

Validation of a Patient-Pharmacist Relationship Measurement Tool in Lebanon

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Research

ABSTRACT

Objectives: There is a lack of previous evidence that measure patient-pharmacist relationship based on a theoretical framework. The aim of this study is to validate a measurement tool aid to measure the patient-pharmacist relationship in Lebanon based on a previously established conceptual model.

Methods: A cross sectional study, conducted in all districts in Lebanon between January and April 2016, included 565 patients.

Results: Patient perception, level of expectation and reasons for visiting the pharmacy were all significantly and highly correlated between them ($0.799 < r < 0.878$) ($p < 0.05$ for all). High Cronbach's alphas were found for level of expectation full scale (0.921) and the following factors: patient perception (0.926), the main reason for visiting back for the pharmacy (positive reactions) (0.804) and barriers for asking questions (negative reactions) (0.755).

Conclusion: Our results show that the level of expectation of the patient is heightened when the perceived image of the pharmacist is enhanced. This affects the negative and positive reactions accordingly. Role change should be identified as a priority. Both increased quality of the patient-pharmacist relationship and pharmacist expertise will lead to an enhanced patient satisfaction, which may ultimately lead to better patient medication adherence. The results of this study will aid researchers or the Lebanese Order of pharmacists to tackle specific dimensions that highly affect the patient-pharmacist relationship and public expectations from the Lebanese pharmacist.

Keywords: Patient perception, Expectation, Barriers, Community pharmacist.

INTRODUCTION

After the expansion of the pharmacist's role beyond only dispensing medications, the pharmacist-patient relationship has become the topic of concern for many health care professionals [1]. Optimal care is provided through a good relationship between patients and their pharmacists, which includes facilitating patient questions, opening the opportunity to share self-decisions, and optimization patient follow-up [1-4].

Many studies have been developed to assess patients' beliefs and knowledge about the pharmacist's role to improve the patient-pharmacist relationship based on the role theory [3-5]. According to the role theory, the individual role is formulated by a set of expectations that society places on an individual performing a determined position in a social

system. This theory may provide a useful theoretical framework to measure how patients' perceptions of the pharmacist's professional image influence their expectations of the pharmacist's role and, in turn their reactions to the role of the community pharmacist [5,6].

Furthermore, the expansion of the pharmacists' role from dispensing to a service provider, may be resulting in changing patient's perceptions or perceived image of the community pharmacist [5,7-10]. Therefore, it is important to understand what patients expect from the community pharmacist since patients are either still unaware of those expanded professional services a pharmacist is able to provide, are not interested in delivered services, or prefer other professionals to deliver them [5,11-13]. Thus, by understanding patients' expectations of the pharmacist, efforts can be done to meet those expectations, and to provide efficient expanded professional services [4,5,14].

Conceptual Model

The role theory consists of a set of dimensions: a "role" (characteristic behavior associated with particular social position), "expectations" (norms, preferences and beliefs) and "reactions to behavior" (positive and negative reactions from a determined behavior) [5]. Marta Sbater and her colleagues developed a conceptual model that applies to patient-pharmacist relationship, based on the role theory aimed at developing and testing how patients' perceived image of the pharmacist influences their expectations of the pharmacist's role, and how this then influences patients' reactions with respect to that role taking into considerations the expanded professional pharmacy services. The model found that perceived pharmacist image affects professional expectations of the community pharmacist and these expectations in turn influence positive reactions [5].

In addition to the societal perceived role, patient satisfaction is an important determinant to maintain the relationship with the health care provider and to adhere to a medication regimen and it consist of cognitive and emotional response [2,10,15]. Several studies have investigated patients' satisfaction and attitudes towards community pharmacy services as a tool to reflect the services provided to patients in community pharmacy at different countries including the Middle East [11,16-24], however, most of these studies are epidemiological in nature only very few measured the relationship based on a theoretical framework.

In Lebanon, latest findings from a study by Iskandar et al. showed that the Lebanese public has a poor understanding of the role and the services provided by the community pharmacist and this is affecting pharmacist perceived image as well as the patient-pharmacist relationship [25]. Due to the unmet need, this paper will examine the validity of a measurement tool for a patient-pharmacist relationship in Lebanon. The study will assess patient-pharmacist relationship at community settings pertaining that most of the patient contact occurs at the referred setting. The results of this study will aid researchers in Lebanon and the Middle Eastern region to address interventions based on important aspects that are affecting the patient-pharmacist relationship.

