

An assessment of counseling quality provided by community pharmacies to type 2 diabetic adult patients for oral therapy: a simulated patient study from Pakistan

Muhammad Majid Aziz^{1),2),3),4)}, Shimin Yang^{1),2),3),4)}, Imran Masood⁵⁾, Shan Zhu^{1),2),3),4)},
Muhammad Ali Raza⁶⁾, Wenjing Ji^{1),2),3),4)}, Naveed Anwar⁷⁾, Amna Saeed⁸⁾ and Yu Fang^{1),2),3),4)}

¹⁾ Department of Pharmacy Administration and Clinical Pharmacy, School of Pharmacy, Xi'an Jiaotong University, Xi'an, P. R. China

²⁾ The Center for Drug Safety and Policy Research, Xi'an Jiaotong University, Xi'an, P. R. China

³⁾ Global Health Institute, Xi'an Jiaotong University, Xi'an, P. R. China

⁴⁾ Shaanxi Center for Health Reform and Development Research, Xi'an, P. R. China

⁵⁾ Department of Pharmacy, Faculty of Pharmacy and Alternative Medicine, Railway Road Campus, Islamia University, Bahawalpur, Pakistan

⁶⁾ Faculty of Pharmacy, Bahauddin Zakariya University, Multan, Pakistan

⁷⁾ Department of Pharmacy, Quaid-i-Azam University, Islamabad, Pakistan

⁸⁾ Punjab University College of Pharmacy, University of the Punjab, Lahore, Pakistan

Abstract. This study was conducted to assess quality of counseling provided to type 2 diabetic patients. For this cross-sectional study, a simulated patient method was applied in 562 selected community pharmacies of Punjab, Pakistan. A scenario for the metformin oral therapy was developed that illustrates direct counseling for adult diabetic patients. Counseling and communication skills were also assessed. Descriptive statistics and chi-square tests were used for analysis. Only 29.4% of simulated patients received medication counseling directly; 47.6% received it on request. About 32.8% of clients were referred to a physician without counseling. The most frequently provided information was dietary instruction (94.8%) and dose of therapy (84.5%). Only one quarter (25.3%) of simulated patients were asked about disease duration and similar rate (25.0%) was found for discussions of special warnings. The side effects, drug storage, drug-drug interactions and duration of therapy were ignored. Minimal information was provided about other medication during therapy (0.2%) and effect of medicine withdrawal (2.7%). About 59.5% simulated patients were instructed for compliance to medication. Counseling to type 2 diabetic patients in Pakistani community pharmacies is not very satisfactory. Pharmacies' staff have little focus on counseling. Professional training of staff could improve counseling and communication skills.

Key words: Counseling, Type 2 diabetic patients, Metformin, Community pharmacies, Pakistan

DIABETES MELLITUS (DM) is one of the most prevalent non-communicable diseases of the world [1, 2]. Globally, more than 422 million adults are suffering with DM [3]. Diabetic adults have two to three time high risks of co-morbidities than non-diabetic adults [4]. The prevalence of diabetes (26.3%) in Pakistan is alarming [5]. About 36 million people over the age 20 have DM. Every fourth Pakistani is suffering from DM [6]. The prevalence in urban areas (28.3%) is higher than rural areas (25.3%) [5]. More males are suffered with DM

than females [1]. Its management is a major concern; Pakistan spends 12% of its healthcare budget to cure DM [2]. The non pharmacological therapy including lifestyle modifications, physical activity, smoking avoidance and proper nutrition along with drug therapy are important aspects for managing DM [7].

Patient counseling has been recognized as an effective tool for DM management and provides economic and clinical benefits to patients. The rational medication improves the therapeutic outcome [8]. Patient counseling enhances patients' aptitude for making decisions toward medication and disease management [9]. Several studies reveal the significant positive impact of counseling on disease management, therapeutic outcome and patients' quality of life [10-14]. Pharmacists have proven role to improve diabetes therapy and disease management [4, 15, 16]. In-addition, counseling services provided by

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Correspondence to: Yu Fang, Department of Pharmacy Administration and Clinical Pharmacy, Health Science Center, Xi'an Jiaotong University, 76 Yanta West Road, Xi'an 710061, People's Republic of China.

E-mail: yufang@mail.xjtu.edu.cn

pharmacist to diabetic patients (DPs) are cost-effective [4]. In developed and developing countries, community pharmacists are ideally located to provide effective counseling and assistance to DPs [4, 7, 17, 18].

