

Original Research

# Perspectives of the community in the developing countries toward telemedicine and pharmaceutical care during the COVID-19 pandemic

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## Abstract

**Background:** Pharmaceutical care (PC) services have expanded in recent years, resulting in improved patient outcomes. However, such PC services are currently available for free in the majority of Arabic countries. During the coronavirus disease (COVID-19) pandemic, telemedicine is especially beneficial since it allows for continuity of care while allowing for social distancing and minimizing the risk of infection. **Objective:** To assess the community's attitude, opinion, and willingness to pay for telemedicine and PC services during COVID-19 pandemic, as well as to create a website provision for telemedicine and PC services. **Methods:** This cross-sectional study was conducted, over five months (December 2020– April 2021), among the general population in Arabic countries, excluding pharmacists, physicians, and pharmacy students. **Results:** A total of 1717 participants were involved, most of them were from Jordan (52.2%) and Iraq (24.8%). Sixty two percent of participants seek pharmacists' advice whenever they have any medication changes and 45.1% of the participants agreed with the idea of paying pharmacists to decrease medication errors. Interestingly, 89.5% of participants encouraged the idea of creating a website that provides a PC, and 35.5% of them would pay for it. The failure to document the medical information of the patients had most applicants' agreement as a reason of medical errors ( $M=4.17/5$ ,  $SD=0.787$ ). More than three-quarters of participants agreed that creating a database containing the patients' medical information will reduce medical errors. **Conclusion:** From a patients' perspective, this study suggests a large patient need for expanding PC services in Arabic countries and introduces a direct estimate of the monetary value for the PC services to contribute to higher savings. The majority of participants supported the idea of creating a website provision of telemedicine and PC services, and a considerable proportion of them agreed to pay for it.

**Keywords:** Telemedicine; Pharmaceutical Care; Developing Countries; COVID-19

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## INTRODUCTION

Improving healthcare responsiveness to patient needs is a critical challenge for all healthcare systems.<sup>1,2</sup> As a result, patients' experiences and expectations around healthcare are increasingly being investigated.<sup>3-5</sup>

Because patients are important partners in establishing priorities and allocating resources in the healthcare system, increasing patient engagement in the pharmaceutical care (PC) process is a critical step.<sup>3</sup> This is especially essential because patients, healthcare workers, and health authorities all have varying perceptions of what constitutes high-quality healthcare.<sup>6</sup>

Throughout the last decades, the pharmacy profession has made numerous notable efforts to broaden its position beyond traditional drug dispensing to include more patient-centered PC practice. Pharmacists are now collaborating with other healthcare professionals as an integral component of their team to deliver the best possible patient care in hospitals and other clinical settings.<sup>7,8</sup>

PC services have expanded in recent years, resulting in improved patient outcomes and therapeutic management across a variety of healthcare settings and medical problems.<sup>9-12</sup> However, such PC services are currently available for free in the majority of Arabic countries. As a result, newly commissioned services should be based on the acceptability and evaluation of the service by patients, as well as stakeholders (healthcare



professionals who offer direct care to patients) and politicians. The assessment of patients' care is critical for evaluating the healthcare services received, with patients' acceptability of care supported as a critical component of quality evaluation.<sup>13</sup>

As a result, studies around the world have revealed good patient attitudes as well as significant challenges for PC optimization, particularly in the community pharmacy context.<sup>14-18</sup> Many studies have found that patients have good views and a high level of satisfaction with the various PC services that are available.<sup>17,19,20</sup>

Telemedicine, a component of telehealth, is described as the use of medical information transmitted between distant sites via electronic communications to improve a patient's clinical health condition during a remote clinical service.<sup>21</sup>

Telemedicine has some limitations, such as the inability to perform an in-person physical examination and the loss of many traditional "doctoring" features such as touch, physical interaction, and emotional connection. Due to restricted internet connectivity or issues obtaining and utilizing technology, telemedicine consultations may not be offered to all patients. As a result, telemedicine consultations are not a complete alternative for in-person visits, nor are they appropriate for all patients or clinical settings.<sup>22-33</sup> Despite these limitations, many patients continue to prefer telemedicine modalities because of their convenience of use, cost savings, and reduced travel time.<sup>34 35</sup>

During the coronavirus disease (COVID-19) pandemic, telemedicine is especially beneficial for chronic disease management since it allows for continuity of care for high-risk groups while allowing for social distancing and minimizing the risk of infection.<sup>36-40</sup> Telemedicine is also being utilized to assess patients who have known or suspected COVID-19.

The purpose of this study was to assess the community's attitude, opinion, and willingness to pay for telemedicine and PC services during COVID-pandemic, as well as create a website provision of a telemedicine and PC services. A secondary purpose was to assess perceived barriers preventing patients from asking for pharmacist advice.

## METHODS

### Study design

This cross-sectional survey was undertaken among the general population at several Arabic countries including Jordan, Iraq, Egypt, Lebanon, Palestine, Syria, Gulf countries (Saudi Arabia, United Arab Emirates, Bahrain, Qatar, Oman, Kuwait), and others using an online self-administered questionnaire of closed-ended questions. In this study, adult participants were recruited utilizing a convenience sampling technique through social media platforms (WhatsApp and Facebook) and Emails. Data were collected over five months (December 2020 – April 2021). The study was approved by the institutional review board at the Applied Science Private University of Jordan (2021-PHA-3).

