




Original Research

Willingness to pay for extended community pharmacy services among general public in the United Arab Emirates

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Received (first version): 11-Jul-2025

Accepted: 20-Aug-2025

Published online: 06-Jan-2026

Abstract

The study examined individuals' willingness to pay for extended community pharmacy services (ECPS) in the United Arab Emirates (UAE). Data was collected from all seven emirates in the UAE through an online descriptive cross-sectional survey which was conducted in March and May 2021. A stratified random sample of 406 respondents participated, 71.43% were females and 28.57% males from different socioeconomic backgrounds. While SPSS was used to analyze respondents' feedback, descriptive statistics were utilized to examine the sample's sociodemographic features, views and readiness to pay for services. Using regression analysis, the researcher determined the link between consumers' sociodemographic attributes and their perceptions of pharmacies and pharmacists and their willingness to pay for extended community services. The findings show that individuals purchase prescription drugs (68.97%), while others buy pharmaceutical products (59.36%) and non-prescription medications (54.43%). Proximity to pharmacies (82.51%) is the main factor influencing people's choices. Most individuals in the UAE are confident that pharmacists have sufficient knowledge of medications and are concerned about public well-being (55.17%). Willingness to pay extended community services depends on pharmacists' professionalism and honesty (77.83%), expertise on medication and illnesses (79.06%), and communication skills (57.39%).

Keywords: community pharmacists, extended community pharmacy services, consumer perception, willingness-to-pay

INTRODUCTION

Community pharmacists (CPs) play a key role in educating patients and serving the public health, in addition to delivering medications and providing healthcare products and services which assists people into making the best use of them¹. CPs are considered as the first option to reach to in comparison with other healthcare providers, as they are easily accessible without having an appointment and no consultation fee required².

The traditional idea that doctors are known to have more freedom to prescribe medications in comparison with CPs as being the ordinary dispensers of medicines determined by doctor's decision, made pharmacists want to develop their job role and enrich it with more professional activities³. Therefore, in the recent years the community pharmacy (CP) roles are developing in promoting the public health by providing extended pharmacy services^{4,5}. Extended community pharmacy services (ECPS) are services related to healthcare

provided in CP settings where many recent studies done in various countries display the advantages of these services^{5,6,7,8}. These services involve additional patient-oriented services such as: monitoring and screening of drug therapy, disease management, improving patient counselling, medicine use reviews, improving drug adherence, and lifestyle modification⁷.

Presently, several countries' pharmacy services go beyond the norm of supplying, dispensing, and selling medication. Some governments are encouraging CPs to expand their role by providing more patient-oriented services⁹. Whereas other developing countries' CP practice discloses the demand for novel pharmacy practice standards¹. In the United Arab Emirates (UAE), there is a gradual progress and positive improvements taken in the pharmacy profession to provide extensive transformation in the quality of patient care¹⁰.

The United Arab Emirates (UAE) is one of the most diverse country in the Middle East with a fast-growing population. The UAE composes of seven emirates; Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al-Quwain, Ras Al-Khaimah, and Fujairah, and it's located in the Middle East bordering the Persian Gulf and the Gulf of Oman. The country has gone a rapid transformation from a small desert to a modern region of extraordinary living standards. Moreover, the quality of health services in the UAE are developing due to the high demand by the nationals, expatriates who are residing in the UAE, and the increase of consumers expectations towards the pharmaceutical profession. Various findings have stated that majority of the CPs in the UAE deliver only patient counselling when requested by patients, and the extended roles aren't practiced yet¹⁰. This is due to the increase in workload, unsatisfied job salary, and stressed relationship between the physician and pharmacist creating these barriers of practice. For this purpose, the health

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authorities are motivated to enhance the quality of services delivered by the pharmacies registered in the UAE¹¹.

Pharmacists deal with both doctors and consumers and these have major impact on their regular activities of prescribing, thereby making them in a very critical position of being economically dependent on both of them. Other studies have proved that by introducing ECPS would be beneficial for patients in improving their quality of life, optimizing drug therapy, reducing long-term healthcare expenses, and achieving cost-effectiveness^{12,13}.

To measure the value of pharmacy services, a willingness to pay (WTP) method is applied¹⁴. It's an economic theory that considers patient's choice and benefit in improving the quality of life. From a pharmacoeconomic approach, WTP assesses the outcomes (benefits) of an intervention overcomes the input (costs). To understand the customer behavior, a WTP-choice model is designed to combine both customer's preferences and WTP. The customer forms their own preference and perception based upon experience and knowledge of the product/service as well as the cost of it which leads to their choice process.

A recent study signified that patients were most likely to pay if they were satisfied in receiving the necessary knowledge/information during the counselling sessions¹⁵. Another study reported that majority of the participants in the study (93.3%) would be willing to pay from their pocket money for these services in order to receive beneficial outcomes of a 50% reduction in medication-related problems¹⁶. However, little is known about the importance of the ECPS and the patient's attitude on the WTP in the UAE due to the limited studies in this area of focus^{17,18}.

Therefore, this research will highlight upon the perception of the consumer towards the community pharmacy (CP) and community pharmacists' (CPs) in delivering the ECPS and their WTP for these services which will be reflected from their feedback. To perform the purpose of this study, a question must be answered which is: "What is the highest amount that the consumers in UAE are WTP for ECPS based upon their perception?"

METHODS

Design and setting

A descriptive cross-sectional online self-administered survey distributed from March to May 2021, to gather the opinion of the general public at various emirates in the UAE.

Study sample

The sample size estimated of the UAE's population proportion was 385, which was calculated using the Raosoft ("Sample Size Calculator by Raosoft, Inc.," 2004) sample size calculator, with a 95% confidence level, 50% response distribution, and 5% marginal error. Stratified random sampling technique utilized to select study respondents on the basis of percentage of people in each emirate which is in total of 385 participants. For instance, the percentage of Dubai emirate is 35.7% of

UAE's 2020-2021-year total population and the calculated participants from that emirate is $385 * 35.7/100 = 137.445$ that is 137 participants, and the same method applied for other emirates in Table 1.

