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Evaluation of Community Pharmacists' Knowledge, Attitude and Practice towards Good Pharmacy Practice in Iran.

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ABSTRACT

Background: The principles of pharmaceutical care are embedded in the concept of Good Pharmacy Practice (GPP). GPP is poorly applied in community pharmacies not only in Asian countries, but even in United States and Europe. The present study was undertaken to evaluate the knowledge, attitude and practice of the community pharmacists in Iran, regarding GPP.

Methods: A total of 794 pharmacists were evaluated with a reliable and validated KAP (Knowledge, Attitude, and Practice) questionnaire regarding GPP in September 2008.

Results: The most important finding in the present study was the pharmacists' low knowledge (Mean= 13.42) and practice (Mean= 29.85) level about GPP, while their attitude towards this subject was at a high level (Mean= 74.83). Increase in their knowledge of good pharmacy practice aligned with an increase in their attitudes towards this issue. Also increase in our pharmacists' knowledge and attitude aligned with an increase in quality of their practice.

Conclusion: The current practice of Iranian community pharmacists needs further improvement. National pharmaceutical organizations should organize educational programs for the community pharmacists to equip them for their main role in community practice: promoting rational drug use.

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Introduction

Across the world, millions of people visit community pharmacies for their daily health care needs. Pharmacists are placed at the first point of contact in the healthcare system due to their easy accessibility (1). Patients counsel to community pharmacists because they are the most available and trusted healthcare providers (2). Nowadays pharmacists are trying to move away from a drug-focused approach towards a patient centered approach with the aim of achieving better outcomes from drug therapy (3). Also as a consequence of the advancement in pharmacy profession, the pharmacist's role is changing from drug compounding and dispensing to providing drug information and patient care (2). This entire scope of patient centered services has been described as pharmaceutical care, a revolution in pharmacy practice (4). The principles of pharmaceutical care are implanted in the concept of Good Pharmacy Practice (GPP) (5). Pharmaceutical care services have an important undisputed positive effect on health care management and costs (6). Various studies have showed the positive influences of community pharmacists' contribution to health care promotion (7).

Safe medication procurement by patients is a global issue (8). GPP is poorly applied in community pharmacies not only in Asian countries (9), but even in United States

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(8) and Europe (10, 11).

To surrender pharmaceutical care, pharmacists should take practice standards which enable them have a proper view of patients' health issues (5). In 1992, the International Pharmaceutical Federation (FIP) presented standards for pharmacy practice under the heading GPP in community pharmacies and hospitals' inpatient and outpatient pharmacies. GPP obligates all pharmacists to ensure that the provided services possess the proper quality. GPP guidelines have been prepared by World Health Organization (WHO) and FIP to encourage all countries to develop pharmacy practice minimum standards (12, 15).

These guidelines present the national standards goals as follows: to promote health, to supply medicines and medical devices, to educate patient self-care, and to improve drug prescription (13). Although the great efforts have been done to set up a national basis for pharmacy practice standards, the system still suffers from the lack of knowledge concerning the quality of pharmacy services (14). Application of practice standards results in improvement of clinical and economic outcomes of patients' health care (5).

The pharmacy practice situation varies from country to country. Even these conditions may vary between different areas within a country (12, 15). In Iran, role of community pharmacists is not clearly defined. In fact, most of the pharmacists are confined to prescription filling. Not much research focusing on community pharmacists' roles have been conducted in Iran. The present study was undertaken to evaluate the current knowledge, attitude and practice of the community pharmacists in Iran regarding GPP via quantification of quality parameters.

Methods

A questionnaire was prepared to investigate knowledge, attitude and practice (KAP) of community pharmacists regarding GPP. The KAP questionnaire was designed through searching in related internet websites. This KAP questionnaire consisted of a total of 17 questions. Among these questions, 5 were related to the knowledge, 6 were related to attitude and the remaining 6 questions were related to the practice aspects. All Knowledge questions and 2 practice related questions were designed as multiple choices. Attitude related questions were developed in five choices, Likert-Scale (16, 17) where 5 represents 'completely positive attitude', 4 'positive attitude', 3 'no idea', 2 'negative attitude' and 1 'completely negative attitude'. Formal and content validity of the questionnaire was evaluated by expert pharmacists.

