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Research Article

ASSESSMENT OF PHARMACIST'S ROLE IN COUNSELLING AND EDUCATING DIABETIC PATIENTS ABOUT INSULIN THERAPY

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ABSTRACT

Background: Insulin therapy is the cornerstone treatment for diabetic patients. Insulin administration errors are common and may pose a significant risk to the life of the patient. Pharmacists can play an important role in educating and counseling diabetic patients about the proper use of insulin to prevent such errors. Objective: to evaluate the role of community pharmacists in educating diabetic patients about the proper use of insulin. Setting: This study was conducted on a convenient sample of 54 pharmacies in Baghdad, Iraq during December 2017. Methods: This study was a cross sectional conducted based on simulated patient method. A scenario including a prescription for lente and regular insulin was used in assessment pharmacist counseling role. Main outcome measure: assessment of pharmacists' counseling and educating role about insulin therapy by comparing the given information to simulated patient with standard information based on the expert recommendations for best practice in insulin injection technique. Results: This study showed that 16.7% of the community pharmacists just dispense insulin and refer the patient to the physician for counseling and education. All pharmacists who counsel and educate the simulated patient about insulin failed to do so properly. The pharmacists who educate the simulated patient about insulin usually focus on the time of and site of injecting insulin. Conclusion: Community pharmacists lack the adequate knowledge to educate and counsel diabetic patients about their insulin therapy.

Keywords: Pharmacist's counseling role, Insulin, Iraq.

INTRODUCTION

Diabetes Mellitus (DM) is a common metabolic disorder with a high prevalence in developing countries such as Iraq. It is characterized by absolute or relative insulin deficiency[1-3]. Diabetes can cause many complications, some of them are acute such as hypoglycemia, diabetic ketoacidosis and hyperosmolar nonketotic coma, while others are chronic such as cardiovascular disease, stroke, nephropathy, retinopathy and foot ulcers[4,5]. Insulin therapy is the cornerstone of treatment in type 1 diabetes and is eventually used for treatment of type DM patients[6,7]. There are many causes for insulin related medication errors that pose a significant risk to the life of the patient. Some of these errors are rare such as dosing errors; while others are more common like those occurred during preparation and administration of insulin[8]. Pharmacists can play an important role in educating and counseling diabetic patients about the proper use of insulin to prevent such errors[9]. Many studies in Iraq reported that diabetic patients have poor knowledge and practice in administering insulin[10,11].

Aim of study

This study aimed to evaluate the role of community pharmacists in educating diabetic patients about the proper use of insulin.

MATERIALS AND METHODS

Study design and sample size

An observational cross-sectional study using simulated patient method was conducted during December 2017. The simulated patient method has been used widely in pharmacy practice-based research[12-14]. A fifth (last) year pharmacy student was trained by a certified diabetes educator about correct method for insulin injecting technique in order to act as a simulated patient (SP). Convenient sample of 54 pharmacies located in north, south, east and west of Baghdad were chosen to perform this study based on easiness of access to these pharmacies by the simulated patient.

Assessment of pharmacist's counseling role

To assess the counseling provided by the pharmacist to the patients with diabetes about insulin, the SP was provided with a typical prescription for treatment of type 1 diabetes, which includes regular insulin to be mixed with lente insulin twice daily. This scenario that includes insulin vials and syringes is more commonly used in Iraq and this method is associated with greater chance of error during administration[11].

When the SP accessed the community pharmacy, she firstly observed the number of staff and customers in the pharmacy to assess for busyness of the pharmacy. SP simulated to be recently diagnosed to have diabetes and doesn't know anything about the use of insulin, thus asked the pharmacist to advise him about the

use of insulin. After the end of counseling session the simulated patient asked about the price of the prescription and simulated to be very expensive for her and thus refused to purchase it to authenticate the interaction and left the pharmacy.

To minimize recall bias, the SP immediately fills in the assessment form (table 1) after finishing the interview with the pharmacist and leaving the pharmacy to assess pharmacists' counseling and educational role about the use of insulin. The assessment form was developed based on the latest expert recommendations for best practice in insulin injection technique[15].