Emirate	Population percentage	Sample number of participants
Dubai	35.70%	137
Abu Dhabi	34.70%	134
Sharjah	16.20%	62
Ajman	5.80%	22
Ras Al-Khaimah	4.10%	16
Fujairah	2.70%	10
Umm Al Quwain	0.90%	4
Total	100.00%	385

Participants included were 18 years of age and above, able to read and complete the self-administered questionnaire independently, and agreed to participate in this survey. Participants excluded from the study were those who had language barriers neither understanding English nor Arabic, and those who refused to participate.

Research tools

After studying the parameters to be evaluated in the research and referring back to previous literatures and validated surveys, the research team developed a questionnaire to gather data^{19,20,21,22}. In addition, the author of the study titled "Public Perceptions, Expectations, and Views of Community Pharmacy Practice in Kuwait"²³ granted us the permission to use parts of his questionnaire design in our survey. The 10-minutes survey was designed to be self-administered which consisted of three sections. The first one comprised of 12 questions that provided demographic and other characteristics information of participants. The second section consisted of 8 questions in which 3 of them provide information about patterns of visiting the CP, and the remaining questions regarding the general public perception of CPs²³.

Section three of the survey included 8 questions to explore the consumers' perception on WTP for the ECPS. Initially, 2 questions evaluating the ECPS experienced in the UAE: first wither the respondents have ever received ECPS other than buying medications in community pharmacies. If yes (question 22), only those who have experienced ECPS were asked to choose more than one option of the different types they had received. The rest 6 items examining the public perception on the WTP for ECPS; beginning with a yes or no question regarding wither CPs should be paid for such additional services, if yes (question 24), 1 question included 5 statements to investigate the reason behind consumers' opinion towards the CPs being paid for ECPS by stating their extent of agreement on a three-point Likert scale (3 = agree, 2 = neutral, and 1 = disagree). If no (question 25), 1 question included 6 statements to investigate the reason behind the consumers' opinion towards



CPs not being paid for ECPS through a three-point Likert scale. Furthermore, a question based on contingent valuation method (CVM) using the direct open-ended elicitation format²⁴ was examined to determine the value the respondents were willing to pay for the ECPS, in which a statement regarding the average physicians' consultation service estimated time and cost in UAE denoted as an approach to aid respondents into answering such open-ended question to avoid starting point bias, outliers and unreliable responses²⁵. The question was:

Based on recent studies, the average consultation time ranges between 10-20 minutes, in which the doctor visit costs starting from 50 dirhams and up to 500 dirhams. What is the highest amount of money would you be willing to pay for an additional pharmacy service (in AED)?

The CVM has been applied in various resource contexts to estimate the amount the consumer is willing to pay for a service, and the number of publications applying CVM are rising^{26,27,28,29}. Last 2 questions in the third section were concerning the public opinion of the value and responsibility of these services in UAE; respondents were assessed to choose more than one option concerning who is accountable for funding ECPS, and upon what basis the ECPS should be valued.

The survey was validated for face and content by multiple individuals from practising pharmacists and health educators in the UAE. Based on their input, the survey was modified and a draft version for pilot testing was prepared. The questionnaire was translated into Arabic by a professional translator at Ajman University. It was then back translated into English to check the accuracy and meaning of the translated versions, and recommended amendments made to be finalized. The effectiveness of the questionnaire done through pilot testing using 20 subjects carried in January 2021 to test the feasibility of data collection process. Reliability was tested for nine selected items from the questionnaire based on the pilot study, and Cronbach's α value was 0.592.

Data collection

Random sampling technique was used to collect the data. The final questionnaire was designed and distributed through the web-based application Survey Monkey (surveymonkey.com), and data collected from all seven emirates in the UAE from March to May 2021. Due to presence of COVID-19 restrictions which doesn't allow physical contact, the main investigator distributed the questionnaire using a URL link online through different social media platforms (Email, What's App, Instagram ...etc) to primary contacts in the UAE. Primary participants visited the URL link on their mobile phones to answer the survey, then were requested to send out the survey further to their own contacts after completion, and also to remind their contacts to share with their own contacts after completion. Questionnaires were filled anonymously, and the consent form was indicated at the start of the survey to maintain anonymity of data. The questionnaires were filled individually, and few clarifications were sought from the data collector.

Data analysis

The data were analysed using SPSS ver. 28.0. The researchers

utilized descriptive statistics to analyse the socio-demographic characteristics of respondents, their perceptions of community pharmacies and pharmacists, and their willingness to pay for extended services, which are presented in the tables as frequency and their percentages. Besides, median (IQR) scores of Likert scale for each statement were reported. The statistical tests Mann-Whitney and Kruskal-Wallis were utilized to evaluate the effect of sociodemographic data on willingness and non-willingness to pay for ECPS subgroups. The p value of <0.05 was considered as statistically significant. Kendall's correlation was applied further to explore the correlations among various willingness and non-willingness to pay constructs of ECPS with sociodemographic data.

RESULTS

Sociodemographic Data

The total number of participants was 406 (5.5% beyond the calculated sample size). The survey's demographic section provides a substantial amount of information about the respondents' demographic characteristics (Table 2). The sample comprises 71.43% females and 28.57% males comparably with UAE's percentage of people in this gender group (31% females, 69% males). This is attributed to the fact that females were more engaging in taking and spreading the survey in comparison with males. Similarly, the figures of more than 40% of the sample aged between 18 and 24 years old were higher than the percentage of this age group in UAE (11.80%) was expected as the survey was circulated through social media platforms, and they were more likely to contribute than people in older age groups. Majority of participants have either the Bachelor's (63.79%) or a postgraduate (12.56%) degree, 67% are single and only 11.33% of the sample have more than two children. Respondents represent the emirates of Dubai (34.24%), Abu Dhabi (26.60%), and Sharjah (20.44%), and majority were UAE national (67.98%). Approximately half of respondents (49.51%) are unemployed, and 50.49% have family income starting at 11,000 AED. Despite this fact, 74.14% of them have health insurance coverage, whereas those who don't (25.86%) only 46.67% of them spend no more than 200 AED per month on health services.