The initial draft of the questionnaire was circulated to the members of the research team and modifications were carried out as per the suggestions. Upon receiving the responses from health care professionals, its Internal Consistency Reliability was tested by finding the Cronbach's alpha Coefficient on a sample consisting of 20 randomly selected pharmacists. Cronbach's alpha is an index of reliability associated with the variation accounted for by the true score of the underlying construct (18). Test-related Reliability was tested by finding the Intra-Cluster correlation on the same sample after a week. After this modification, the finalized questionnaire was employed, in order to collect data from the major sample. A cover describing the study's objectives and request for professionals' participation was attached. The names of the respondents were not requested to maintain anonymity and elicit an unbiased response that will better reflect the opinion of respondents.

We invited all pharmacists in Iranian Pharmacists Association Annual Seminar which was held in September 2008 to participate in this survey.

Statistical Analysis

The filled KAP questionnaires were analyzed by producing descriptive statistics using the Statistical Package for Social Sciences (SPSS for MS windows version 17). Score 1 was assigned to the correct answers to all knowledge and two practice questions, and zero was assigned to wrong answers. The numerical variables (e.g. the number of working hours per week) were described numerically. The answers to attitude questions were ranked 1 to 5 accordingly, so the score 5 represents the most positive attitude. In order to determine the effective factors on knowledge variable (the total sum of knowledge scores), the independent variables with entry into the regression model, were used. Accordingly, in order to determine the effective factors on attitude, the knowledge variable was added to the series of independent variables, and to determine the effective factors on practice, both knowledge variable and attitude variable (the total sum of attitude scores), were added to the series of independent variables. The statistical significance level was considered as 0.05.

Results

Of the 794 potential responders who received the questionnaires, 742 fulfilled them, giving a response rate more than ninety percent (%93.4). The demographic data are shown in Tables 1, 2. Internal Reliability for knowledge, attitude and practice variables was tested by finding the Cronbach's alpha Coefficient, which was greater than 0.7 for all of them. As the Cronbach's alpha Coefficient is large (conventionally > 0.7), it is assumed that the items are reliable (19).

Knowledge about GPP

Pharmacists' knowledge about the GPP was evaluated by using five questions. The result is shown in Table 3. The Q5 (question 5) and Q1 had respectively the maximum (175 (23.6%)) and minimum (26 (3.5%)) response rates

Table 1. Quantitative demographic variables of survey respondents (n=742).

Variables	Mean ± SD	Range
Age (year)	40.6 ± 12.0	23.0-80.0
Years from graduation (year)	14.8 ± 1.2	0.0-57.0
Working hours in pharmacy per week (hour)	36.9 ± 18.8	0.0-90.0
pharmacy practice experience (year)	12.7±10.9	1.0-74.0

among all knowledge questions.

All ten independent variables retained in regression model and there was just relationship between pharmacists' knowledge about GPP and "practice field". There was no significant difference between community pharmacists' knowledge of GPP in comparison with hospital pharmacists and pharmacists working in pharmaceutical industries (P= 0.9).

Attitudes towards GPP

To explore pharmacists' attitudes towards GPP, six questions were designed. The descriptive results are presented in Table 4.

All eleven independent variables retained in regression model and there was relationship between pharmacists' attitudes towards GPP and "gender", "pharmacy ownership "and "knowledge variable", as female pharmacists had better attitudes towards GPP than males (P= 0.034); pharmacy ownership was an influential variable in decreasing the attitude (P= 0.011); and increase in their knowledge of GPP paralleled with an increase in their attitudes towards GPP (P= 0.009).

Practice variables

Tables 5 and 6 show the distribution of pharmacists' answers to practice questions.

All twelve independent variables retained in regression model and there was relationship between pharmacists practice related to GPP and "educational qualification", "pharmacy practice experience", "working place location", "living place location", "knowledge variable" and "attitudes variable". Increase in pharmacists' educational qualification (P= 0.037), pharmacy practice experience (P=0.013), knowledge of GPP (P=0.034) and attitudes towards GPP (P= 0.001) paralleled with an increase in their practice related to GPP. In addition, pharmacists from provinces other than Tehran (P=0.038) and pharmacists who were working in provinces other than Tehran (P= 0.021) had higher good pharmacy practice than other pharmacists.

Distribution of knowledge, attitudes and practice variables shows the mean and other statistical factors in Table 7. These statistics are obtained from descriptive analysis of knowledge, attitude and practice variables after summing the scores.

Table 2. Qualitative demographic variables of survey respondents (n=742).