METHODS

Ethical Approval

Since our data collection methodology involves structured interview we obtained a signed informed consent form before starting the study. The consent form explained that all data will be stored in the School of Pharmacy at the Lebanese International University (LIU). All data that is collected from our study has the potential to be shared publicly. Consequently, to maximize benefits and minimize harm, investigators explained to all participants that any acquired information is to be treated with confidentiality and published results are to be in aggregate form with no reference to names. The study received the approval from the Research Committee of the Lebanese International University prior to the start of data collection.

Research Design

A cross sectional study was designed to collect data on patients' perceptions, expectations, satisfactions, negative reactions and positive reactions towards community pharmacist. Using this research design will allow us to draw patterns of relationship among these variables.

Study Population

The study was conducted among community pharmacies in all five districts in Lebanon (Beirut, Mount Lebanon, North, South and Bekaa), targeting patients visiting community pharmacy aged 18 years and above. The study included only patients visiting the community pharmacies and excluded members who are institutionalized in hospitals or nursing homes because these patients in Lebanon do not have direct contact with the pharmacist. The assessment was

performed on community pharmacies from every district across Lebanon through a survey to be filled out by the investigators through a face to face interview with eligible participants.

Sampling Strategy

Through convenient sampling community pharmacies are selected from each district. This study was conducted between January and April 2016. A sample of 492 patients was targeted to allow for adequate power for bivariable analysis to be carried out according to the Epi info sample size calculation [26], with a population size of 4 million in Lebanon, a 20% assumed response rate [2] and a 5% confidence limits.

DATA COLLECTION

Instrument

A group of investigators formulated the scale to investigate patients' perception, expectations, negative and positive reactions as well as the level of satisfaction. The questions used in this scale were adopted from similar studies done at different Middle Eastern and European countries but tailored according to the conceptual model dimensions perceptions, expectations and reactions [5,10,11,16,24,27-30]. The measurement tool was translated into Arabic and back translated to English to ensure accuracy and consistency. The full questionnaire was pilot-tested on 20 individuals whose answers were not included in the final data entry sheet.

Before starting data collection, a full-day training session was conducted to train the ten survey team members on the instrument, and ensure thorough following of ethical considerations in order to have a consistent collection of the data amongst them. The investigator interviewed each patient in a private area of the pharmacy to ensure confidentiality. The questionnaire took approximately 20 minutes to be completed in private.

Questionnaire Structure

The questions were divided into five parts. The first part includes the socio-demographic characteristics including age, gender, marital status, work status, social support, educational level, family size and family monthly income.

The second part included questions related to patient expectations of a good pharmacy. The patients answered 11 close-ended questions including expectations from the pharmacist such availability, quick service, delivery, better prices, offering a variety of services in addition to cognitive services such as quick response and good counselling. Moreover, this part included questions on pharmacist attitude such as respect and empathy.

The third part contained questions about patient's perception of the pharmacist's role in the community pharmacy. This included 14 items about the counselling for the drug use, disease, side effects, drug-drug and food interactions. Moreover, questions related to disease diagnosis and treatment, checking prescription accuracy, physician referring, patient follow -up and delivering services (laboratory results interpretation, injections) were also included.

The fourth part was related to questions about the main reason for visiting back the pharmacy that reflects patient's positive reactions. It included 7 items concerning pharmacist's effective listening, answering questions quickly, giving enough time for counselling, has a good reputation, respects patient privacy, and pharmacy's parking availability.

The last part contained questions related to the barriers for asking questions to the pharmacist. This included 7 items about privacy, trust, and pharmacist behavior, lack of knowledge, time and physical availability. At the end, a final question was asked about the overall satisfaction of the pharmacy services.

Statistical Analysis

Data entry was performed by one person who was not involved in the data collection process. Statistical analysis was performed using SPSS software, version 22. Percentages were shown for qualitative variables, while means and standard deviation were given for quantitative variables. Two sided statistical tests were used to compare between group percentages, Wilcoxon test for quantitative variables with non-homogeneous variances or non-normal distribution, and Student's t-test for quantitative variables of normal distribution and homogeneous variances. ANOVA and Kruskal-Wallis tests was used to compare between three groups or more, and Pearson correlation coefficient were used to correlate between quantitative variables. A p-value of 0.05 was considered statistically significant.

