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Impact of Educational Background and Experience on Community Pharmacists' Knowledge and Healthcare Service Quality in Karbala

A research study

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Abstract

Community pharmacists play a crucial role in the healthcare system by providing medication counseling, health education, and other essential services. This research aims to investigate how age, gender, the educational background (specifically the universities from which they graduated) and the level of experience of community pharmacists in Iraq impact their knowledge and communication skills.

Method

This study involved 200 community pharmacies, each provided with a specialized questionnaire comprising 40 questions covering diverse scientific fields in pharmacy. Additionally, a separate questionnaire was administered to one customer at each pharmacy to evaluate the pharmacist's communication skills from the customer's perspective.

Results

The study showed that there is no significant difference of knowledge and communication skills between male and female pharmacists. Highest level of knowledge was found in 30–40-year-old community pharmacist with Baghdad university leading the way followed by Karbala and Al-Zahrawi university.

Conclusion

knowledge and communication skills are independent on gender but it is dependent on age and experience, in addition the university in whom a pharmacist graduated from will play a critical rule in his future knowledge.

Introduction

The role of community pharmacists has evolved over recent decades and it is now including an expanded role in primary and patient-centered health care(1)Community pharmacies are often considered an ideal setting in which to deliver public health services as they are often geographically accessible in both rural and urban areas, and have extended opening hours, when we compare it to other primary healthcare facilities(2)(3)The number of community pharmacies available to serve patients in Iraq is high and still increasing, leading to increasing competition among pharmacies to attract and retain customers(4)In addition, pharmacists must take responsibility for the quality of the services they provide. Increasing patient satisfaction is important to enhance purchase intention, and thus pharmacy performance(5) in many countries a special test is made to ensure a certain level of knowledge that a pharmacist should have to make the drug administration process in community pharmacies efficient and reliable like Continuing Education (CE) exam or Continuing Professional Development (CPD) exam(6) such tests are mandatory for practicing pharmacy profession in these countries. In Iraq as a pharmacist, you can carry out pharmacy profession without the need to take such annual tests, rather it is a matter of bureaucratic paper work leading to deteriorating the scientific knowledge level of many pharmacists over time(7) the overall result would be pharmacy malpractice affecting the health care quality service in Iraq. Despite the efforts that has been established by the Iraqi ministry of health in potentiating continuing medical education programs in health care institutions aiming at leveling up scientific knowledge degree of health care providers (including pharmacist), such efforts remained formal without a concrete result(8) Previous research has proven the importance of targeted educational interventions to improve pharmacists' knowledge and attitudes towards pharmaceutical care(9). Additionally, studies have shown that community pharmacists can have a positive effect on patient outcomes, such as increased medication adherence, through the provision of tailored services(10) However, the specific factors that influence the knowledge and service quality of community pharmacists in the Iraqi context remain understudied. The Iraqi healthcare system, like many in the region, faces unique challenges, including resource limitations, evolving disease burdens, and the need for strengthened primary care services(11).

Community pharmacists are increasingly recognized as essential contributors to addressing these challenges. By understanding the factors that influence their knowledge and practice, targeted interventions can be developed to enhance their capacity to deliver high-quality pharmaceutical care. Previous researches have explored various aspects of pharmacist practice, including knowledge, attitude, and practice studies related to pharmacovigilance and pharmaceutical care, these studies have underscored the importance of educational interventions in improving pharmacists' knowledge and attitudes(12). Furthermore, evidence suggests that community pharmacists can positively impact patient outcomes, such as medication adherence, through customized services. However, research specifically examining the interaction between educational background, experience, and service quality among community pharmacists in Iraq remains limited. This study addresses this gap by examining the relationship between pharmacists' educational background (e.g., type of degree, postgraduate training), work experience (e.g., years of practice, practice setting), and their knowledge and ability to provide high-quality healthcare services in Karbala, Iraq. The findings will contribute to a deeper understanding of the factors influencing pharmacist practice in this context and inform strategies for strengthening pharmaceutical care services in Iraq. This research will also offer valuable insights for other developing countries facing similar challenges in ensuring access to quality healthcare.

