comprehend and retain information about insulin. Additionally, patients who have been living with diabetes for a longer time may have developed more extensive knowledge through their experience. Assessing the impact of these factors can help healthcare professionals tailor their education and support strategies to address the specific needs of different patient populations.[16]

Understanding the knowledge of type 2 diabetes patients regarding insulin therapy is vital for providing effective education and support.[5,6] By evaluating patients' understanding of the purpose and importance of insulin, knowledge of different types of insulin and regimens, awareness of proper administration techniques and side effects, insulin storage and handling procedures, and the impact of demographic factors on knowledge, healthcare providers can identify areas of improvement and develop targeted interventions. Ultimately, enhancing patients' knowledge of insulin can lead to better self- management skills, improved glycemic control, and better health outcomes for individuals living with type 2 diabetes. Community awareness programs are needed to educate people about healthy lifestyles to reduce the risk of diabetes and secondary problems such as hypertension which can cause major complications later.

CONCLUSION

Insulin therapy is a critical component of diabetes management. Adequate pharmacological knowledge ,its handling and understanding of insulin among patients are crucial for achieving optimal glycemic control, preventing complications, and improving overall outcomes.

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