Factor Analysis

To confirm the questionnaire construct validity in the Lebanese population, a factor analysis was conducted on tool items as cited above: eleven questions concerning the patient's level of expectations, fourteen questions concerning patient's perception and seven questions concerning patient's barriers for asking questions. The factor analysis was

conducted using the principal component analysis technique, with a promax rotation since the extracted factors were found to be significantly correlated. The Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were ensured to be adequate. The retained number of factors corresponded to Eigenvalues higher than one. Moreover, Cronbach's alpha was recorded for reliability analysis for the different subscale factors. The final scale was baptized "Patients Expectations, Perceptions and Barriers about Community Pharmacy" (PEPB-CP).

RESULTS

Six hundred surveys were distributed, and a total of 565 participants completely answered the survey questions with a response rate of 94%.

Sociodemographic Characteristics

Table 1 summarized the patients' sociodemographic characteristics. The respondents were all Lebanese citizens, with the majority of them aging between 18-30 years old. Our sample included mostly females (56.5%). The majority of respondents were married (60.5%); 37.5% had a family size of 4 persons and more and 44.2% of respondents had an income of fewer than three million Lebanese Liras per month; 41.1% had a university degree and 39.3% of respondents were not working.

Table 1. Sociodemographic characteristics of the participants (n=565).

Factor	Frequency (%)
Gender	
Males	246 (43.5%)
Females	319 (56.5%)
Age category	
18-30	224 (39.6%)
31-40	131 (23.2%)
41-50	93 (16.5%)
51-65	79 (14%)
More than 65	38 (6.7%)
Marital status	
Single	223 (39.5%)
Married	342 (60.5%)
Current family size	
Living alone	24 (4.2%)
2 members	54 (9.6%)
3 members	122 (21.6%)
4 members	153 (27.1%)
More than 4 members	212 (37.5%)
Level of education	
No school	49 (8.7%)
Less than 8 years	88 (15.6%)
Finished school	109 (19.3%)
University degree	232 (41.1%)

Post graduate degree	87 (15.4%)
Work status	
No	222 (39.3%)
Yes	334 (59.1%)
Disabled	9 (1.6%)
Family monthly income	
No current income	52 (9.2%)
Less than 1 million LL	99 (17.5%)
Between 1-3 million LL	250 (44.2%)
More than 3 million LL	164 (29%)

Factor Analysis

We ran a factor analysis on the whole sample (n=565) to check the validity of the created questionnaire. The items converged over a solution of two factors that had an Eigenvalue over 1. High Cronbach's alphas were also found for the full questionnaire (0.94), showing good reliability.

Patient's Level of Expectations

Out of all the items asked in the questionnaire, all variables could be extracted from the list, with only one item that over-correlated to each other ($r > 0.9$), having a low loading on factors (< 0.3) or because of a low communality (< 0.3) for all of the four-factor analysis.

The factor analysis for the patient's level of expectations, was run on the total sample of participants included in the study (Total n=565). The level of expectations items converged over a solution of two factors that had an Eigenvalue over 1, explaining a total of 60.72% of the variance. A Kaiser-Meyer-Olkin measure of sampling adequacy of 0.906 was found, with a significant Bartlett's test of sphericity ($P < 0.001$). Moreover, high Cronbach's alphas were found for factor 1 "Service and availability of products" (0.924), factor 2 "pricing" (0.501) and the full scale (0.921) (Table 2).

Table 2. Factor analysis of the patient's level of expectations survey items in patient's satisfaction in the Lebanese community pharmacies.

Factor 1	Loading on factor
Respect	0.869
Good counseling	0.799
Quick response to questions	0.798
Providing services such as measuring BP, Glucose, Triglycerides	0.773
Availability of any requested pharmaceutical product	0.761
Quick service	0.737
Availability of the pharmacist at all times at the pharmacy	0.729
Empathy	0.722
Delivery or at home services	0.532
Factor 2	
Offering cosmetic sampling	0.794
Better prices and discounts	0.599

High Cronbach's alphas for the full scale (0.921), 0.924 for factor 1 and 0.501 for factor 2

Patient Perception

The patient's perception survey questions were used as a part of the cross-sectional study questionnaire and were asked to the whole sample; the factor analysis was run on the whole sample surveyed patients (Total n=565). According to the rotated component matrix, these variables could be combined into 2 factors. The patient's perception items converged over a solution of two factors that had an Eigenvalue over 1, explaining a total of 62.11% of the variance. A Kaiser-Meyer-Olkin measure of sampling adequacy of 0.905 was found, with a significant Bartlett's test of sphericity ($P < 0.001$). Moreover, high Cronbach's alphas were found for factor 1 "pharmacist's knowledge and counseling" (0.925), factor 2 "pharmacist's care and advices" (0.698) and the full scale (0.926) (Table 3).