Method

This study involved 200 community pharmacies, each provided with a specialized questionnaire comprising 40 questions covering diverse scientific fields in pharmacy. Additionally, a separate questionnaire was administered to one customer at each pharmacy to evaluate the pharmacist's communication skills from the customer's perspective.

The pharmacist questionnaire was designed and supervised by the Pharmacists Syndicate in Karbala to ensure that the resultant scores accurately represent the pharmacists' knowledge. This was particularly important given the absence of a universally accepted formula in research literature; rather, the evaluation methods tend to vary by country, influenced by a set of unique local factors.

Beyond the questionnaire responses, other basic demographic and professional information, such as age (three age group : 25-30, 30-40 and above 40 year) gender (male or female), experience (years of practice inside the community pharmacy, four groups which are 1-5, 5-10, 10-15 and beyond 15 years) and university of graduation (7 university has been included which are : Baghdad, Karbala, Alzahrawi, Alsafaw, Alkufa, Babylon, and outside Iraq) , was also collected for each pharmacist.

Statistical analysis of data

All data has been managed using IBM SPSS version 23 by which many tests has been included such as independent sample t test, univariate and multivariate general linear model and one way ANOVA test.

Results

Table 1: T test of knowledge and communication depending on gender

	gender	N	Mean	Std. Deviation	Std. Error Mean	T test
knowledge	male	97	69.4	16.2	1.65	0.1
	female	103	73.01	13.9	1.37	
communication	male	97	71.7	18.9	1.92	0.8
	female	103	72.4	17.5	1.73	

Table 2: ANOVA test for knowledge and communication in relation to age

		Degree of freedom	F	Sig.
knowledge	Between Groups	2	6.1	0.002
	Within Groups	197		
	Total	199		
communication	Between Groups	2	1.2	0.277
	Within Groups	197		
	Total	199		

Table 3: Tuki test to make multiple comparison of knowledge and communication between different age groups

Dependent Variable	(I) age	(J) age	Sig.
knowledge	25-30	30-40	0.007
		above 40	0.272
	30-40	25-30	0.007
		above 40	0.006
	above 40	25-30	0.272
		30-40	0.006
communication	25-30	30-40	0.826
		above 40	0.282
	30-40	25-30	0.826
		above 40	0.631
	above 40	25-30	0.282
		30-40	0.631