In Pakistan 79% of healthcare is provided through private sector and 77% of healthcare budget is consumed for purchase of medicines [19, 20]. About 80% of medicines are sold through 80,000 community pharmacies [20, 21]. Like other developing countries, community pharmacies can be potential source of diabetes care [7, 17, 21, 22]. But still, no evidence exists about the role of community pharmacies in pharmaceutical care of DM. To the best of our knowledge, there are no studies on the standard of medication counseling to DPs. Therefore, we evaluated how pharmacies in, Pakistan, provide medication counseling services. This baseline study will provide a frame of reference to inform and strengthen medication counseling services.

Methods

A simulated patient (SP) method was used in selected community pharmacies in Punjab, Pakistan. This method has been used to assess medication counseling in community pharmacies [23-25]. This cross-sectional study was performed between June 2016 and February 2017.

Simulated patients

Thirteen SPs were selected and trained. All SPs, aged 24–27 years were male. SPs were final year students of Pharm D. Each SP had a good command of the local languages. To ensure equal data quality across SPs, rater reliability was analyzed using the percentage agreement method. Every SP was advised to complete a feedback record form immediately after their visit to each pharmacy. The feedback record (Supplementary file 1) form was a partially modified version of that used in previous studies [23, 24].

Validity and reliability

Three experts from academia of administrative pharmacy and experienced community pharmacist validated scenario and feedback record form by item-objective congruence score method. The average score >0.5 were consider good for content validity [26]. Every expert have option to score “-1” for “clearly not measure”, “0” for “unclear content” and “1” for “clearly measure”.

Before study data collection, a pilot study in 20 pharmacies was also performed. The reliability of the feedback record form and methodology also was assessed. The feedback record form was partially modified based on the pilot study results. The results obtained from pilot study were not included in the final results.

Communication skills assessment

Counseling communication skills were assessed by SPs, who rated them on a 5-point Likert scale: very poor (a score of 1), poor (2), moderate (3), good (4), and very good (5).

Study setting

Study sites were community pharmacies in Punjab, Pakistan. The area of the Punjab province is 205,344 square kilometers and is the most populous province. The population is estimated to be more than 91 million, or 56% of the total national population [19].

Pharmacy selection

A list of pharmacies was obtained from Department of Health [27]. After confirming each pharmacy's licensure, pharmacies were arranged geographically with a serial number. Pharmacies were systematically selected from the list by this serial number. A stratified sampling technique was used to select pharmacies. Nine strata were formed based the Punjab governmental administrative divisions. Each stratum was further divided into four substrata: divisional city, district city, tehsil city, and suburban and rural area. The availability of medicine during the pilot study was also considered when determining the sample size. The sample size of pharmacies was calculated by Raosoft for response distribution (60%), confidence interval (95%) and margin of error (4%) for the total 22,319 pharmacies [28]. Finally, total 562 pharmacies were selected (Supplementary file 2). We tried to ensure a homogeneous and uniform presentation of pharmacies from all areas of Punjab province.

Scenario

SP visited the pharmacy with a prescription of Metformin 250 mg for the treatment of his newly diagnosed diabetes. If the medicine was dispensed without counseling, SP requested advice. This scenario illustrated direct counseling for adult patients with type 2 DM.

Ethical approval

The study design and protocols were approved by an ethics review committee at the Health Science Center of Xi'an Jiaotong University (Ref # MR102-15/Phar) and the Pharmacy Research Ethics Committee at The Islamia University of Bahawalpur, Pakistan (Ref # 67-2015/PREC). The confidentiality of outcomes was also maintained by the oath of all data collectors in view of research ethics. None of the data contained identifying information; pharmacies were assigned identification numbers that were used in the data analysis process.

Table 1 Specification of pharmacies, staff and visits ($N = 529$)