Variable		N (%)
Gender	Male	303 (40.9%)
	Female	433 (58.4%)
Educational qualification	Undergraduate	11 (1.5%)
	PharmD	709 (95.6%)
	Post PharmD	13 (1.8%)
Practice Field	Community Pharmacy	495 (66.7%)
	Pharmaceutical Industry	52 (7.0%)
	Hospital Pharmacy	61 (8.2%)
Pharmacy ownership	Yes	350 (47.2%)
	No	347 (46.8%)
Living place Location	Tehran	673 (90.7%)
	Other cities	46 (6.2%)
Working place Location	Tehran	625 (84.2%)
	Other cities	92 (12.4%)

Discussion

The most important finding in the present study was the pharmacists' low knowledge and practice level about GPP, while their attitude towards this subject was at a high level. Pharmacists' knowledge about the GPP was evaluated by using five questions regarding providing a range of high standard pharmacy services to the patients. The fifth knowledge question had the maximum response rate among all knowledge questions. Twenty three point five percent of the responders to this question implied that the best method for presenting drug use instructions to the patients is written instructions which are affixed to the drug container and also explained verbally to the patient plus verbal complementary drug information (e.g. drug adverse effects, drug-drug interactions).

Pharmacists' attitude towards good pharmacy practice was evaluated by using six questions regarding our pharmacists' opinion about different aspects of current situation of pharmacy practice in Iran. Despite our community pharmacists' low level of knowledge, their attitude towards this subject was at a high level. However, increase in their knowledge of good pharmacy practice paralleled with an increase in their attitudes towards this issue. In a study by Oparah, et al. 75% of a sample of 1500 Nigerian pharmacists had positive attitude towards pharmaceutical care. Also they were enthusiastic to put pharmaceutical care into their practice, but expressed strict concerns about their knowledge and professional skills regarding this issue (22). Not only the community pharmacists, even the Nigerian and Saudi Arabian pharmacy students in two separate studies had a favorable positive attitude towards patient-centered pharmaceutical care services (23, 24).

Table 3. Pharmacists' knowledge about Good Pharmacy Practice.

Knowledge Questions	Correct answer N (%)	Incorrect answer N (%)	No answer N (%)
Q1	26 (3.5%)	682 (91.9%)	34 (4.6%)
Q2	111 (15.0%)	583 (78.6%)	48 (6.5%)
Q3	65 (8.8%)	625 (84.2%)	52 (7.0%)
Q4	121 (16.3%)	567 (76.4%)	54 (7.3%)
Q5	175 (23.6%)	517 (69.7%)	50 (6.7%)

Knowledge Questions:
Q1: What is the main purpose of standard drug dispensing?
Q2: What are the main items which should be mentioned on the label of drugs that should be counted from a bulk container?
Q3: Under which circumstances recycled containers can be used in pharmacy?
Q4: What are the minimum requirements for a container to dispense tablets and capsules in?
Q5: What is the best method for presenting drug use instructions to the patients?

Our Pharmacists' practice in community pharmacies was evaluated by asking their reactions under similar circumstances. Regarding community pharmacists' low practice level especially in developing countries (25), our pharmacists' current low intention to apply the good pharmacy practice standards in community pharmacies was predictable (emphasizing the large sample size in our study). Nearly 8% of the responders in this study could answer the first practice question regarding their reaction while facing a dangerous drug-drug interaction in a patient's prescription correctly. In contrast, nearly 57% of the community pharmacists in a study by Awad, et al had regularly performed interventions on prescriptions via interactive discussions with physicians (6). Some reasons that many pharmacists do not check the legality of the prescriptions and identify possible drug interactions are: inadequate knowledge, lack of professional development programs, and more trade interest than responsibility (1). In a study by Toklu, et al. the community pharmacists labeled the 43% of the prescriptions properly, but only 6.5% of the prescriptions contained a verbal warning of possible drug-drug interactions (26). In another study, Lao's pharmacists' poor practice became evident by the lack of drug information in 59% of prescriptions, and lack of labeling in 47% (27). According to the response to practice questions in our study, mean consultation length was nearly five minutes for each patient. This finding is parallel to the results in Poudel, et al study where the process of consultation took 1-5 minutes (3).