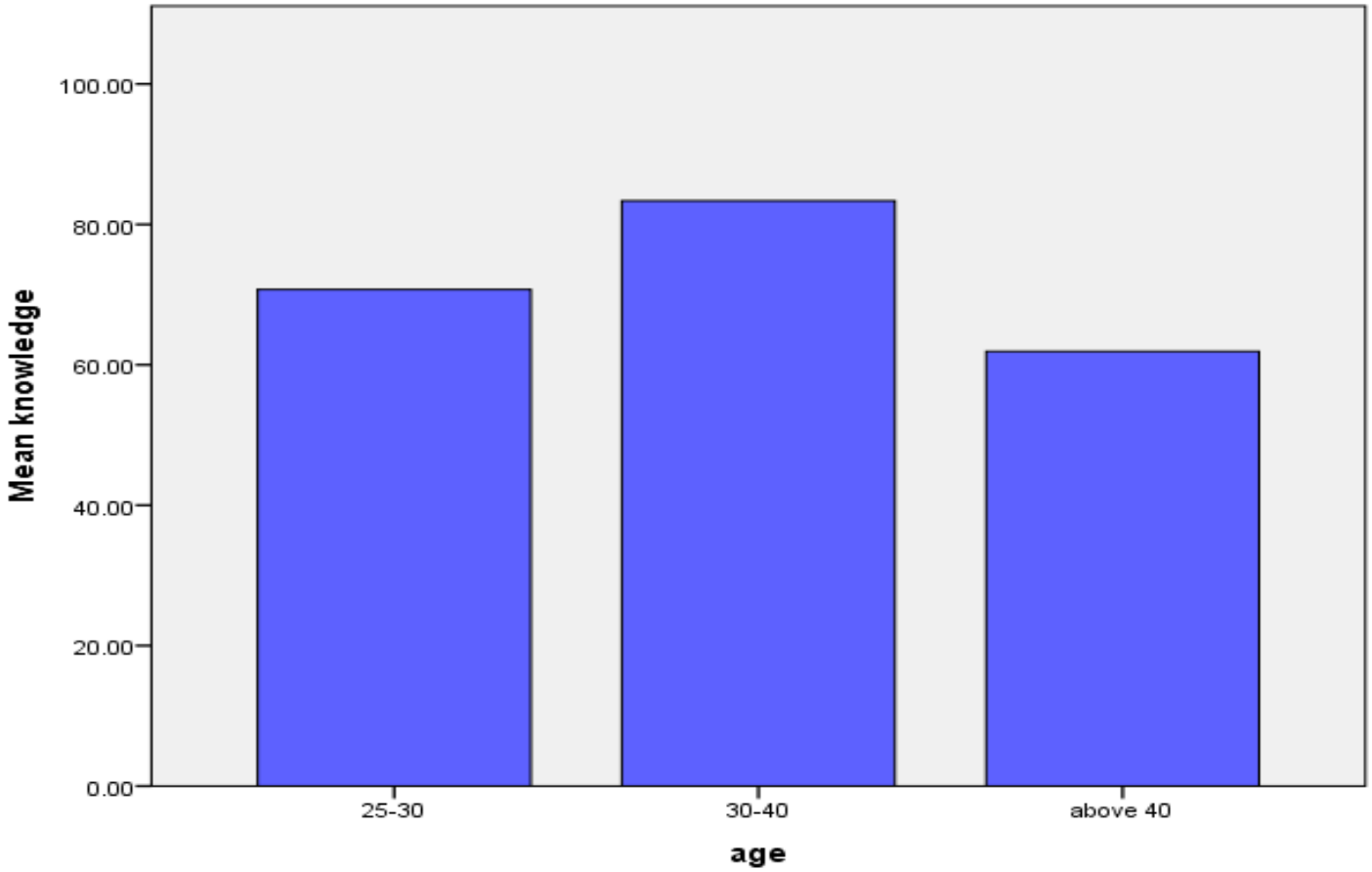

figure 1: knowledge vs age

Table 4: impact of university and experience on knowledge (dependent Variable is knowledge)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9811.623[a]	17	577.154	2.905	0.000
Intercept	323083.828	1	323083.828	1626.417	0.000
university	4967.158	6	827.860	4.167	0.001
experience	854.300	3	284.767	1.434	0.235
university * experience	3188.927	8	398.616	2.007	0.048
Error	36153.864	182	198.648		
Total	1062931.660	200			
Corrected Total	45965.487	199			