Characteristics	Category	<i>n</i> (%)	<i>p</i> -value*
Class of pharmacy (Number of the sale counters reported by SPs)	1	322 (60.9)	0.536
	2–5	192 (36.3)	
	>5	15 (2.8)	
Number of employees at the time of visit as reported by SPs	1–5	351 (66.3)	0.585
	6–10	176 (33.3)	
	>10	2 (0.4)	
Gender of pharmacy retailers (contacted)	Male	529 (100.0)	
	Female	0 (0.0)	
Age of contacted retailer (years), estimated by SP	<25	2 (0.4)	0.026
	25–35	235 (44.4)	
	36–45	72 (13.6)	
	46–55	156 (29.5)	
	>55	64 (12.1)	
Day of the visit	Monday	35 (6.6)	0.390
	Tuesday	69 (13.0)	
	Wednesday	51 (9.6)	
	Thursday	64 (12.1)	
	Friday	34 (6.4)	
	Saturday	136 (25.7)	
	Sunday	140 (26.5)	
Time of visit	8:00–12:00	107 (20.3)	0.256
	12:00–14:00	4 (0.7)	
	14:00–22:00	418 (79.0)	
Number of waiting customers	0–5	316 (59.7)	0.276
	6–10	207 (39.1)	
	>10	6 (1.2)	
Waiting time (mints)	1–5	174 (32.9)	0.059
	>5	355 (67.1)	
Total time of conversation (talk about medication) (mints)	≤2	349 (66.0)	0.087
	3–5	173 (32.7)	
	>5	7 (1.3)	
Privacy during conversation	Full provided	0 (0.0)	0.241
	Semi provided	7 (1.3)	
	Not provided	522 (98.7)	

* *p*-value <0.05 = significant

Data analysis

The Statistical Package for the Social Sciences (SPSS) version 18.0 was used for descriptive analysis of the data related to counseling. Frequencies and percentages were measured. Chi-square tests were used to determine the influence of different factors on provision of counseling. The *p*-values less than 0.05 were considered statically significant.

Results

A total of 529 (94.3%) pharmacies responded to SPs. At 33 (5.8%) pharmacies medicine was not available. Most (60.9%) visited pharmacies had a single counter. All retailers were male and it was estimated that many (58.0%) were aged 25–45 years. Most pharmacies (98.7%) failed to provide privacy during counseling. Only age influences the provision of counseling (*p*-value 0.026) as given in Table 1.

Table 2 Response of selected pharmacies to request of medication ($N = 529$)

Response	<i>n</i>	%
Counseling without demand	156	29.4
On demand counseling		
Provided	252	47.6
Questioning and advised to contact a doctor	34	6.4
Directly advised to contact a doctor	87	16.4

Table 3 Information acquired by staff from SPs ($N = 442$)

Questions asked	<i>n</i>	%
Duration of disease or therapy	112	25.3
Whether had taken any medicine before	87	19.6
Why the medicine was prescribed	120	27.1
Any co-morbidity or its treatment?	176	17.2
Any allergy to medicine in history?	47	10.6
Do you know how to take medicine?	109	24.6
You want to ask anything else?	51	11.5

Table 4 Contents of medication counseling provided to SPs ($N = 408$)

Information provided	<i>n</i>	%
The name of the medicine discussed	305	74.7
Drug storage	0	0.0
How to take the medication (e.g. with/before/after meal)	253	62.0
Dose of therapy	345	84.5
Duration of therapy or refill of prescription	0	0.0
Possible side effects of therapy	0	0.0
Possible drug-drug interaction	0	0.0
Life style modification or dietary instruction	387	94.8
Any other special warnings or precautions/ contraindications	102	25.0
Non compliance to medication and its effect	243	59.5
Effect of medicine withdrawal	11	2.7
Other medication during this therapy	1	0.2
Reinsured that client understand all instructions	353	86.5

Less than one-third (29.4%) of pharmacies provided counseling to SPs without being asked and 47.6% provided on the request of patient (Table 2).

Only one quarter (54.0%) the pharmacies asked about the duration of disease or therapy. Few pharmacies (27.1%) described reason of medicine prescription (Table 3).

Most pharmacies (84.5%) provided information related to dose of therapy, but no clients were counseled

Table 5 Communication skills of counseling person ($n = 408$)

Skill used	(Mean \pm SD)
Eye contact	2.4 \pm 0.5
Attention to customer	2.4 \pm 0.5
Engagement of customer	2.2 \pm 0.3
Non-verbal expressions used	1.2 \pm 0.2
Provided written information	1.1 \pm 0.3

about the storage of medicine (Table 4).

The communication skills of the person providing counseling were determined by including only cases in which the staff both asked and answered questions. Attention to the customer and contacts with patients was the skill ranked most highly (2.4 \pm 0.5) and the provision of written information was the skill ranked lowest (1.1 \pm 0.3) by the SPs (Table 5).