The questionnaire was distributed to assess participants' attitudes toward telemedicine and PC. The survey was created using a web-based commercially available software, Google Forms. Web-based surveys are a convenient and efficient data collection tool compared to the traditional data capturing methods.<sup>41</sup> They save time as well as eliminate any geographical boundaries. The form included information about the study, eligibility criteria, as well as informed consent for voluntary participation. The survey was anonymously completed to minimize any potential for bias. Any adult (18 years old and above) was able to participate except pharmacists, physicians, and pharmacy students as an exclusion criterion.

### Data collection tool

A broad literature review was conducted for the questionnaire development.<sup>42-48</sup> Translation, linguistic, back-translation, and a pilot test were all part of the development phase of the study. The validity of the face, content, and construct, in addition to the internal consistency, were all assessed during the confirmation phase.

Variables taken from the literature were written in the English language. This was later translated to the modern standard Arabic language by three researchers with knowledge of cross-sectional study before being distributed to participants. This technique prioritized meaning adaptation over linguistic or literal translation. Following that, a group included the main researcher, a researcher with a PhD in clinical pharmacy, and an experienced linguist knowledgeable about medical terminology judged the semantic, idiomatic, theoretical, and cultural equivalence. From the above-mentioned, a second version was created and administered to a group of nine adult volunteers with varying educational levels in order to collect data on comprehension of the survey and items, the time required to complete the instrument, and any possible content or form errors that needed to be corrected prior to proceeding to the next phase. Finally, a fourth researcher did the backward translation following expert approval of the face as well as content validity; this was then forwarded to the lead author for final approval.

The instrument was face validated by two groups: one comprised of 11 volunteers who were not involved in the primary study, and another comprised of a team of four experts, each with a PhD or Master's degree in the health field and four years or more of clinical experience, who assessed the tool using three scores: comprehension, clarity, and accuracy. The Fleiss' Kappa index was calculated, which allowed for the determination of agreement among observers when randomness was corrected. The results were interpreted in accordance with Landis and Koch's<sup>49</sup> recommendation that items with scores between 0.61 and 0.80 be considered satisfactory, indicating considerable agreement.

The same four experts who evaluated the face validity also evaluated the content validity, categorizing each item as "essential," "useful but not essential," or "not necessary." The Content Validity Ratio (CVR) was estimated using the obtained data. The CVR is a percentage calculated by dividing the agreement in the essential category by the total number of



evaluations. Moreover, the instrument's Content Validity Index (CVI) was determined. The above is reinforced by Tristán's<sup>50</sup> modification of the Lawshe model, which proves that a CVR value of 0.58 is appropriate to consider an item acceptable, regardless of the number of the involved evaluators.

Finally, the internal consistency of the scale was determined using Cronbach's alpha, with a Cronbach's alpha of 0.70 or greater being appropriate if the scale's purpose is to be used in research.<sup>51</sup>

The self-administered questionnaire consisted of several sections. The first section described the participants' demographic data including gender, age, marital status, occupation, level of education, type of insurance, income, and country of residence as well as the presence of chronic diseases.

The second section addressed participants' attitudes in seeking medical advice. In this section different information was collected such as asking participants about their preferences in requesting medical advice from either a pharmacist or a physician. In addition, participants were requested to specify the frequency of visiting a physician or a pharmacist and the time spent at the pharmacy or the clinic. The participants were asked if they have an electronic file as a patient in the pharmacy. This section also includes the participants perspectives about if the pharmacist's advice about the medications is more trustable than the physician's advice and the reasons behind their response.

The third section evaluated the participants' opinions about the economic issues relating to the clinical pharmacist services. This section captured the participants' willingness to pay for telemedicine and PC services. Participants were asked about whose responsibility to pay for such service whether it is the patient, government, or the physician as well as the maximum amount to be paid in their opinion. Also, participants were questioned if they support the idea of a website that provides PC and whether this service should be paid off. The participants' opinions were evaluated toward the medication-related errors and if they think that paying for the pharmacist's advice will decrease medications' errors or not. Also, if creating a database that contains the patient's personal information, diseases, medications, laboratory tests, medical reports, images, and others will help reduce medical errors as well. Factors related to medical errors were assessed via a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

The next section evaluated participant's attitudes towards PC services in addition to the ability of pharmacists to perform such a service. Attitude variables were assessed using a 5-point Likert scale with responses ranging from "1 = strongly disagree" to "5 = strongly agree". The ability of a pharmacist to perform a pharmaceutical service was assessed using a Likert scale with four choices ranging from "4 = very important" to "1 = unimportant". The participants' willingness to pay for PC services and telemedicine was assessed as well as the idea of paying pharmacists to decrease medication errors and the maximum amount most participants were ready to pay per visit. The participants' attitudes to different PC responsibilities,

including patients counselling, the prevention of treatment-related problems, and solving them were reported.

The last section summarized the major barriers (pharmacist-, patient-, and system-level barriers) that hinder the integration of PC in real practice. These barriers included the absence of private counseling sections, inappropriate pharmacy design, time constraints, organizational obstacles, lack of physician's trust in the pharmacist's abilities, pharmacist's physical separation from patient care areas, lack of coordination/communication with physicians, and others. The percentage of barriers preventing patients from asking for pharmacist advice was also identified.

The participants' opinions about the factors that may increase or decrease medication errors were reported. The first statement relates medication errors with the failure to document the medical information of the patients. The second and third statements relate the increase in medication errors to the difficulty to remember drug details and medical history. The participants were questioned if they agree that creating a database containing the patients' diseases, laboratory tests, and other information will reduce medical errors.