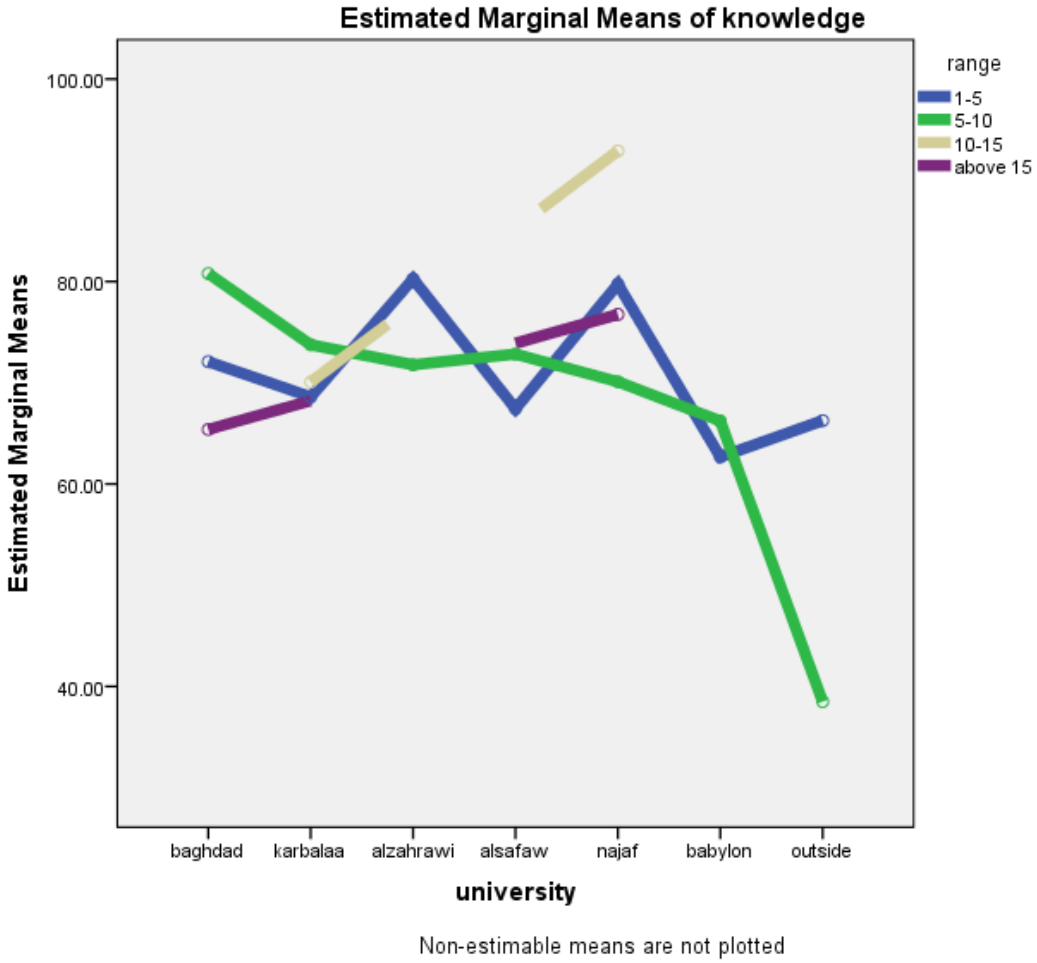

Figure 2: marginal means of knowledge according to universities and experience

Table 5: independent sample t-test of knowledge and communication skills between Alzahrawi and Alsafwa

	university	N	Mean	Std. Deviation	T test
knowledge	alzahrawi	40	77.9	11.03	0.001
	alsafaw	36	68.3	10.04	
communication	alzahrawi	40	76.07	12.6	
	alsafaw	36	69.4	21.2	0.097

Table 6: correlation between knowledge and communication (pearson correlation)

		knowledge	communication
knowledge	Pearson Correlation	1	0.102
	Sig. (2-tailed)		0.151
	N	200	200
communication	Pearson Correlation	0.102	1
	Sig. (2-tailed)	0.151	
	N	200	200

Table 7: impact of experience ON knowledge and communication

Source	Dependent Variable	Sig.
Corrected Model	knowledge	0.582
	communication	0.009
Intercept	knowledge	0.000
	communication	0.000
experience	knowledge	0.582
	communication	0.009

Discussion

The findings revealed few significant differences among age groups and a limited gender–age interaction effect, such results are consistent with many other studies(13).Research shows that those aged between 30 and 40 years generally possessing the highest level of scientific knowledge compared to both younger pharmacists under 30 and older pharmacists over 40 (table 3), This trend is shaped by several factors related to a pharmacist's career trajectory and the developments they experience at various stages of their professional journey.

Pharmacists in the 30-40 age range are typically in the optimal phase of their careers, combining academic knowledge with practical experience gained over 10 to 15 years. This enables them to apply theoretical principles efficiently in real-world setting, enhancing their ability to provide accurate pharmaceutical consultations. In addition, this group is often at the peak of their professional growth, continuously developing their skills, staying updated on the latest advancements in the pharmaceutical field, and applying modern therapeutic techniques to improve patient care. Their frequent interactions with doctors and patients further expand their knowledge, making them scientifically and practically proficient.

In contrast, pharmacists over 40 may experience a noticeable decline in their scientific knowledge. Pharmacists' age and years of practice were associated with a lower aggregate of knowledge score as has been seen in other studies(14).This decline can be attributed to factors such as a lack of continuous education and the absence of mandatory competency exams after graduation. Younger pharmacists, aged 25-30, are academically knowledgeable but may struggle due to limited practical experience. While their theoretical understanding is current, they are still refining their real-world application of that knowledge, making it harder to effectively apply their academic background in practice. The education should provide ability for critical thinking, improve problem-solving skills and decision making during pharmacotherapy(15). The statistical analysis also showed no significant difference in communication skills between different age groups, means that age itself is not a major factor

influencing communication style among pharmacists. Although one might expect that younger individuals would be more influenced by technology and digital communication, while older individuals might rely more on personal and traditional communication methods, the results indicate that there is no noticeable impact from these age-related differences.