Discussion

This study shows that counseling provided to type 2 DPs at community pharmacies in Pakistan is not very satisfactory [29]. The provision of counseling remain consistent among the visited pharmacies. Most factors have no significant effect on the counseling services (p -value >0.05). However; identical to a Swedish study, current research also indicates that age of staff member engaged in DPs' counseling have effect on counseling services (p -value <0.05) [24]. Privacy was not provided in the majority of pharmacies. Previous studies indicate that provision of privacy during the counseling plays a fundamental role [30-32]. It fulfills the patient satisfaction and enhances the confidence of pharmacists [30, 32]. Less than one-third (29.4%) of pharmacies provided counseling to SPs without being asked but similar to a previous study from Saudi Arabia [33], the response rate increased noticeably. The studies show that counseling rate for prescribed therapies in community pharmacies varied from 8% to 100% [34]. In majority case time provided by drug seller to the patients was less than 2 mins as reported in previous studies [35, 36]. More time provided by pharmacist to patients for their medication counseling also increase the patient's satisfaction [36].

Some side effects like diarrhea, metallic taste of mouth, stomach upset, nausea, vomiting and weakness are associated with metformin therapy [37, 38]. But drug sellers did not tell the possible side effects. Moreover, Pakistan's Recommendations for Optimal Management of diabetes from Primary to Tertiary care level (PROMPT) recommended that mentioned side-effects of metformin can be reduced, if taken with food [38]. But in this study only 62% SPs got the information in this regard.

It is observed that mostly DPs withdraw therapy at the appearance of side-effects [39]. The discontinuation of therapy significantly increases metabolic deterioration in patients and the cost of diabetes management. The long term use of oral hypoglycemic medicine is very necessary [40, 41]. But information sharing for medicine withdrawal and its effects are ignored by drug sellers of Pakistan. Similarly, the storage of medicine and duration of therapy or refill of prescription were also completely missed. The drug-drug interaction, co-morbidity and other medication during treatment are discussed by few pharmacy retailers. The rate of special warnings (25%) for medication is lower than Swedish pharmacies (32%) but name of the medicine (74.7%) is more frequently mentioned as compared to this Swedish study (65.0%). However, no significant difference is found in rate of discussion about purpose of therapy [24].

Non-adherence to medication by type 2 DPs of Pakistan is common [42]. But several studies prove that pharmacists' intervention can improve adherence to medication of type 2 DM [43, 44]. But current study shows that about 59.5% drug sellers highlighted the effect of non-compliance to medication. In this regard this study resembles to a previous study of Spain [45]. Major reasons behind the poor medication counseling can be absence of qualified person in pharmacies and drug selling by unqualified salesmen [29].

This study highlights a positive aspect of counseling that most SPs got information for dose of therapy and life style modification or dietary instruction. These non pharmacological interventions also have very important role in the wellbeing of DPs [7]. This study also shows that staff of pharmacies is not skilled in communication. As communication skills is very important component of medication counseling [46, 47]. Finally, this study demonstrates that staff of community pharmacies need

further trainings to enhance their knowledge and communication skills.

Conclusions

The staff of community pharmacies in Pakistan have little focus on DPs counseling. Drug storage, route of drug administration, and side effects are not discussed during prescription handling. The precautions about therapy and effects of other medications are overlooked. Scientific knowledge and counseling skills of staff seems poor. The strategies should implement to develop community pharmacy service on modern scientific basis. In addition, the continuous training of staff would help to strengthen medication counseling services.

Limitations

The present study has some limitations. First, this study was conducted in selected pharmacies. Although we tried to select a range of pharmacies from different areas, different results may have been found by selecting other pharmacies in other areas. Second, although rater reliability was analyzed, use of the SP method may have produced bias or misperceptions in assessing retailer age, provision of privacy, conversation time, and communication skills. To overcome any potential bias, a score range was used to determine retailer age and conversation time and retailer communication skills were measured using a 5-point Likert scale. Similarly, a 3-point scale was used to determine privacy. Third, medicines were not available in some pharmacies, which may have influenced the results. Unavailability of medicine is a universal phenomenon. This factor can be eliminated by any method in any setting. Therefore, overall findings may vary on availability of medicines in all pharmacies. Fourth, the assessment of conversation time did not reflect the exact counseling time; the SPs were advised to estimate how long they had talked with staff about medication and disease. Finally, all the scenarios were performed by male SPs aged between 24–27 years, as males are more dominant in Pakistani society. However, it's probable that scenario performed by these SPs may have affected the results. The research outcome may vary with different age and gender of SPs.

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