#### Statistical analysis

All statistical analyses were completed using IBM SPSS®, Version 24.0 (Armonk, NY, USA). All continuous variables were evaluated for normality using the Shapiro-Wilk test and then were presented as means, standard deviations (SD), medians, interquartile range (IQR) as appropriate. Categorical variables were presented as the number and percentage of subjects in each category.

## RESULTS

In terms of face validity and scale accuracy, the agreement index - as evaluated by Fleiss' Kappa - indicated that the instrument was generally in substantial agreement, as represented by understanding 0.78, clarity 0.76, and accuracy 0.69. The evaluation conducted by the 11 participants yielded a 97 percent agreement rate; a 95 percent agreement rate for clarity; and a 98 percent agreement rate for accuracy. Adjustments were made based on these findings, taking into account the experts' and participants' suggestions for item phrasing.

The content validity took into account the expert or review panel's judgment. The CVR results suggested that all items were acceptable, as long as the values obtained were greater than 0.58 and ranged between 0.78 and 1. The items' content validity index was 0.92, which was deemed acceptable, and as a result of these findings, all items were retained.

In terms of reliability, the instrument produced a Cronbach's alpha coefficient of 0.74, which indicates that the questionnaire's reliability is satisfactory.<sup>52</sup>

A total of 1717 participants were involved in this study. The mean age of respondents was 27.64 (SD=9.58) years and half of the total sample (62%) were females. Most of the participants



were from Jordan (52.2%), followed by Iraq (24.8%). About one-half of the participants (49.9%) didn't have insurance. Regarding financial status, 44% were of less than 500\$ monthly income and 19.7% stated no income (Table 1).

| Characteristic                       | n (%) or mean (SD) |
|--------------------------------------|--------------------|
| Gender                               |                    |
| Male                                 | 652 (38.0)         |
| Female                               | 1065 (62.0)        |
| Age (years)                          | 27.64 (±9.58)      |
| Marital status                       |                    |
| Unmarried                            | 1165 (67.9)        |
| Married                              | 510 (29.7)         |
| Others (e.g., divorced, widows)      | 19 (1.1)           |
| Occupation                           |                    |
| Not Working                          | 1144 (66.6)        |
| Working                              | 521 (30.3)         |
| Retired                              | 29 (1.7)           |
| Insurance type                       |                    |
| Ministry of health                   | 163 (9.5)          |
| Government                           | 203 (11.8)         |
| Private sectors                      | 471 (27.4)         |
| No insurance                         | 857 (49.9)         |
| Education level                      |                    |
| No formal education                  | 3 (0.2)            |
| Primary education                    | 8 (0.5)            |
| Secondary education                  | 168 (9.8)          |
| University education                 | 1395 (81.2)        |
| Postgraduate                         | 116 (6.8)          |
| Monthly income                       |                    |
| No income                            | 338 (19.7)         |
| < 500 \$                             | 755 (44.0)         |
| 500-1000 \$                          | 338 (19.7)         |
| > 1000 \$                            | 263 (15.3)         |
| Country of stay                      |                    |
| Jordan                               | 896 (52.2)         |
| Iraq                                 | 426 (24.8)         |
| Palestine                            | 140 (8.2)          |
| Egypt                                | 95 (5.5)           |
| Syria                                | 56 (3.3)           |
| Others                               | 104 (6.1)          |
| Do you suffer from chronic diseases? |                    |
| Yes                                  | 258 (15.0)         |

In this study, 56.0% of participants prefer physicians as their first illness reference, whereas 16.4% seek first advice from pharmacists. The average number of physician visits per month

for 9.2% of the participants was ranging from 1-3 visits per month, while 62.0% seek pharmacists' advice whenever they have any medication changes (Table 2). More than one-half of the participants deal with a specific community pharmacy and only 10.9% have electronic files as patients in those pharmacies. Around one-third of participants spend from 5 to 9 minutes asking about their treatments during each pharmacy visit. More than one-quarter (33.0%) of the study participants stated that the advice taken from the pharmacists about the medications is of more trusted than that from the physicians, and around three quarter (73.0%) reported the easiness of pharmacists' access as a reason, and 66.9% believed that pharmacists have extensive knowledge about medications and 55.1% considered that asking pharmacists is a cheap option (Table 2).

| Statement   | n (%)       |
|---|-------------|
| <b>First illness reference</b>  |             |
| Physician   | 962 (56.0)  |
| Pharmacist  | 281 (16.4)  |
| Your information  | 151 (8.8)   |
| Family members  | 218 (12.7)  |
| Friends   | 29 (1.7)    |
| Others  | 53 (3.1)    |
| <b>Which of the following is the best preferred for you?</b>                        |             |
| Visit the physician   | 704 (41.0)  |
| Visit the pharmacist  | 208 (12.1)  |
| Call the physician  | 101 (5.9)   |
| Call the pharmacist   | 42 (2.4)    |
| Visit both the physician and pharmacist   | 529 (30.8)  |
| Call both the physician and pharmacist  | 133 (7.7)   |
| <b>How many times do you visit physicians per month?</b>                            |             |
| Never   | 310 (18.1)  |
| Rarely  | 1191 (69.4) |
| 1-3   | 158 (9.2)   |
| 4-6   | 26 (1.5)    |
| > 6   | 32 (1.9)    |
| <b>Do you visit the physician for a routine checkup (without an acute problem)?</b> |             |
| Never   | 640 (37.3)  |
| Rarely  | 522 (30.4)  |
| Sometimes   | 478 (27.8)  |
| Always  | 77 (4.5)    |
| <b>How often do you go to the pharmacists to check your medications?</b>            |             |
| Never   | 0 (0.0)     |
| Once per week   | 57 (3.3)    |
| Once per month  | 229 (13.3)  |
| Once every 3 months   | 167 (9.7)   |