Perception toward Community Pharmacy and Community Pharmacists

The survey's results show that respondents (Table 3) usually visit the pharmacy 2-3 times a month (31.03%) or once every few months (43.35%). Most of them do it in order to purchase prescription medications (68.97%), pharmaceutical products (59.36%), or non-prescription medications (54.43%). The choice of a community pharmacy is affected by a variety of reasons, especially its close proximity to home (82.51%). A significant number of respondents believe that pharmacists know about medications and are concerned about caring for the public (55.17%), are interested in both health and business matters but prioritize the latter (44.09%) and maintain a good balance between health and business matters (41.38%). The majority of respondents receive information on health-



Table 2. Respondents' Demographic Characteristics	
Characteristics	Frequency (%)
<i>Gender</i>	
Female	290 (71.43)
Male	116 (28.57)
<i>Age</i>	
18-24 years old	168 (41.38)
25-34 years old	162 (39.90)
35 years and older	76 (18.72)
<i>Marital status</i>	
Single	272 (67.00)
Married	104 (25.62)
Divorced	16 (3.94)
Not willing to disclose	11 (2.71)
Widowed	3 (0.74)
<i>Number of siblings</i>	
0-2	178 (43.84)
5 and more	148 (36.45)
03-Apr	80 (19.70)
<i>Number of children</i>	
0-2	360 (88.67)
03-Apr	27 (6.65)
5 and more	19 (4.68)
<i>Level of education</i>	
University Bachelor or equivalent	259 (63.79)
High school graduate	66 (16.26)
Postgraduate	51 (12.56)
Diploma	27 (6.65)
Less than a high school graduate	3 (0.74)
<i>Emirate</i>	
Dubai	139 (34.24)
Abu Dhabi	108 (26.60)
Sharjah	83 (20.44)
Ajman	49 (12.07)
Ras Al Khaimah	10 (2.46)
Fujairah	10 (2.46)
Umm Al Quwain	7 (1.72)
<i>Country of Origin</i>	
UAE	276 (67.98)
Iraq	25 (6.16)
Syria	18 (4.43)
KSA	17 (4.19)
Jordan	13 (3.20)
Others	57 (14.04)
<i>Employment Status</i>	
Not working	201 (49.51)



Working	190 (46.80)
Not willing to disclose	10 (2.46)
Retired	5 (1.23)
<i>Monthly family income</i>	
11,000 and more	205 (50.49)
0-5,000 AED	158 (38.92)
6,000 – 10,000 AED	43 (10.59)
<i>Health insurance coverage</i>	
Yes	301 (74.14)
No	105 (25.86)
<i>Monthly spending on health services for those who don't have insurance coverage (n=105)</i>	
0-200 AED	49 (46.67)
500 AED and more	43 (40.95)
300-400 AED	13 (12.38)

Table 3. Respondents' Perceptions of Community Pharmacies and Pharmacists		
Characteristics	Frequency (%)	95% CI
Frequency of Visiting the Pharmacy		
At least once every few months	176 (43.35)	156.43 - 195.57
Two to three times a month	126 (31.03)	116.68 – 135.32
Rarely	69 (17.00)	61.43 – 76.57
Once a year	19 (4.68)	14.74 – 23.256
Once or more a week	16 (3.94)	12.08 -19.92
Reasons for visiting any pharmacy		
To purchase prescription medications	280 (68.96)	261.73 – 298.27
To purchase pharmaceutical products	241 (59.35)	221.60 -260.40
To purchase non-prescription medications	221 (54.43)	208.30 - 240.67
To ask for a pharmacist's advice	52 (12.81)	38.80 – 65.20
To purchase monitoring devices	44 (10.84)	31.72 – 56.28
To get general health information	20 (4.93)	11.45 – 28.55
To get first-aid information	5 (1.23)	1 – 9.35
Other	7 (1.72)	1.86– 12.13
Factors affecting the choice of a community pharmacy		
Close proximity	335 (82.51)	320.00 – 350.00
Good and competitive prices	191 (47.04)	171.29 – 210.71
Provision of a good range of products and services	182 (44.83)	162.36 – 201.64
Convenient opening hours	167 (41.13)	147.57 – 186.43
Friendliness of the pharmacy staff	158 (38.92)	138.74 – 177.26
Pharmacist's knowledge and ability to answer any drug or disease-related question	143 (35.22)	124.14 – 161.86
Attractive appearance of the pharmacy	65 (16.01)	50.52– 79.48
Confidentiality and privacy	59 (14.53)	45.08– 72.92
Other	5 (1.23)	1 – 9.35
A view upon the community pharmacist		
They know more about medications and are concerned about caring for the public	224 (55.17)	204.36 – 243.64