Although the pharmacy practice has broadened the pharmacists' role towards more patient-oriented role, deficits in pharmacy practice has remained a global

Table 4. Pharmacists' attitudes towards Good Pharmacy Practice**.**

Attitude Questions	Completely Positive N (%)	Positive N (%)	No idea N (%)	Negative N (%)	Completely Negative N (%)	No answer N (%)
Q1	499 (67.3%)	172 (23.2%)	15 (2.0%)	1 (0.1%)	5 (0.7%)	50 (6.7%)
Q2	234 (31.5%)	230 (31.0%)	162 (21.8%)	44 (5.9%)	14 (1.9%)	58 (7.8%)
Q3	158 (21.3%)	290 (39.1%)	163 (22.0%)	65 (8.8%)	11 (1.5%)	55 (7.4%)
Q4	265 (35.7%)	252 (34.0%)	134 (18.1%)	28 (3.8%)	6 (0.8%)	57 (7.6%)
Q5	159 (21.4%)	281 (37.9%)	167 (22.5%)	72 (9.7%)	10 (1.3%)	53 (7.1%)
Q6	265 (35.7%)	288 (38.8%)	76 (10.2%)	34 (4.6%)	22 (3.0%)	56 (7.5%)

Attitude Questions:
Q1: Pharmacists' professional services are a necessary complementary part in health care system.
Q2: Pharmacists are responsible for safety evaluation of prescriptions.
Q3: In Iran, explaining drug's adverse drug reactions often decreases the patient's compliance with drug therapy.
Q4: The main underlying item in a pharmacist's performance should be the professional factors rather than the economical factors.
Q5: Current pharmacy services in Iran are not appropriate.
Q6: Trained pharmacy technicians working under the direct supervision of pharmacists, are necessary for presenting better pharmacy services to the patients.

Table 5. Practice multiple choices questions.

Practice Questions	Correct answer N (%)	Incorrect answer N (%)	No answer N (%)
Q1	60 (8.1%)	585 (78.8%)	97 (13.1%)
Q2	348 (46.9%)	275 (37.1%)	119 (16.0%)
Q3	257 (34.6%)	387 (52.2%)	98 (13.2%)
Q4	221 (29.8%)	423 (57.0%)	98 (13.2%)

Practice Questions:
Q1: What is your reaction while facing a dangerous drug-drug interaction in a patient's prescription? (e.g. concomitant prescription of Tranylcypromine and Fluoxetine)
Q2: Is there any list in your pharmacy containing names and addresses of reliable physicians with illustrious background in disease diagnosis and rational drug prescription to refer the patients to?
Q3: Do you ask the female patients if they are pregnant or breast feeding before delivering the medicines to them?
Q4: How is your professional appearance in pharmacy? (Clean white coat with a badge stating your name and position)

issue (4, 20). For instance, in the United Kingdom, there is 0.04% to 0.08% dispensing errors in community pharmacy practice (10, 11). According to the study by Szeinbach, et al., even under strict quality controls, US pharmacists make an estimated 5.7 errors per 10,000 prescriptions (nearly 2.2 million dispensing errors per year) (8). Retail pharmacy settings (e.g. chain pharmacies) in the United States can't maintain appropriate quality assurance systems. Also the drive-through pharmacies cause dispensing and communication errors, ignore the patients privacy and prolong the prescription processing. Pharmacists' excessive workload and attitude of the patients (e.g. lack of interest in counseling) jeopardizes patient safety. Another deficit of this system is limited pharmacists' involvement in patient education. In many cases patients are not trained about drugs adverse reactions, storage conditions, precautions and drug-drug interactions (21).

In summary, despite our community pharmacists' high level of attitude, their practice was at a low level. Good knowledge is a prerequisite for good pharmacy practice (28). Increase in our pharmacists' knowledge and attitude paralleled with an increase in quality of their practice. It provides important clues for national pharmaceutical organizations to organize educational programs for the community pharmacists to equip them for their main role in community practice: promoting rational drug use.

In conclusion, GPP is poorly applied worldwide. As the pharmacists have a significant impact on public health and improving patient's quality of life, the current practice of community pharmacists needs further improvement. Providing GPP standards and guidelines is not the FIP's only duty. Furthermore, conducting supervision and inspection over implementation of these standards by FIP

Table 6. Practice open questions.

Questions	Mean ± SD (minute)	Range (minute)
How long does it typically take for you to consult with a patient?	5.0 ± 3.4	0.0-20.0
How many times in a week do you confer the drug information textbooks and softwares to evaluate the prescriptions?	6.8 ± 5.9	1.0-50.0

Table 7. Distribution of knowledge, attitudes and practice variables (out of 100).

Statistics	Knowledge	Attitudes	Practice
Mean	13.42	74.83	29.85
Median	20.00	80.00	25.00
Mode	0.00	80.00	25.00
Range	80.00	100.00	100.00
Minimum	0.00	0.00	0.00
Maximum	80.00	100.00	100.00

could help realization of GPP different aspects.

Considering the GPP a way to implement pharmaceutical care, a pharmacist's main concern should be the promotion of rational and economic prescribing and appropriate use of medicines.

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