|   |             |
|---|-------------|
| Once every 6 months   | 177 (10.3)  |
| When I have any medication changes  | 1046 (62.0) |
| <b>Do you have a specific community pharmacy to deal with?</b>  |             |
| Yes   | 1013 (59.0) |
| <b>Do you have an electronic file as a patient in the pharmacy?</b>   |             |
| Yes   | 187 (10.9)  |
| <b>How many minutes do you spend in the pharmacy to ask about the treatment?</b>                                      |             |
| <5 minutes  | 836 (48.7)  |
| 5-9 minutes   | 650 (37.9)  |
| 10-15 minutes   | 173 (10.1)  |
| >15 minutes   | 58 (3.4)    |
| <b>Do you think that the pharmacist's advice about the medications is more trustable than the physician's advice?</b> |             |
| Yes   | 566 (33.0)  |
| No  | 237 (13.8)  |
| Sometimes   | 853 (49.7)  |
| Prefer not to answer  | 61 (3.6)    |
| <b>If yes or sometimes, why?*</b>   |             |
| Have extensive knowledge about medications  | 1148 (66.9) |
| I trust the pharmacist's advice   | 843 (49.1)  |
| Easy access   | 1253 (73.0) |
| Cheap option  | 946 (55.1)  |
| Others  | 403 (23.5)  |

\*Participants were able to choose more than one answer to this question.

Table 3 displays the participants' willingness to pay for PC services and telemedicine. 45.1% of the participants agreed with the idea of paying pharmacists to decrease medication errors. On the other hand, around half of those who disagree, consider this as a part of the pharmacists' role. The maximum amount most participants were willing to pay per visit was 2 USD. Interestingly, 89.5% of participants encouraged the idea of creating a website that provides a PC, and 35.5% of them would pay for it.

More than two-thirds of participants believe that pharmacists should provide more counseling roles instead of only dispensing medications. The majority of responders stated that they can depend on pharmacists' prescribed medications without the need for a physician's prescription (Table 4). As shown in table 4, from the participants' perspectives, different PC responsibilities were reported.

Regarding participants' attitudes towards PC services. Generally, 42.9% of participants strongly agreed that all pharmacists should perform PC including the prevention of treatment-related problems as well as solving them. 41.8% agreed that the pharmacists' primary responsibility is to practice PC. The participants agreed/strongly agreed on most statements reflecting favorable attitudes regarding PC (Table 5).

| Table 3. Participants' willingness to pay for telemedicine and pharmaceutical care services                               |             |
|---|-------------|
| Statement   | n (%)       |
| <b>If there is an idea to pay the pharmacist for the time you spend with, will you agree to it</b>                        |             |
| Yes   | 774 (45.1)  |
| <b>If yes, who do you think should pay for the pharmacist?*</b>   |             |
| The patient   | 414 (24.1)  |
| The government  | 682 (39.7)  |
| The pharmacy  | 699 (40.7)  |
| Other organizations   | 473 (27.5)  |
| <b>If no, why you won't pay?</b>  |             |
| This is a part of his/her work and he/she has a salary for it   | 894 (52.1)  |
| I don't listen to the pharmacist advice   | 38 (2.2)    |
| I don't trust the pharmacist  | 20 (1.2)    |
| Others  | 287 (16.7)  |
| <b>If yes, what will be the maximum amount to pay in your opinion per visit?</b>  |             |
| 0.5 \$  | 69 (8.9)    |
| 1 \$  | 160 (20.7)  |
| 2 \$  | 176 (22.7)  |
| > 2 \$  | 134 (13.3)  |
| I have no idea  | 235 (14.0)  |
| <b>Do you think if the pharmacist is paid for the medication advice, the medication-related errors will be decreased?</b> |             |
| Yes   | 479 (27.9)  |
| No  | 429 (25.0)  |
| Maybe   | 809 (47.1)  |
| <b>If there is an idea for a website that provides pharmaceutical care, do you encourage it?</b>                          |             |
| Yes   | 1536 (89.5) |
| <b>If it is a paid website, will you pay for it?</b>  |             |
| Yes   | 610 (35.5)  |
| No, I am not interested   | 380 (22.1)  |
| No, I have no idea how will the website help me   | 275 (16.0)  |
| No, I can ask my GP   | 191 (11.1)  |
| No, for other reasons   | 261 (15.2)  |
| <b>What is the maximum amount of money you can accept to pay per year for that website?</b>                               |             |
| 20 \$   | 271 (15.8)  |
| 40 \$   | 148 (8.6)   |
| 60 \$   | 67 (3.9)    |
| 80 \$   | 28 (1.6)    |
| 100 \$  | 30 (1.7)    |
| 150 \$  | 21 (1.2)    |
| I do not know   | 45 (2.6)    |

\*Participants were able to choose more than one answer in this question.



| Statement   | n (%)       |
|---|-------------|
| <b>What is the main pharmaceutical care responsibility in your opinion?</b>   |             |
| Justify the cause of drug use   | 1418 (82.6) |
| Dose and how to use the drug  | 1625 (94.6) |
| Mention the drug's side effects   | 1590 (92.6) |
| Drug-drug interactions  | 1462 (85.1) |
| Monitor the treatment outcome   | 1147 (66.8) |
| <b>In your opinion, do you think that the pharmacist can prescribe specific drugs without the need for a doctor's prescription?</b> |             |
| Yes   | 636 (37.0)  |
| No  | 120 (7.0)   |
| Sometimes   | 961 (56.0)  |
| <b>Do you believe that pharmacists should be committed to more counseling roles rather than dispensary activities?</b>              |             |
| Yes   | 1204 (70.1) |

The participants rated most of the pharmacists' abilities as being important to very important. The most important perceived competencies mentioned were: pharmacists' ability to listen to the patients effectively, providing accurate information on all patients' medications and accurate updated information on over-the-counter medications (OTCs), proper counseling on drug use, side effects, modifications on lifestyles (Table 6).