They are interested in both health and business matters but tend to be more concerned with business matters	179 (44.09)	159.39– 198.60
They have a good balance between health and business matters	168 (41.38)	148.55 – 187.45
They are more concerned with the health of the patients than with the business	121 (29.80)	102.94 – 139.06
They are primarily businesspeople who are more concerned with making money than with the health of their patients	57 (14.04)	43.28 – 70.72
Source of information on health-related problems		
General practitioner	313 (77.09)	296.40 – 329.60
Internet	230 (56.65)	210.43 – 249.57
Pharmacist	166 (40.89)	146.58 – 185.42
Family and friends	137 (33.74)	118.33 – 155.67
Television	18 (4.43)	9.87 – 26.13
Other	9 (2.22)	3.18 – 14.82
Barriers to consulting the pharmacist as the first person		
Physicians are more trusted than pharmacists	270 (66.50)	251.36– 288.64
Lack of privacy in the pharmacy	121 (29.80)	102.94 – 139.06
Business of the pharmacist	101 (24.88)	83.93 - 118.07
Lack of the pharmacist’s knowledge to answer drug-related problem	81 (19.95)	65.22 – 96.78
Other	29 (7.14)	18.83 – 39.17
Reasons for approaching the pharmacist before the physician		
No appointment is needed to visit the pharmacy	246 (60.59)	226.70 – 265.30
Treatment of minor health ailments, e.g., heartburn, constipation, headache, and muscle pain	238 (58.62)	218.55 – 257.45
No waiting time if required to see the pharmacist	225 (55.42)	205.37 – 244.63
The pharmacist consultation is free of charge	186 (45.81)	166.32 – 205.68
Pharmacist more knowledgeable about the doses and side effects of medications	119 (29.31)	101.02– 136.98
Other	12 (2.96)	5.30 – 18.69
Desirable qualities to look for in a pharmacist		
Knowledge about medications and diseases	321 (79.06)	304.93 – 337.07
Honesty and professionalism	316 (77.83)	299.60 – 332.40
Willingness to offer advice and answer any drug or disease-related question	274 (67.49)	255.50 – 292.50
Good communication skills	233 (57.39)	213.47 – 252.53
Understanding of patient concerns	206 (50.74)	186.26 – 225.74
Other	9 (1.97)	83.51– 14.49

related problems from general practitioners (77.09%) and Internet sources (55.65%), in comparison to pharmacists (40.89%). Most respondents (66.50%) argue that the fact that physicians are more trustworthy than pharmacists constitutes the key barriers to consulting a pharmacist as the first person. In accordance with the respondents, the main reasons for approaching pharmacists before physicians are the absence of appointments in pharmacies (60.59%), an opportunity to treat minor health ailments (58.62%), low waiting time (55.42%), and the fact that pharmacists’ advices are free of charge (45.81%). Furthermore, honesty and professionalism (77.83%), knowledge about medications and diseases (79.06%), the willingness to offer advice (67.49%), good communication skills (57.39%), and understanding of patients’ concerns (50.73%) are the most desirable qualities in a pharmacist.

Willingness to Pay for Extended Community Pharmacy Services

In accordance with the study’s findings, it was found that only 16.01% of respondents have received additional services from pharmacists in the past (Table 4), which mostly included lifestyle modification counselling (30.30%), determination of drug-related problems (33.33%), smoking cessation programs (24.24%), and weight management counselling (21.21%).

There is no agreement (53.45 %, n=217) among respondents on the need to reimburse pharmacists for such additional services. Table 5 elaborates those who agree (n=189) with the need to introduce additional payments mostly explain their opinion by referring to the fact that pharmacists are a quick-to-reach source of information (89.42%), their consultations are not



limited in time (74.60%), and they are trustworthy (68.25%). Whereas those who disagree (n=217) with this proposal argue that they would rather visit a physician than a pharmacist (70.50%) and that pharmacists already make enough profits from selling products (47.92%).

Majority of participants (92.12%) are willing to spend no more than 200 AED on additional pharmacy services, since they mainly believe that either the government (65.27%) or insurance companies (67.98%) should be responsible for funding such additional services (Table 4). The quality of services (53.94%) is viewed as valid criteria for estimating the value of these extended services in comparison to pharmacist's expertise (46.06%). More details can be found in Tables 4 and Table 5.

Association between total willingness to pay and non-willingness to pay scores among different subgroups

There was a significant effect of the level of education ($p = 0.047$), country of origin ($p = 0.023$), and monthly spending on health services for those who don't have health insurance coverage ($p = 0.008$) on the willingness to pay scores (Table 6). However, number of children ($p = 0.025$) and emirate ($p = 0.047$) had significant effect on the non-willingness to pay scores (Table 7).

Correlation analysis of willingness to pay related constructs and other variables

Kendall's correlations were highly significant between constructs C1 and C2, C1 and C3, C2 and C4, C3 and C4, C2 and C5, C3 and C5, C4 and C5, and many other variables, with a p

Table 4. Respondents' Perception on Willingness to Pay for Additional Services

Question	Frequency (%)	95% CI
Reports of receiving additional services other than buying medicines in a UAE community pharmacy		
No	341 (83.99)	326.52–355.48
Yes	65 (16.01)	50.51 – 79.48
Types of ECPS received in UAE		
Determine drug-related problem	22 (33.33)	2.28– 40.62
Lifestyle modification counselling	20 (30.30)	1.38- 38.15
Smoking cessation program	16 (24.24)	1– 32.92
Weight management counselling	14 (21.21)	2.14 – 30.14
Diabetes care service	13 (19.70)	2.71 – 28.71
Medication counselling review	11 (16.67)	1 – 22.09
Hypertension care	10 (15.15)	4.16 – 24.16
Asthma care	10 (15.15)	4.16 – 24.16
Body piercing service	8 (12.12)	4.89 – 20.89
Wound care service	6 (9.09)	5.35 – 17.35
Other	3 (4.55)	5.23 – 11.23
Whether pharmacists should be paid for such additional services		
No	217 (53.45)	197.30 – 236.70
Yes	189 (46.55)	169.30 – 208.70
The highest amount of money that one would be willing to pay for an additional pharmacy service		
0-200 AED	374 (92.12)	358.77– 381.23
500 AED and more	26 (6.40)	16.33 – 35.67
300-400 AED	6 (1.48)	1.23 – 10.77
Who should be responsible for funding such additional services		
Insurance companies	276 (67.98)	257.57 – 294.42
Government	265 (65.27)	246.20– 283.80
Patient	73 (17.98)	57.83 – 88.17
Other	13 (3.20)	7.17 – 18.83
Basis for valuing such additional services		
Quality of service given by the pharmacist	219 (53.94)	199.31 – 238.69
Expertise of the pharmacist	187 (46.06)	167.31 – 206.68