Table 1: Assessment form

Areas of assessment	Counseling parameter
Preparations for injecting insulin	1.Inspect the insulin vial regarding expire date, or any damage such as leakage of insulin or presence of abnormal particles or abnormal color.
	2.Clean hands and injection area before injecting insulin.
	3.Re-suspension of cloudy insulin.
	4.Mix insulin correctly by drawing soluble before suspended insulin
	5.Inject insulin 30 minutes before meal
	6.Opened insulin vials should be kept at room temperature or at least insulin should be brought to room temperature before injection.
Insulin injecting technique	1.Mention all possible sites for injecting insulin such as back of upper arm, thigh, buttock or abdomen.
	2.Inspect the injection site for absence of wounds, or hypertrophy before injection.
	3.Pinch the skin before inserting insulin syringe.
	4.Insert the needle at 90°angle.
	5.Administer insulin slowly and hold the needle under the skin for at least 10 sec. after the plunger has been depressed.
	6.Withdraw syringe needle at the same angle.
	7.Dispose the used syringe in puncture proof containers and not directly into the trash.
	8.Rotate injection site
	9.Insulin syringes should be used once only.
Storage and stability of insulin	1.Store unopened insulin vials in the refrigerator.
	2.Discard insulin vials 1 month after opening.

Ethics approval

This study was scientifically and ethically approved by the local scientific committee of the College of Pharmacy, Baghdad University. To be ethical, Iraqi pharmacists consent was indirectly obtained by creating a question for pharmacists (do you accept to participate in a study that aims to assess your role in counseling and educating patients about the proper usage of their treatment?) and posting this question as a survey in the official site of the syndicate of Iraqi pharmacists on the facebook (Al-Multaqa Al-Syadalini), which includes more than 15000 registered Iraqi pharmacists. More than 95% of the participated pharmacists in that survey provided their consent for enrollment in such study. The consent to participate in this study was not directly obtained from participated pharmacists. Waiving participant consent is justifiable in such studies since risks and burdens to participant pharmacists are minimal and the research has the possibility to generate socially valuable information[16].

Data analysis

Data input and analysis was done using Statistical Package for the Social Sciences (SPSS) version 17. Continuous data are reported as mean and standard deviation (SD). Categorical data are expressed as frequencies and percentages. Spearman correlation coefficient was used to test the correlation among continuous variables. Chi square test was used to test the significant difference among categorical variables. P values less than 0.05 were considered significant.

RESULTS

This analyzed data showed that 16.7% of the community pharmacists just dispense insulin and refer the patient to the physician for counseling and education (Table 2). All pharmacists who counsel and educate the SP about insulin failed to do so properly (Table 3). The pharmacists who educate the SP about insulin usually focus on the time of and site of injecting insulin (Table 4). Table 5 showed that there is a positive correlation between pharmacist counseling role with the number of patients and staff present in the pharmacy at the time of intervention.

Table 2: Percent of Pharmacists who provide educational information about insulin

Parameter	No. of pharmacists	P value
Those who just repeat physician instructions	8 (14.8%)	0.000
Those who give insulin to the patient without any information	9 (16.7%)	
Those who provide some information to the patients	37 (68.5%)	

Table 3: Level of pharmacists' educational information about insulin usage to diabetic patients

Parameter	Good education at least 50% of points	Poor education Less than 50%	P value
All educational information	0 (0%)	54 (100%)	
Preparation of insulin injection	0 (0%)	54 (100%)	
Injecting technique	0 (0%)	54 (100%)	1
Storage and stability of insulin	0 (0%)	54 (100%)	

Table 4: Role of pharmacists in educating diabetic patients about insulin usage

Parameter		Mentioned information		Not mentioned information
		Correctly and completely	Incompletely or wrongly	
Preparation	Insulin vial inspection	0 (0%)	0 (0%)	54 (100%)
	Cleaning hands and injection area	4 (8.5%)	0 (0%)	50 (92.6%)
	Mixing insulin (soluble before cloudy)	4 (7.4%)	0 (0%)	50 (92.6%)
	Resuspension of cloudy insulin	1 (1.9%)	0(0%)	53 (98.1%)
	Injection mealtime gap	2 (3.7%)	21 (38.9%)	31 (57.4%)
	Insulin should be kept at room temp before injection	0(0%)	0 (0%)	54 (100%)
Storage	storage of unopened vials	1 (1.9%)	0 (0%)	53 (98.1%)
	all insulin vials should be discarded 1 month after opening	0 (0%)	1 (1.9%)	53 (98.1%)
Injecting technique	Choice of a suitable site for injecting insulin	10 (18.5%)	16 (29.6%)	28 (51.9%)
	Skin fold	6 (11.1%)	0 (0%)	48 (88.9%)
	Insert the needle at 90 angle	8 (14.8%)	1 (1.9%)	45 (83.3%)
	Hold the needle under the skin for at least 10 s after the plunger has been depressed	0 (0%)	0 (0%)	54 (100%)
	Dispose of used needle safely	0 (0%)	0 (0%)	54 (100%)
	Single use of syringe	0 (0%)	0 (0%)	54 (100%)
	Rotate site of injection	0(0%)	0 (0%)	54 (100%)
	Inspection injection site for absence of wounds, or hypertrophy before injection	0 (0%)	0 (0%)	54 (100%)
	Administer insulin slowly and withdraw syringe needle at the same angle	0 (0%)	0 (0%)	54 (100%)