In this study, 83.2% of the participants considered the lack of private counseling areas in pharmacy as one of the major barriers hindering the integration of PC in real practice. Interestingly, the lack of access to the patient medical record in the pharmacy was the most chosen barrier by applicants (n=1470, 85.6%). The lack of coordination between pharmacists and physicians was the third most reported cause preventing the PC service from taking place in the pharmacies. On the other hand, 68.6% believed that the lack of physicians' trust in the pharmacist's abilities is one of the barriers, 66.6% said the barrier is the deficiency of pharmacists' clinical knowledge, and 57% mentioned the negative attitudes of pharmacists towards PC as a possible barrier (Table 7). 57.4% considered that the absence of private areas in pharmacies is the major barrier preventing patients from asking for pharmacist's advice.

| Statement   | n (%)      |            |             |           |          | Mean (SD)     | Median (IQR) |
|---|------------|------------|-------------|-----------|----------|---------------|--------------|
|   | 5          | 4          | 3           | 2         | 1        |               |              |
| All pharmacists should perform pharmaceutical care (prevent and solve treatment-related problems) | 736 (42.9) | 675 (39.3) | 273 (15.9)  | 33 (1.9)  | 0 (0.0)  | 4.191 (0.774) | 4 (1)        |
| Pharmacists' primary responsibility should be practicing pharmaceutical care                      | 586 (34.1) | 718 (41.8) | 370 (21.5)  | 40 (2.3)  | 3 (0.2)  | 4.034 (0.809) | 4 (2)        |
| Pharmacy students can perform pharmaceutical care during their experiential training              | 524 (30.5) | 625 (36.4) | 4563 (26.6) | 102 (5.9) | 10 (0.6) | 3.863 (0.923) | 4 (1)        |
| Providing pharmaceutical care takes too much time and effort                                      | 460 (26.8) | 648 (37.7) | 489 (28.5)  | 115 (6.7) | 5 (0.3)  | 3.800 (0.907) | 4 (1)        |
| Pharmaceutical care will improve patients' health   | 667 (38.8) | 716 (41.7) | 306 (17.8)  | 23 (1.3)  | 5 (0.3)  | 4.135 (0.778) | 4 (1)        |
| Providing pharmaceutical care is professionally rewarding   | 500 (29.1) | 726 (42.3) | 432 (25.2)  | 52 (3.0)  | 7 (0.4)  | 3.927 (0.835) | 4 (1)        |
| Pharmaceutical care is the right direction for the provision to be headed                         | 600 (34.9) | 754 (43.9) | 339 (19.7)  | 18 (1.0)  | 6 (0.3)  | 4.080 (0.773) | 4 (1)        |

5: strongly agree; 4: agree; 3: neutral; 2: disagree; 1: strongly disagree.

Regarding the respondents' opinions about the factors that may increase or decrease medication errors. The first statement which relates medication errors with the failure to document the medical information of the patients had most applicants' agreement, M= 4.171 out of 5, SD = 0.787. The second and third statements to which many participants agreed with relate the increase to potential medical errors by the healthcare providers to the difficulty to remember drug details and medical history. It can be observed that more than

three-quarters of participants agreed that creating a database containing the patients' diseases, laboratory tests, and other information will reduce medical errors (Table 8).

Asking participants about if they had experienced errors related to their treatments revealed that 33.8% experienced medication errors once or twice during their lifetime. While 6.9% experienced 3 to 4 treatment-related problems, and 3.7% had errors more than 4 times.



| Ability of pharmacists  | n (%)       |            |            |          | Mean (SD)     | Median (IQR) |
|---|-------------|------------|------------|----------|---------------|--------------|
|   | 4           | 3          | 2          | 1        |               |              |
| Listen to patients effectively  | 1082 (63.0) | 471 (27.4) | 134 (7.8)  | 7 (0.4)  | 3.229 (0.969) | 4 (1)        |
| Perform limited physical exams and access to clinical laboratory tests records  | 666 (38.8)  | 633 (36.9) | 325 (18.9) | 70 (4.1) | 3.077 (0.858) | 3 (1)        |
| Assess patients' needs for review of drug therapy, needs for drug therapy monitoring, and needs for advice on lifestyle modifications | 754 (43.9)  | 655 (38.1) | 268 (15.6) | 17 (1.0) | 3.223 (0.757) | 3 (1)        |
| Have accurate information on all the medications taken by patients and accurate updated information on OTCs                           | 935 (54.5)  | 552 (32.1) | 189 (11.0) | 18 (1.0) | 3.373 (0.728) | 4 (1)        |
| Recommend dose adjustments  | 741 (43.2)  | 648 (37.7) | 255 (14.9) | 50 (2.9) | 3.185 (0.809) | 3 (1)        |
| Select parameters of patient care to monitor drug therapy   | 709 (41.3)  | 730 (42.5) | 242 (14.1) | 13 (0.8) | 3.217 (0.724) | 3 (1)        |
| Identify expected therapeutic outcomes of drug therapy  | 718 (41.8)  | 733 (42.7) | 217 (12.6) | 26 (1.5) | 3.221 (0.737) | 3 (1)        |
| Provide counseling on drug use, side effects, and counseling on lifestyle modifications   | 853 (49.7)  | 655 (38.1) | 171 (10.0) | 15 (0.9) | 3.340 (0.701) | 4 (1)        |
| Monitor adherence to medications  | 680 (39.6)  | 627 (36.5) | 307 (17.9) | 80 (4.7) | 3.084 (0.870) | 3 (1)        |
| Communicate with other members of the healthcare team and with patients effectively   | 737 (42.9)  | 674 (39.3) | 240 (14.0) | 43 (2.5) | 3.199 (0.787) | 3 (1)        |
| Discuss the patient case with the physician   | 809 (47.1)  | 622 (36.2) | 215 (12.5) | 48 (2.8) | 3.250 (0.795) | 3 (1)        |