Table 5. Respondents' Opinion Upon Community Pharmacists Whether Being Paid or Not for ECPS				
Question	Agree	Neutral	Disagree	Median (IQR) Score
Reasons why pharmacists should be paid for additional services (n=189)				
I trust the pharmacist enough to provide additional health services	129 (68.25)	57 (30.16)	3 (1.59)	5 (4-5)
The pharmacist is the first health practitioner to seek answers regarding any health-related issue	72 (38.10)	82 (43.39)	35 (18.52)	5 (4-5)
The pharmacist is a quick to reach source requiring no appointment	169 (89.42)	18 (9.52)	2 (1.06)	5 (4-5)
The pharmacist treats me professionally and sincerely	114 (89.42)	69 (9.52)	6 (1.06)	4 (4-5)
The consultation time with the pharmacist is unlimited compared to the doctor visit	141 (74.60)	36 (19.05)	12 (6.35)	5 (4-5)
Reasons why pharmacists should not be paid for additional services (n=217)				
They make enough profits from selling medicines and other products	104 (47.92)	96 (44.24)	17 (7.83)	2 (2-3)
I can't afford to pay	76 (35.02)	94 (43.32)	47 (21.66)	4 (4-5)
I don't think the service would work	89 (41.01)	93 (42.86)	35 (16.13)	4 (4-5)
I don't have time to interact with the pharmacist	67 (30.87)	107 (49.31)	43 (19.82)	5 (4-5)
I would rather visit a specialized doctor rather than visiting a pharmacist	153 (70.50)	56 (25.81)	8 (3.69)	2 (2-3)
Pharmacists are just businesspeople who sell products in the pharmacy	48 (22.11)	88 (40.55)	81 (37.33)	4 (4-5)

Values are presented as numbers (%) unless otherwise stated

Table 6. Comparison of total willingness to pay scores with subgroup of general public (n=189)		
Characteristics	Median (IQR score)	P value
Gender		
Female	13(12-14)	0.565
Male	13(12-15)	
Age		
18-24 years old	13(12-14)	0.407
25-34 years old	14(12-15)	
35 years and older	13(11-15)	
Marital status		
Single	13(12-14.25)	0.476
Married	13(12-15)	
Divorced	14(12-15)	
Not willing to disclose	12(11-13)	
Widowed	12(12-12)	
Number of siblings		
0-2	13(12-15)	0.838
03-Apr	13(12-14)	
5 and more	13(12-15)	
Number of children		
0-2	13(12-14)	0.118
03-Apr	13(11-15)	
5 and more	15(13.5-15)	
Level of education		
University Bachelor or equivalent	13(12-14)	0.047
High school graduate	14(12-15)	
Postgraduate	13(12-14)	



Diploma	15(13.25-15)	
Less than a high school graduate	15(15-15)	
Emirate		
Dubai	13(12-15)	0.361
Abu Dhabi	14(12-14)	
Sharjah	13(12-14)	
Ajman	13(11.5-15)	
Ras Al Khaimah	15(13-15)	
Fujairah	12(10.5-13)	
Umm Al Quwain	12(12-12)	
Country of Origin		
UAE National	13(11-14)	0.023
Arab	14(12-15)	
Non-Arab	13(11-13)	
Employment Status		
Not working	13(12-15)	0.209
Working	13(12-15)	
Not willing to disclose	11.5(10.25-14.25)	
Retired	11(10-11)	
Monthly family income		
0-5,000 AED	13(12-15)	0.817
6,000 – 10,000 AED	13(12-15)	
11,000 and more	13(12-14)	
Health insurance coverage		
Yes	13(12-14)	0.775
No	13(12-15)	
Monthly spending on health services for those who don't have insurance coverage (n=105)		
0-200 AED	14(12-15)	0.008
300-400 AED	12(10-12)	
500 AED and more	13(12-14)	

Mann-Whitney U test; Kruskal-Wallis H test; Bold indicate statistically significant values

Table 7. Comparison of total non-willingness to pay scores with subgroup of general public (n=217)		
Characteristics	Median (IQR score)	P value
Gender		
Female	13(12-15)	0.725
Male	14(12-14)	
Age		
18-24 years old	14(12-15)	0.827
25-34 years old	13(12-15)	
35 years and older	13(12-15)	
Marital status		
Single	13(11.75-15)	0.129
Married	14(13-15)	
Divorced	13(12.5-14.5)	
Not willing to disclose	12(12-13)	



Widowed	13(12-13)	
Number of siblings		
0-2	14(12-15)	0.274
03-Apr	13(11-15)	
5 and more	13(12-15)	
Number of children		
0-2	13(12-15)	0.025
03-Apr	14(13.5-15.5)	
5 and more	14(13-15)	
Level of education		
University Bachelor or equivalent	13(12-15)	0.391
High school graduate	14(13-16)	
Postgraduate	13(11-14.75)	
Diploma	14(12-14)	
Less than a high school graduate	12.5(12-12.5)	
Emirate		
Dubai	13(12-15)	0.047
Abu Dhabi	14(13-15)	
Sharjah	13(12-15)	
Ajman	12.5(11.25-14)	
Ras Al Khaimah	15(12-15)	
Fujairah	11(10.5-13)	
Umm Al Quwain	15(12.75-16.25)	
Country of Origin		
UAE National	14(12-15)	0.411
Arab	13(12-14)	
Non-Arab	11.5(11-14.5)	
Employment Status		
Not working	14(12-15)	0.553
Working	13(12-15)	
Not willing to disclose	12(12-12.75)	
Retired	14(10-14)	
Monthly family income		
0-5,000 AED	13(11-15)	0.636
6,000 – 10,000 AED	13.5(12-15)	
11,000 and more	14(12-15)	
Health insurance coverage		
Yes	14(12-15)	0.059
No	13(11-14)	
Monthly spending on health services for those who don't have insurance coverage (n=105)		
0-200 AED	13(11-14.5)	0.695
300-400 AED	13(11-14)	
500 AED and more	13(12-14.25)	

Mann-Whitney U test; Kruskal-Wallis H test; Bold indicate statistically significant values



value <0.001 in each case (Table 8).

Correlation analysis of non-willingness to pay related constructs and other variables

Kendall's correlations were highly significant between constructs C1 and C4, C3 and C4, C4 and C6, and many other variables, with a p value <0.001 in each case (Table 9).