Table 5: Correlation between information provided by pharmacist to the patient and some technical parameters

Parameter	Correlation coefficient	P value
No. of patients in the pharmacy	0.351	0.009
No. of the staff in the pharmacy	0.626	0.000

DISCUSSION

This study showed that only minority (16.7%) of pharmacists never counseled the patients about insulin usage. In an Ethiopian study, 28.8% of pharmacists never educate diabetic patients about insulin administration, handling and storage[17]. Meanwhile, there is significantly positive correlation between the number of pharmacy staff and ability of pharmacists to educate and counsel the patients; this may be attributed to the availability of assistants in the pharmacy who can help the senior pharmacist in preparing and dispensing the prescription, and consequently affording more time for to educate and counsel the patients[18]. On the other hand, a positive correlation was reported between number of patients attending the pharmacy at the time of intervention and the pharmacists' attitude to educate and counsel the patients, despite that this finding may be contradicted with the above finding, but it may be explained in that Iraqi patients usually prefer to purchase their medications from the pharmacist who seem to be competent and helpful to them. Moreover, the present study showed that all participated pharmacists provide inadequate information to the diabetic patients regarding the proper use of insulin; similar finding was reported among community pharmacists in Qatar[19]. The finding of this study is somewhat in tune with that reported by Mikhael EM, which found that community pharmacists in Iraq provided common cold patients with limited information about their prescribed medication[20]. This malpractice of providing inadequate pharmaceutical care may be mainly attributed to the poor knowledge of the community pharmacists rather than lack of sufficient time, since the information provided by all pharmacists in all pharmacies without regard to number of patients and staff is poor. Similar finding was reported in Nepal, where only 1.9% of pharmacists reported to have good knowledge about diabetes and its treatment[21].

The present study also showed that pharmacists during their education about insulin focused mainly on site and time of injecting insulin. This came in tune with similar finding reported in Nepal, where 51% of the pharmacists always educated the diabetic patients about the time of administration of their insulin[21]. Unfortunately, the current study showed that despite the involved pharmacists educate their patients about the time of using insulin, they failed to do so in appropriate manner, where most of them failed to specify the correct time for injecting regular insulin 30min before meal[15]. Furthermore, the interviewed pharmacists in this study despite their focus on educating patients about insulin injection site, most of them mention one site only (either arm or abdomen) without mentioning the other possible sites for injecting insulin, which may increase the chance for developing insulin side effects such as lipodystrophic changes[15].

Although this study is limited by the small sample size of studied pharmacies, but it gives a hint that most community pharmacists in Baghdad have poor knowledge regarding insulin therapy. The reason behind such poor knowledge may be related to inadequately executed curriculum in Iraqi pharmacy colleges[20], or due to ignorance of the community pharmacists to update their information through continuous medical educational programs[17]. Therefore, it is highly recommended to perform larger scale studies to confirm the findings of this study, and to assess the main cause of such poor knowledge among the community pharmacists for the aim of solving this problem in the future.

CONCLUSION

The participated community pharmacists lack the adequate knowledge to educate and counsel diabetic patients about their insulin therapy.