4: very important; 3: important; 2: neutral; 1: unimportant.

| Statement   | n (%)       |
|---|-------------|
| Lack of private counseling areas                              | 1429 (83.2) |
| Inappropriate pharmacy design                                 | 1091 (63.5) |
| Time constraints  | 1098 (63.9) |
| Organizational obstacles                                      | 1222 (71.2) |
| Lack of physicians' trust in the pharmacists' abilities       | 1178 (68.6) |
| Pharmacists' physical separation from patient care areas      | 1355 (78.9) |
| Lack of communication/coordination with physicians            | 1418 (82.6) |
| Inadequate teamwork of the health care members                | 1265 (73.7) |
| Deficient communication skills of pharmacists                 | 849 (49.4)  |
| Negative attitudes of pharmacists towards pharmaceutical care | 984 (57.3)  |
| Lack of patient interest                                      | 1250 (72.8) |
| Deficient clinical knowledge of pharmacists                   | 1143 (66.6) |
| Inadequate pharmaceutical care training                       | 1230 (71.6) |
| Inability to deal with a different gender                     | 868 (50.6)  |
| Religious constraints   | 718 (41.8)  |
| Inadequate drug information resources in the pharmacy         | 949 (55.3)  |
| Lack of access to the patient medical record in the pharmacy  | 1470 (85.6) |
| Poor image of pharmacist's role in society                    | 1005 (58.5) |

| Statement  | n (%)      |            |            |           |          | Mean (SD)     | Median (IQR) |
|--|------------|------------|------------|-----------|----------|---------------|--------------|
|  | 5          | 4          | 3          | 2         | 1        |               |              |
| One of the most important reasons for the high incidence of medical errors is the failure to document medical information related to the patient   | 706 (41.1) | 721 (42.0) | 224 (13.0) | 36 (2.1)  | 7 (0.4)  | 4.171 (0.787) | 4 (0)        |
| It can often be difficult for the patient to remember his medical history and medication details   | 505 (29.4) | 760 (44.3) | 284 (16.5) | 130 (7.6) | 15 (0.9) | 3.897 (0.922) | 4 (1)        |
| It is often difficult for a patient to remember details of their medical history and drug details, which may increase the potential for medical errors provided by the healthcare practitioner | 629 (36.6) | 731 (42.6) | 268 (15.6) | 62 (3.6)  | 4 (0.2)  | 4.077 (0.825) | 4 (0)        |
| Creating a database containing patient's personal information, diseases, medications, laboratory tests, medical reports, x-rays, and other information helps reduce medical errors             | 985 (57.4) | 479 (27.9) | 199 (11.6) | 27 (1.6)  | 4 (0.2)  | 4.366 (0.777) | 5 (1)        |

5: strongly agree; 4: agree; 3: neutral; 2: disagree; 1: strongly disagree.

## DISCUSSION

This is the first regional study to assess the community's attitude, opinion, and willingness to pay for both telemedicine and PC services during COVID-pandemic, as well as to assess perceived barriers preventing patients from asking for pharmacist's advice. The results showed that when participants have any need to change their medications, they have favorable attitudes in seeking medical advice from a pharmacist. The possible explanation for this finding was the easiness of pharmacists' access and considering pharmacists as being an extensive and inexpensive source for the provision of medication information. In line with previous studies,<sup>53-55</sup> the PC practice in Jordan is still growing. Nevertheless, patients' attitudes and perceptions towards PC services and telemedicine are promising. Many previous studies have demonstrated that patients have positive attitudes and high satisfaction towards the PC services provided. Additionally, several of these studies have identified factors that were associated with increased patient satisfaction, including pharmacists' communication and competency level, medication counseling introduction, health service promptness, and pharmacy location.<sup>53,56,57</sup> For example, for Jordanians, the proximity of the community pharmacy and the delivery of accurate free advice by the pharmacist were found to be the driving forces to visit the community pharmacy.<sup>58,59</sup> Likewise, the primary motivations behind people's visiting the community pharmacy, in Saudi Arabia; were identified to be the proximity of community pharmacies and the presence of a well-qualified and experienced pharmacist.<sup>53,58</sup>