DISCUSSION

This study is considered to be the first of its type done in the UAE, evaluating the WTP for ECPS by the general public. No study has been carried out in the UAE to assess patient satisfaction or the quality of ECPS provided in the country. However, Palaian et al.³⁰ highlighted the importance of improving community pharmacists into providing ECPS by training and educating them in order to support the healthcare system in the UAE. In many developed countries, community pharmacies have advanced into diversified practices with a range of improved, specialised or extended pharmacy services.

Findings of our study showed that participants visit pharmacies at least once every few months. An analysis of the reported reasons for visiting pharmacies and factors affecting their choice shows that respondents of the study display common patterns of purchasing behaviour in the industry, pharmacy's close proximity, and provision of a good range of products and services. Similar findings were reported in KSA, Kuwait, and Canada^{21,23,31}. Majority view pharmacists as mere sellers of products. In Dubai, some community pharmacists care more about the business aspect of their profession as they occasionally supply their customers with any medicine they purchase without prescription³². In addition, Ibrahim¹ shows that pharmacies view individuals who seek their services as clients rather than patients and the public perceives pharmacies as businesses. Definitely these negative perceptions could be resolved by UAE health authorities through improving the pharmacist's image in the community by educating them to build strong relationships with their clients.

Furthermore, findings also indicate that most individuals prefer consulting physicians as the initial providers of healthcare information. About 66.50% of the research participants view physicians as more knowledgeable than pharmacists. The findings correlate with the results of the study by Hindi³³, which shows that physicians are perceived as superior to pharmacists because of their training and knowledge. Likewise, in Poland doctors are preferred to provide information regarding medications even though pharmacists are fully skilled to do so³⁴. Thus, most individuals are likely to consult physicians for severe health conditions and diagnoses. Strong ties with physicians also encourage some individuals to seek their healthcare guidance, which limits utilization of pharmaceutical services. In some cases, physicians' influence on patients' decisions is so strong that people seek their authorization to use pharmacy services. Therefore, individuals' attitude towards physicians has a significant impact on their utilization of pharmacy services. This finding requires serious attention and continuous efforts to

make a difference to improve future pharmacy practice in the UAE in order to meet the public expectations regarding their role and to demonstrate the economic benefits of extending their contributions into patient-oriented care.

Although pharmacies enhance community members' well-being, those offering extended services have to equip personnel with expert knowledge in functions such as immunization, blood pressure monitoring, counseling, and diabetes management. Since community pharmacies are usually the initial place to visit for medical help, they are serving as sources of health information. Ibrahim¹ indicates that various interventions are used in different countries to empower pharmacies to meet patients' needs. For instance, they are encouraged to enhance staff's knowledge and skills and client relationships to offer better services. Therefore, continuous professional development in the pharmaceutical industry can help service providers to offer more extended services. The extension of the services in pharmacies is an important step towards the right direction for the transformation of the healthcare system and improvement of the benefits to be gained by patients. The change will necessitate additional training for pharmacists to equip them with the skills they need to be able to not only keep accurate patient records but also offer them more holistic care³⁰.

Nowadays, the trend for extended pharmacy services is becoming prevalent in many developed countries, as customers are looking for an opportunity to optimize the choice of pharmaceutical products, while also saving time and costs^{3,4,5}. These services were linked to improve quality of life, reduced physicians' workload, decreased long-term healthcare expenses, and optimized drug therapy^{5,6,7,12,13}. However, only 16.01% of the sample have received additional services from pharmacists in UAE. It seems justified to assume that the low awareness of the benefits of additional pharmacy services among UAE residents and the fact that these services are barely used in the country might explain this surprising pattern. Palaian et al.³⁰ demonstrates that the barriers to practicing ECPS in UAE by community pharmacists is due to the level of understanding of ECPS, lack of data upon the value of ECPS, and they aren't trained enough to practice these services. In addition to high patient demand and lack of time for providing extended services³². These findings support the conclusion by Sadek et al.¹¹ suggesting that UAE pharmacists rarely provide additional services, mostly focusing on their primary role of selling products requested by customers, and contradict the conclusions of Dameh¹⁰, who highlighted the growing demand on extended community pharmacy services in the UAE. Therefore, community pharmacists in the UAE should be trained and competent enough to be able to provide effective health services that will benefit the community.

Most respondents are unwilling to pay for additional services, arguing that they would rather visit a physician since pharmacists already earn a substantial amount of money by selling products. It is known that respondents' satisfaction with the quality of information received by pharmacists and pharmacists' knowledge predicts the willingness of patients



Table 8. Correlation among willingness to pay related constructs and other variables (n=189)

Constructs/ Variables	τ (p value)																	
	C1	C2	C3	C4	C5	Gender	Age	MS	No. of siblings	No. of children	Level of education	Emirate	C of O	ES	MFI	HIC	MHS	
C1	-	0.358**	0.248**	0.231*	0.122	-0.008	-0.001	-0.034	-0.048	-0.041	-0.046	0.008	0.022	-0.068	-0.011	-0.055	-0.066	
C2		-	0.144*	0.238**	0.269**	-0.001	-0.032	-0.110	-0.014	0.106	-0.063	-0.001	0.057	-0.025	-0.110	0.025	0.013	
C3			-	0.237**	0.259**	-0.062	0.050	0.023	0.012	0.088	-0.041	-0.021	0.061	-0.008	0.118	-0.021	-0.021	
C4				-	0.347**	-0.108	0.073	0.000	0.028	0.001	-0.107	0.036	0.108	-0.025	-0.002	0.057	0.037	
C5					-	0.017	-0.060	0.023	-0.037	0.091	0.025	0.081	0.027	0.031	-0.027	0.014	-0.006	
Gender						-	0.030	0.009	-0.035	-0.001	0.108*	-0.157**	0.241**	-0.125*	-0.052	0.249**	0.245**	
Age							-	0.153**	0.073	-0.052	-0.018	0.049	-0.010	-0.041	0.038	-0.057	-0.057	
MS								-	0.366**	-0.533**	-0.053	-0.068	-0.026	-0.106*	-0.004042	0.091	0.078	
No. of siblings									-	-0.348**	-0.000144	0.057	-0.195**	-0.161**	-0.00255	-0.011	-0.016	
No. of children										-	0.018	0.117*	-0.039	0.085	0.093*	-0.085	-0.075	
Level of education											-	-0.004116	0.107*	0.197**	0.157**	-0.053	-0.043	
Emirate												-	-0.173**	0.020	0.087*	-0.263**	-0.257**	
C of O													-	-0.082	-0.071	0.235**	0.225**	
ES														-	0.178**	-0.183**	-0.158**	
MFI															-	-0.000296	-0.119**	
HIC																-	0.951**	
MHS																	-	-