Table 3. Factor analysis of the patient's perception survey items in patient's satisfaction in the Lebanese community pharmacies.

Factor 1	Loading on factor
Counsel about drug use and administration	0.810
Counsel about side effects	0.809
Advise about drug food interaction	0.786
Check drug interactions	0.767
Check for accuracy of my prescription with regard to drug name and dose	0.755
Able to give injections when needed	0.736
Tell me when to refer to a physician or to the hospital	0.721
Listen to patient problems	0.673
Counsel about the disease and how to control it	0.668
Able to interpret my lab tests results	0.614
Only dispense the right order medication	0.402
Factor 2	
Give me non-pharmacological advice	0.502
Follow up the patients on their conditions	0.441
Diagnose my problem and give me the treatment	0.418
High Cronbach's alphas for the full scale (0.926), 0.925 for factor 1 and 0.698 for factor 2	

Main Reasons for Visiting Back the Pharmacy (Positive Reactions)

The patient's barriers for asking questions survey items were used as a part of the cross-sectional study questionnaire and were asked to the whole sample; the factor analysis was run on the whole sample surveyed patients (Total n=565). The patient's perception items converged over a solution of two factors that had an Eigenvalue over 1, explaining a total of 57.35% of the variance. A Kaiser-Meyer-Olkin measure of sampling adequacy of 0.775 was found, with a significant Bartlett's test of sphericity ($P < 0.001$). Moreover, high Cronbach's alphas were found for factor 1 "pharmacist's availability and reputation" (0.864), factor 2 "pharmacy location and its advantages" (0.564) and the full scale (0.804) (Table 4). According to the rotated component matrix, these variables could be combined into 2 factors.

Table 4. Factor analysis of the patient's main reasons for visiting the pharmacy or visiting back the pharmacy (negative reactions).

Factor 1	Loading on factor
gives you enough time	0.859
respect your privacy	0.839

listen carefully	0.822
pharmacist reputation	0.499
Factor 2	
discount and better prices	0.751
parking availability	0.698
location proximity	0.612
High Cronbach's alphas for the full scale (0.804), 0.864 for factor 1 and 0.564 for factor 2	

Patient's Barriers for Asking Questions (Negative Reactions)

The patient's barriers for asking questions survey items were used as a part of the cross-sectional study questionnaire and were asked to the whole sample; the factor analysis was run on the whole sample surveyed patients (Total n=565). The patient's perception items converged over a solution of two factors that had an Eigenvalue over 1, explaining a total of 44.57% of the variance. A Kaiser-Meyer-Olkin measure of sampling adequacy of 0.732 was found, with a significant Bartlett's test of sphericity ($P < 0.001$). Moreover, high Cronbach's alphas were found for the full scale (0.755) (Table 5). According to the rotated component matrix, these variables could be combined into one factor "pharmacist's negative traits".

Table 5. Factor analysis of the patient's barriers for asking questions or not visiting back the pharmacy survey items in patient's satisfaction in the Lebanese community pharmacies.

Factor 1	Loading on factor
Pharmacist is unfriendly	0.763
Fear of intimidation	0.698
Pharmacist has no time to counsel	0.688
Lack of pharmacist knowledge	0.645
I don't trust the pharmacist	0.520
High Cronbach's alphas for the full scale (0.755)	

Patient perception, the level of expectation and reasons for visiting the pharmacy were all significantly and highly inter-correlated, with a correlation coefficient varying between 0.799 between level of expectation and reasons for visiting the pharmacy, to 0.878 between patient perception and the level of expectation ($p < 0.05$ for all variables). All these 3 factors were negatively and significantly correlated with the barriers' variable, except for the level of expectation ($p = 0.511$) (Table 6).

Table 6. Correlation factors between each axe of the model.