Around half of the respondents in our study declared unwillingness to pay for PC services and considered this as a part of the pharmacist's role. Jordanian public may possibly not feel convenient about paying out-of-pocket for health services that are usually free or included in the physician's fee. This later may be deemed one possible explanation for that negative decision; however, this was not investigated in the current study. Our participants were shown to value the service, but they may feel that their medical insurance should cover it. In addition, the decision of participants may have been impacted negatively as the mechanism of payment for delivering the service was not outlined. This finding is in agreement with a

pilot study conducted in readiness to accept telemedicine in Iraqi hospitals.<sup>48</sup> On the other hand, examining the literature further shows that 36–85% of people were found willing to pay for a pharmacist service,<sup>46</sup> with an amount of money ranging from 4.02 USD for a service that decreased medication-related problems, to 40 USD for providing more specialized service by the pharmacist.<sup>60, 61</sup> However, these previously published studies were performed to assess an expanded introduction of PC services in developed countries rather than evaluating the opinion and attitudes of public in extending the pharmacy delivery service to a comprehensive care service provided in community pharmacies. A study from Malaysia concluded that the majority of Malaysians valued the introduced service and they were willing to pay a significant amount of money linked to an awareness on such services.<sup>46</sup>

Regarding creating a website and presenting a telemedicine and PC services, the majority of participants supported the idea and considerable proportion of them agreed to pay for it. In the present study, the maximum amount that most participants were ready to pay was 2 USD per visit. This finding is consistent with a median amount of 2.86 USD that was paid by the participants of study conducted in Malaysia to investigate the willingness of public to reimburse for their provided PC services and telemedicine.<sup>46</sup> Less amount of money was indicated to be paid by the Jordanian compared with that reported to be paid in other developed countries. This most likely reflected the weaker economic power rather than less of appreciation of provided service. From another perspective study, the monthly salary for most Jordanian community pharmacists (40 hours per week) is around 750 USD only<sup>47</sup>. This illustrates dramatic income benefits to the pharmacists, in addition to the patients' saving of unrequired physician visits (in Jordan, an average consultation fee ranges from 15-45 USD per physician's visit).<sup>47</sup>

In the present study, high percentage of participants believed that pharmacists should provide more counseling roles instead of only dispensing medications. This was in line with findings of a study conducted in Jordan where the majority of participants (87.0%) showed an interest in pharmacists performing a monthly medication check.<sup>47</sup> Traditionally, the pharmacists are involved in providing health-care services with focus on dispensary



responsibilities. The professional role of pharmacist extends nowadays to cover more specialized areas such as; providing health care guidance, patient education, pharmaceutical marketing, as well as being the most powerful links between patients and other healthcare providers.<sup>44, 45</sup> The pharmacist must be well educated by trusted sources on most updated and reliable information related to pharmacy field.<sup>44,45,62,63</sup> To achieve an optimal delivery of PC by the Jordanian pharmacists, a significant effort is required in order to satisfy expectations of the public, regarding their professional role, and to show the financial benefits of expanding their participations into patient-direct care. In this study, the participants rated most of the pharmacists' abilities as being important to very important. Regarding the participants' perception towards the pharmacist's abilities, most participants in the current investigation agreed that the pharmacists were role models for pharmacy practice and they had strong interpersonal skills. These results are similar to those have been reported in studies for community pharmacy carried out in Saudi Arabia and Qatar.<sup>44,62</sup>

The lack of private counseling areas in pharmacy and non access to the patient medical document in the pharmacy were reported by participants as major barriers hindering the integration of PC in real practice. Previous studies have reported several major barriers in achievement of diverse PC, these include non-access to patient interaction and workplace for patient counselling; insufficient professional skills; lack of time; poor image of the pharmacists; pharmacists' low self-confidence; inadequate drug information sources; insufficient clinical knowledge as well as communication skills.<sup>44,45,62</sup> The absence of patient medical records in pharmacy and workplace settings for patient counselling (on their prescribing their medicines), as well as limited interaction with other healthcare professionals were the top apparent barriers for PC provision in the present study. This demonstrates the importance of maintaining patient medical records in community pharmacy in order to facilitate the development of a PC scope of practice.<sup>44,62</sup> The main target of these interactions is to teach pharmacy students to develop an appreciation of their significant role in future.<sup>44,62</sup>

In the current study, inadequate drug information resources and databases in the pharmacy was documented as one of the major barriers that hinder the integration of PC as well as a major cause of medical errors in real practice. This result has been reported in previous studies, where pharmacist had very small number of hardcopy drug information resources.<sup>56</sup> Additionally, in Saudi Arabia, in a study conducted to evaluate the pharmacy students' satisfaction with pharmacy experiences of community pharmacy, the students reported they did not get all required information from their patients and relied only on the prescription provided. These practice sites in Saudi Arabia were lacking electronic systems.<sup>62</sup> The results of the present study highlight the need to support the pharmacist with all required tools to easily access the patient's medical records through utilization of electronic systems, and to prevent and/or reduce high incidence of medical errors.

One of the limitations of this study is lacking a description of

the payment mechanism which should be included in future research to reduce any strategic bias regarding the parents' willingness to pay for PC delivery. Another limitation of this study is that the small convenience sample that was used limits its generalization to the whole Arabic countries. In addition, willingness to pay was estimated according to subjective opinions of patients rather than on actual banking data. For example, the measured value was hypothetically drawn and might be biased as a result of sample selection. This latter limits the monetary benefits that may result from pharmaceutical healthcare services. Yet, willingness to pay is widely acknowledged as the best methodology employed.<sup>61</sup> The PC services structure and finance would be developed, by a social and cultural framework identified by this study findings, in the area of a developing country. A larger sample from different cities around the Arabic countries should be targeted in future research. This is to attain a higher awareness of willingness to pay throughout developing countries and Arabic countries.

### Implications for policy and practice

From a patients' perspective, this study suggests a large patient need for expanding PC services in Arabic countries, particularly Jordan and Iraq and introduces a direct estimate of the monetary value for the PC services.

The extended roles of a pharmacist, in optimizing patient care and medication use, contributes to higher savings.