REFERENCES

1. Forouhi NG, Wareham NJ. Epidemiology of diabetes. Medicine (Abingdon) 2014; 42(12):698-702. https://doi.org/10.1016/j.mpmed.2014.09.007
2. Mansour AA, AL-Maliky AA, Kasem B, Jabar A, Mosbeh KA. Prevalence of diagnosed and undiagnosed diabetes mellitus in adults aged 19 years and older in Basrah, Iraq. Diabetes Metab Syndr Obes. 2014; 7:139-144. https://doi.org/10.2147/DMSO.S59652 PMid:24833912 PMCid:PMC4014373
3. American Diabetes Association. Introduction: Standards of Medical Care in Diabetes- 2018. Diabetes Care 2018; 41(Suppl. 1):S1-S2. https://doi.org/10.2337/dc18-Sint01 PMid:29222369
4. Amos AF, McCarty DJ, Zimmet P. The rising global burden of diabetes and its complications: estimates and projections to the year 2010. Diabetic Medicine 1997; 14(suppl. 5):S1-85. https://doi.org/10.1002/(SICI)1096-9136(199712)14:5+<S7::AID-DIA522>3.3.CO;2-I
5. Kitabchi AE, Umpierrez GE, Miles JM, Fisher JN. Hyperglycemic crises in adult patients with diabetes. Diabetes Care 2009;32(7):1335-1343.doi:10.2337/dc09-9032 https://doi.org/10.2337/dc09-9032
6. Painter NA, Sisson E. An overview of concentrated insulin products. Diabetes Spectr. 2016; 29(3):136-140. https://doi.org/10.2337/diaspect.29.3.136 PMid:27574366 PMCid:PMC5001226
7. Kahn SE, Cooper ME, Del Prato S. Pathophysiology and treatment of type 2 diabetes: perspectives on the past, present, and future. Lancet 2014; 383:1068-1083. https://doi.org/10.1016/S0140-6736(13)62154-6
8. Prescrire Editorial Staff. Insulin use: preventable errors. Prescrire Int. 2014;23(145):14-17. PMid:24516905
9. American Pharmacists Association. Understanding insulin management: Role of the pharmacist. Pharmacy Today 2014; 20(3):85-96. https://doi.org/10.1016/S1042-0991(15)30967-1
10. Ebrahim SM, Jassim UT, Baji DM. A Study to assess the attitude and practice of diabetic patient towards self-administration of insulin in Basra city, Iraq. Int J Gen Med Phar. 2014; 3(4): 65-74.
11. Al- Lehibi KI, Raheem YA,Hussein IS. The necessity of teaching diabetic patients the correct way of insulin administration: A Clinical trial to improve glycemic control. Al - Kindy Col Med J. 2012; 8(2):137-147.
12. Al-Mohamadi A, Badr A, Bin Mahfouz L, Samargandi D, Al AA. Dispensing medications without prescription at Saudi community pharmacy: Extent and perception. Saudi Pharm J. 2013; 21(1):13-18. https://doi.org/10.1016/j.jsps.2011.11.003 PMid:23960815 PMCid:PMC3745069
13. Alte D, Weitschies W, Ritter CA. Evaluation of consultation in community pharmacies with mystery shoppers. Ann Pharmacother. 2007; 41(6):1023-1030. https://doi.org/10.1345/aph.1H565 PMid:17519295
14. Weiss MC, Booth A, Jones B, Ramjeet S, Wong E. Use of simulated patients to assess the clinical and communication skills of community pharmacists. Pharm World Sci 2010; 32(3):353-361. https://doi.org/10.1007/s11096-010-9375-z PMid:20238164
15. Tandon N, Kalra S, Balhara YPS, Baruah MP, Chadha M, Chandalia HB, etal. Forum for injection technique and therapy expert recommendations, India: The Indian recommendations for best practice in insulin injection technique, 2017. Indian J Endocrinol Metab. 2017; 21(4):600-617. https://doi.org/10.4103/ijem.IJEM_97_17 PMid:28670547 PMCid:PMC5477451
16. Rhodes KV1, Miller FG. Simulated patient studies: an ethical analysis. Milbank Q. 2012; 90(4):706-24. https://doi.org/10.1111/j.1468-0009.2012.00680.x PMid:23216428 PMCid:PMC3530739
17. Erku DA, Belachew SA, Mekuria AB, Haile KT, Gebresillassie BM, Tegegn HG, etal. The role of community pharmacists in patient counseling and health education: a survey of their knowledge and level of involvement in relation to type 2 diabetes mellitus. Integr Pharm Res Pract. 2017; 6:137-143. https://doi.org/10.2147/IPRP.S140777 PMid:29354560 PMCid:PMC5774313
18. Ngoh, LN. Health literacy: A barrier to pharmacist–patient communication and medication adherence. J Am Pharm Assoc (2003). 2009; 49:e132-e149.
19. Javed B, Kheir N, Yousif A. Patient counseling practices among community pharmacists in Qatar. Qatar foundation annual research conference proceedings 2016: HBPP1645 http://dx.doi.org/10.5339/qfarc.2016.HBPP1645.
20. Mikhael EM. Evaluating the rationality of antibiotic dispensing in treating common cold infections among pharmacists in Baghdad – Iraq. Br J Pharm Res. 2014; 4(23):2653-2661. https://doi.org/10.9734/BJPR/2014/13586
21. Shrestha M, Maharjan R, Prajapati A, Ghimire S, Shrestha N, Banstola A. Assessment of knowledge and practice of community pharmacy personnel on diabetes mellitus management in Kathmandu district: a cross sectional descriptive study. J Diabetes Metab Disord 2015;14:71. https://doi.org/10.1186/s40200-015-0205-7 PMid:26396963 PMCid:PMC4578402

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