Factor/ Factor	Patient perception	Level of expectation	Barriers	Reasons for visiting the pharmacy
Patient perception	-	$r = 0.878; p < 0.001$	$r = -0.09; p = 0.032$	$r = 0.810; p < 0.001$
Level of expectation	$r = 0.878; p < 0.001$	-	$r = -0.028; p = 0.511$	$r = 0.799; p < 0.001$
Barriers	$r = -0.09; p = 0.032$	$r = -0.028; p = 0.511$	-	$r = -0.218; p < 0.001$
Reasons for visiting the pharmacy	$r = 0.810; p < 0.001$	$r = 0.799; p < 0.001$	$r = -0.218; p < 0.001$	-

DISCUSSION

A conceptual model, similar to that of Sabater et al. [5] was adapted to assess the relationship between patients' perception concerning the role of the pharmacist, patient's satisfaction, the barriers for asking questions and the main

reasons for visiting back the same pharmacy in Lebanon. In the current study, we were able to validate scale based on the conceptual model in the Lebanese population. Results provide initial evidence supporting the reliability and validity of the scale and each part of it. The scale demonstrated good psychometric properties, with excellent internal consistency. The internal reliability of the variables of the model was excellent (Cronbach's $\alpha=0.94$), compared to that of Sabater et al. (Cronbach's $\alpha=0.71$). Therefore, our model can be safely applied in our Lebanese community pharmacy context to assess how the pharmacists influence patients' expectations and how the patient reacts towards the pharmacist's attitudes and behaviors. Another way to verify the reproducibility of the questionnaire was to use correlation coefficients, as the one proposed by Kirshner and Guyatt [31]. The correlation coefficients showed a high correlation between each item of the questionnaire and the satisfaction level.

No conceptual model was previously tested in Lebanese community pharmacies. Patient-perceived pharmacist expertise is the degree to which a patient believes the pharmacist has the knowledge, skills, and abilities necessary to help him or her [2,32]. Our study results showed that a positive patient's perception of the pharmacist's image will lead to an increased expectation of the pharmacist's role, thus leading to a stronger pharmacist-patient relationship bond. Our results are in line with the ones of Crosby et al. that showed that patient-perceived pharmacist expertise has been shown to be an independent predictor of patient satisfaction and trust [33].

Since Patients still attribute the dispensing role to pharmacists, without necessarily attributing the role of a service provider to them [12]. Patients' expectations would be greater if the professional image of the pharmacist improved. The results showed that the patient's perception is positively associated with the expectation level and the reason for visiting the pharmacy but negatively associated with the patient's barriers for asking questions. This, in turn, is associated with the patients' negative and positive reactions. Our results are much similar to those of Sabater and Al Ghurair [2,5]. Strategies to improve the pharmacist's professional image should be implemented by health care authorities in Lebanon for this purpose (Supplementary File).

In addition, when the pharmacist acts as a service provider (listens carefully, gives enough time to the patient, responds quickly to the patient's questions and needs), not only does it increase the patient's level of expectation, it is also one of the main reasons for positive reactions where the patient seeks to return to the same pharmacy, as shown in our results. The level of expectation is positively correlated with the reasons for visiting the same pharmacy according to our results. This confirms the importance of the relationship quality as a mediator between the pharmacist expertise as perceived by the patient and the level of satisfaction [2].

Moreover, a good patient-pharmacist relationship is mandatory to achieve a high level of satisfaction. The pharmacist plays multiple roles during his community work and which includes the clinical, business, patient advocate, dispensing and manager aspect of the profession. Our study didn't study the relation between the pharmacist's multiple roles and patient's expectations or health care providers but the correlation was evident in other studies [6,34-36].

LIMITATIONS

Our study has some limitations. The total sample size is acceptable, withdrawn from 3 districts in Lebanon and might not be representative of the whole population. A selection bias is still however possible. The use of a questionnaire in patients may not always be accurate: problems in question understanding, with over or under evaluation of the questions, which can lead to a possible information bias. Furthermore, it is possible that other sample groups, such as patients above 60 years old that are a minority in our study, might have different opinions and might be affected in different ways.

CONCLUSION

Our results show that the level of expectation of the patient is heightened when the perceived image of the pharmacist is enhanced. This affects the negative and positive reactions accordingly. Role change should be identified as a priority. Both increased quality of the patient-pharmacist relationship and pharmacist expertise will lead to an enhanced patient satisfaction, which may ultimately lead to better patient medication adherence. Deeper studies are necessary to evaluate the interventions that would affect patient's expectations and its relationship with the pharmacist.

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