C: Construct; τ: Kendall's correlation (Tau); MS: Marital Status; C of O: Country of Origin; ES: Employment Status; MFI: Monthly Family Income; HIC: Health Insurance Coverage; MHS: Monthly Health Spending; *p value < 0.05, **p value < 0.001.
 C1: I trust the pharmacist enough to provide additional health services
 C2: The pharmacist is the first health practitioner to seek answers regarding any health-related issue
 C3: The pharmacist is a quick to reach source requiring no appointment
 C4: The pharmacist treats me professionally any sincerely
 C5: The consultation time with the pharmacist is unlimited compared to the doctor visit



Table 9. Correlation among non-willingness to pay related constructs and other variables (n=217)

Constructs/ Variables	τ (p value)																	
	C1	C2	C3	C4	C5	C6	Gender	Age	MS	No. of siblings	No. of children	Level of education	Emirate	C of O	ES	MFI	HIC	MHS
C1	-	0.074 (0.235)	0.059 (0.345)	0.230** (0.180)	0.087 (0.180)	0.177* -0.005	0.038 (0.561)	-0.013 (0.840)	-0.005969	-0.082 (0.194)	0.090 (0.166)	-0.074 (0.238)	0.013 (0.835)	0.064 (0.324)	-0.082 (0.210)	0.013 (0.843)	-0.046 (0.485)	-0.046 (0.470)
C2		-	0.086 (0.161)	0.121* (0.048)	0.015 (0.809)	0.050 (0.409)	0.108 (0.095)	0.032 (0.598)	-0.045 (0.466)	0.018 (0.766)	0.085 (0.178)	-0.132* -0.031	0.075 (0.197)	0.083 (0.194)	-0.119 (0.062)	-0.057 (0.356)	0.043 (0.505)	0.040 (0.522)
C3			-	0.221** (0.052)	0.124 (0.052)	0.128* -0.037	-0.076 (0.239)	0.027 (0.656)	0.029 (0.639)	-0.032 (0.605)	0.039 (0.539)	0.060 (0.326)	0.012 (0.837)	-0.063 (0.327)	-0.046 (0.468)	0.046 (0.463)	-0.024 (0.707)	-0.033 (0.594)
C4				-	0.181* -0.005	0.246**	0.039 (0.542)	-0.024 (0.694)	-0.047 (0.456)	-0.033 (0.597)	0.093 (0.144)	-0.029 (0.633)	0.043 (0.468)	-0.031 (0.628)	-0.031 (0.623)	-0.008 (0.894)	-0.123 (0.057)	-0.113 (0.070)
C5					-	0.137* -0.031	-0.004 (0.955)	-0.002 (0.971)	-0.084 (0.196)	-0.038 (0.552)	0.066 (0.313)	-0.003 (0.956)	0.111 (0.067)	-0.063 (0.340)	0.002 (0.978)	0.099 (0.124)	-0.011 (0.866)	0.007 (0.911)
C6						-	-0.169 (0.009)	-0.106 (0.082)	-0.093 (0.135)	-0.004 (0.949)	0.074 (0.241)	-0.136* -0.025	0.093 (0.111)	-0.151* -0.018	0.063 (0.325)	0.027 (0.659)	-0.215**	-0.194* -0.002
Gender							-	#	#	#	#	#	#	#	#	#	#	#
Age								-	#	#	#	#	#	#	#	#	#	#
MS									-	#	#	#	#	#	#	#	#	#
No. of siblings										-	#	#	#	#	#	#	#	#
No. of children											-	#	#	#	#	#	#	#
Level of education												-	#	#	#	#	#	#
Emirate													-	#	#	#	#	#
C of O														-	#	#	#	#
ES															-	#	#	#
MFI																-	#	#
HIC																	-	#
MHS																		-

C: Construct; τ: Kendall's correlation (Tau); MS: Marital Status; C of O: Country of Origin; ES: Employment Status; MFI: Monthly Family Income; HIC: Health Insurance Coverage; MHS: Monthly Health Spending; *p value < 0.05, **p value < 0.001.
 C1: They make enough profits from selling medicines and other products
 C2: I can't afford to pay
 C3: I don't think the service would work
 C4: I don't have time to interact with the pharmacist
 C5: I would rather visit a specialized doctor rather than visiting a pharmacist
 C6: Pharmacists are just businesspeople who sell products in the pharmacy



to pay for additional pharmacy services¹⁵. However, many participants of this research are under the impression that pharmacists either focus on pursuing business purposes or struggle with maintaining a balance between serving the public health and making profits. This belief explains the reluctance of respondents to seek pharmacists' advices on health-related matters. Simultaneously, most respondents believe that pharmacists are a quick-to-reach source of information who are trustworthy and professional. Despite this belief, respondents are reluctant to spend their money on additional pharmacy services as 67.98% of them expect it would be funded by insurance companies. Similarly, majority of respondents weren't willing to pay for pharmaceutical care services as they believed it would be covered by insurance companies³⁴. This highlights the need for an authoritative intervention to aid in the advancement of the pharmaceutical services reimbursements in UAE and other developing countries and increase the patient's demand towards insurance companies for coverage of these services.