In reality, it seems that communication skills don't change based on age, but are more influenced by the environment in which a person grows up(16)(17)

Thus, this analysis shows that differences in communication skills are not directly linked to age, but are primarily influenced by environmental, educational, and professional factors.

It is important also to mention that university education forms the foundation of scientific knowledge for its recipients. When a student graduates, they possess a vast body of knowledge that allows them to understand the theoretical aspects of pharmacy, such as pharmacology, various diseases, and the interactions between drugs and chemicals. However, the challenge lies in whether these universities are able to provide education that reflects the latest scientific developments in the field. This largely depends on the quality of the curricula offered by the university as well as the academic experience of the faculty members. The results clearly indicate significant differences in the scientific level of pharmacy graduates from various universities(18). Implications of this study call our attention to rethink meaningful ways that can help students increase key proficiencies needed in scientific practices, such as successful reasoning skills. The differences in scientific knowledge and skills among graduates from various universities can be attributed to a variety of factors, including curriculum design, teaching methods, institutional focus, and student demographics(19). Regarding our study, Baghdad university comes first in regard of knowledge scale due to the fact that the curriculum at Baghdad University might be more in-depth and detailed, providing students with a solid scientific foundation that they can build upon in their professional careers. Moreover, the admission standards at this university may be higher, which means that its students are more competent and well-prepared from the beginning. On the other hand, universities like Karbala and Al-Zahrawi showed a similar but slightly lower level than Baghdad University, while others, such as Alsafwa, Najaf, and Babylon, recorded lower knowledge levels. Some universities outside this classification displayed significantly lower levels. This disparity reflects the variation in the quality of education among Iraqi universities, which could be due to

a lack of resources, weak clinical training, differences in faculty expertise, and inconsistent admission standards across institutions, inadequate qualifications for continuous medical education, tools and resources, can also impact pharmacist performance. Additionally, the overwhelming number of pharmacists negatively impacts their training and qualifications.
Regarding the impact of practical experience, the data suggests that pharmacists with more years of work experience tend to have a higher level of knowledge. This is logical, as continuous interaction with patients, handling medications, and collaborating with doctors and fellow pharmacists contribute to expanding their knowledge and refining their skills.
It is important to recognize that both the university from which a pharmacist graduates and the experience they gain later play a fundamental role in shaping their scientific level(20). Relying solely on years of work experience as a measure of competence is insufficient, there should be continuous evaluation of pharmacists through training programs and educational courses to ensure their ongoing scientific and professional development(21).
In this context, the importance of continuous education for pharmacists after graduation cannot be overlooked. The pharmacy profession is one of those that constantly experiences scientific and technological developments, which necessitates pharmacists to stay updated on the latest research in the field. Ongoing training programs offered by professional associations or hospitals help bridge the gap between academic education and practical experience(22).
In conclusion, it can be said that the quality of academic education in Iraqi universities has a significant impact on the level of knowledge among pharmacists. Universities that provide a rich educational environment with ample resources and offer strong practical training opportunities enhance the knowledge and competence of their graduates. Conversely, universities lacking these resources produce graduates who face greater challenges in effectively applying their knowledge in their professional lives. Therefore, there must be continuous improvement in the quality of education in Iraqi universities to ensure that pharmacists are highly competent and capable of providing better healthcare services to society.

Conclusion

According to our study, we concluded that knowledge and communication skills are independent on gender but it is dependent on age and experience, in addition the university in whom a pharmacist graduated from will play a critical rule in his future knowledge.

Recommendation

It would be highly beneficial to repeat the study with a significantly larger and more comprehensive sample covering multiple provinces. Additionally, refining and streamlining the questions posed is essential to precisely identify the shortcomings among pharmacists. We also recommend placing greater emphasis on continuing medical education and making the employment conditions for pharmacists in the private sector contingent upon their success in an annual scientific examination. This would ensure a sufficient academic standard to prevent or minimize therapeutic errors.

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