Participants of this study have reported that the highest amount majority were willing to spend is no more than 200 Dirhams (equating to \$54.46) for extended services. In Jordan, the maximum amount respondents were willing to pay pharmacists for pharmaceutical care services that aids in 50% reduction of medication-related problems is 2.8 Dinar (equating to \$3.95)¹⁶. Furthermore, in Serbia³⁵ 38% were willing to pay from \$1to \$2 for pharmaceutical care services and 23% of respondents suggested nominal fee reimbursement for these services in Poland³⁴. This may be due to the average annual income and rise in economic pressure which may present a load for families daily living expenses. Therefore, purchasing behaviour of the general population and country's economic development should be carefully considered.

The current study reported that the level of education significantly affects the willingness to pay for ECPS, whereby those with lower education levels were more likely to pay. Nevertheless, this finding contradicts many other studies linking literacy levels to variations in individuals' healthcare choices. For instance, the study by Okai et al.³⁶ shows that individuals with higher educational achievements are likely to demand for a broad range of pharmacy services in Ghana. In addition, a study done in Saudi Arabia to assess the populations' willingness to pay for improved level of access to healthcare services found that when people's education increases, the level of contribution and the decision to pay were likely to increase²⁸. Besides, high literacy levels are linked to increased health awareness. Raghupathi, V and Raghupathi, W³⁷ state that educated people recognize disease symptoms on time and seek appropriate care from relevant providers. It seems justified to assume that people with a higher level of education might have deeper knowledge of the benefits of extended pharmacy services, which could be inferred from the findings^{5,6,7,8,12,13}. Hence, it is highly recommended for the collaboration and organisation between the ministry of education and ministry of health in UAE to search more in-depth regarding these variations of data, in order to unify a clear understanding of health awareness and benefits of additional services provided

by community pharmacists.

Moreover, it was found that country of origin had significant affect on the willingness to pay for ECPS, in which Arabs were more like to contribute to in comparison with UAE nationals. This is probably because UAE nationals believe that these additional services should be funded by insurance companies or government, since majority of them have health insurance coverage provide to them by health authorities in the country. Similar studies demonstrate the effect of country of origin on the willingness to pay^{38,39}. In addition, monthly spending on health services for those who don't have insurance coverage also had significant affect on the willingness to pay for ECPS. Evidently that would be the case as they have to pay from their pocket money to receive health services in comparison to those who have health insurance. This explains clearly the correlation between these two variables and their effect on WTP.

However, it was found that both the number of children and emirates had significant effects on the non-willingness to pay for ECPS; Those having more than three children would possibly not be willing to spend extra money for ECPS. In a various context, the WTP was found to be higher in households with large number of children in order to reduce paediatric burns⁴⁰. Therefore, depending on the benefits gained by a service the WTP is affected; Those residing in Ras Al Khaimah and Umm Al Quwain aren't willing to pay perhaps due to unfamiliarity of ECPS in those areas and they may not consider them as valuable in comparison with other emirates. For instance, the study by Entele BR⁴¹ reveals that households location having accessibility to cheaper energy sources value less the renewable energy sources supposing that cheaper sources are constant. So, this interpretation shows that until a perception of the substantial value of the services provided across all regions of a country is unified, the WTP is influenced. At the same time, surprisingly, the level of income had no significant effect in both the willingness and non-willingness to pay data, unlike the studies conducted in KSA and Jordan^{16,28}. Consequently, community pharmacists should be provided with appropriate opportunities and training to improve their pharmacy practice and to deliver high-quality health services all over the pharmacies in the UAE in order to demonstrate the benefits and value of these services to the general public.

Strength and Limitations

Despite our best efforts, our study has several limitations. Initially, the stratified sampling technique was affected due to COVID-19 lockdown, yet random sampling was accomplished to ensure population diversity. Additionally, majority of respondents were females, and the largest age group were between 18-24 years old. These factors may have influenced the obtained results. Furthermore, the assessed value of WTP was obtained under hypothetical settings and could be biased as an outcome of the sample selection, since it was measured based upon personal opinions rather than actual transactional data. This study didn't examine the quality of ECPS delivered in a pharmacy setting and hence it is unclear whether the responses from participants were influenced by their lack of background knowledge of these services.



Despite the limitations, the available evidence provides a premise to state that findings of this research are valuable due to the low availability of articles on this topic. Further studies could consider carrying out a qualitative study to uncover all the relevant issues pertaining to the WTP for ECPS, by examining the quality of the ECPS delivered by the community pharmacist, consumer needs and expectations, and the level of customer satisfaction for the services provided. Second, scientists are recommended to carry out a series of studies in neighbouring countries in the GCC and other Arab countries, in order to determine whether the relative unpopularity and undesirability of ECPS are inherent exclusively to the UAE pharmaceutical industry. Third, scholarly are recommended to examine the value of pharmacists' advice in order to design specific approaches for evaluating the quality of extended community services.

CONCLUSION

Reasons for the unwillingness to pay were identified, in which participants believed that the physicians were the primary choice for their health-related concerns, low awareness of the benefits of additional pharmacy services provided, and the services should be funded by insurance companies. The study recommends continuous education and interventions

to equip community pharmacists in improving the quality of ECPS delivered, to advance their image in the community by building strong relationships with their clients, and to increase public awareness about the variety of services provided in community pharmacies. Further studies and strategies should be implemented in such area of focus which would be very useful to policymakers in the UAE for setting up a benchmark that would value the extended services delivered by community pharmacists, to construct greater benefits to consumers, and cost effectiveness to healthcare providers.

AUTHOR CONTRIBUTIONS

IZ, the student researcher, performed the study, performed literature review and wrote the initial draft of the manuscript. MA and SP were the research supervisor and supervisors respectively, contributed in conceptualizing the research idea and all stages of conducting the research and manuscript writing. MAT contributed in designing the study tool, supervised the data collection procedure, edited the manuscript and revised subsequent versions.

CONFLICTS OF INTERESTS

The authors declare that they have no competing interests

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