This study outlined that Jordanians, Iraqi and other participants are ready to co-pay for the PC services. Additionally, the elements of the service that were highlighted by the study participants can be used as a benchmark to structure and design pharmacy-led care services which patients would seek and pay for.

For pharmacists, the study highlights the importance to develop counseling and medication review services, as well as setting a reference money value for such service startup fees.

## CONCLUSIONS

From a patients' perspective, this study suggests a significant patient need for expanding PC services in Arabic countries and introduces a direct estimate of the monetary value for the PC services. The extended roles of a pharmacist, in optimizing patient care and medication use, contribute into higher savings. The majority of participants supported the idea of creating a website provision of telemedicine and PC services, and a considerable proportion of them agreed to pay for it.

For pharmacists, the study highlights the importance to develop counseling and medication review services, as well as to set a reference money value for such service startup fees. Participants believe that pharmacists should provide more counseling roles instead of only dispensing medications. The absence of private counseling areas in pharmacy and inability to access the patient medical record in the pharmacy were reported by participants as major barriers hindering the integration of PC in real practice.



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## CONFLICTS OF INTEREST

All Authors declare no conflicts of interest related to this article.

## HIGHLIGHTS

Expanding pharmaceutical care services in developing countries is required.

Medical errors can be caused by failure to document patient medical data.

Creating a database containing the patient medical record reduces medical errors.

It is important to develop counseling and medication review services.

## References

1. Sacristán JAJBmi. Patient-centered medicine and patient-oriented research: improving health outcomes for individual patients. *BMC Med Inform Decis Mak*. 2013;13:1-8. <https://doi.org/10.1186/1472-6947-13-6>
2. Mohammed K, Nolan MB, Rajjo T, et al. Creating a Patient-Centered Health Care Delivery System: A Systematic Review of Health Care Quality From the Patient Perspective. *Am J Med Qual*. 2016;31(1):12-21. <https://doi.org/10.1177/1062860614545124>
3. Geurts MM, Stewart RE, Brouwers JR, et al. Patient beliefs about medicines and quality of life after a clinical medication review and follow-up by a pharmaceutical care plan: a study in elderly polypharmacy patients with a cardiovascular disorder. 2015;6:171-176.
4. Merks P, Kaźmierczak J, Olszewska AE, et al. Comparison of factors influencing patient choice of community pharmacy in Poland and in the UK, and identification of components of pharmaceutical care. *Patient Prefer Adherence*. 2014;8:715. <https://doi.org/10.2147/PPA.S53829>
5. Alsayed A, El Hajji FD, Al-Najjar MA, et al. Patterns of antibiotic use, knowledge, and perceptions among different population categories: A comprehensive study based in Arabic countries. *Saudi Pharmaceutical Journal*. 2022.
6. Pomey MP, Ghadiri DP, Karazivan P, et al. Patients as partners: a qualitative study of patients' engagement in their health care. *PLoS One*. 2015;10(4):e0122499. <https://doi.org/10.1371/journal.pone.0122499>
7. Bradley C. The future role of pharmacists in primary care: *British Journal of General Practice*; 2009.
8. Toklu HZ, Hussain AJJoYP. The changing face of pharmacy practice and the need for a new model of pharmacy education. *J Young Pharm*. 2013;5(2):38-40. <https://doi.org/10.1016/j.jyp.2012.09.001>
9. Bashedi IA, Tadros OK, Aburuz SJPTJoHP, Therapy D. Value of a community-based medication management review service in Jordan: a prospective randomized controlled study. *Pharmacotherapy*. 2016;36(10):1075-1086. <https://doi.org/10.1002/phar.1833>
10. AbuRuz SM, Alrashdan Y, Jarab A, et al. Evaluation of the impact of pharmaceutical care service on hospitalized patients with chronic kidney disease in Jordan. *Int J Clin Pharm*. 2013;35(5):780-789. <https://doi.org/10.1007/s11096-013-9806-8>
11. Bulatova N, Aburuz S, Yousef AJAihse. An innovative pharmaceutical care practical course. *Adv Health Sci Educ Theory Pract*. 2007;12(2):211-222. <https://doi.org/10.1007/s10459-006-0001-8>
12. Farha RA, Bashedi I, Al Ruz HA, et al. Assessment of drug-related problems and their impact on blood pressure control in patients with hypertension. *Eur J Hosp Pharm*. 2016;23:126-130. <https://doi.org/10.1136/ejhpharm-2015-000712>
13. Fox A, Reeves SJoIC. Interprofessional collaborative patient-centred care: a critical exploration of two related discourses. *J Interprof Care*. 2015;29:113-118. <https://doi.org/10.3109/13561820.2014.954284>
14. Kassam R, Collins JB, Berkowitz JJAjope. Comparison of patients' expectations and experiences at traditional pharmacies and pharmacies offering enhanced advanced pharmacy practice experiences. *Am J Pharm Educ*. 2010;74(5):90. <https://doi.org/10.5688/aj740590>
15. Perepelkin JJCPRdPdC. Public opinion of pharmacists and pharmacist prescribing. 2011;144:86-93.
16. AbuRuz S, Al-Ghazawi M, Snyder AJJoPP. Pharmaceutical care in a community-based practice setting in Jordan: where are we now with our attitudes and perceived barriers?. *Int J Pharm Pract*. 2012;20:71-79. <https://doi.org/10.1111/j.2042-7174.2011.00164.x>
17. Al-Arifi MNJSPJ. Patients' perception, views and satisfaction with pharmacists' role as health care provider in community pharmacy setting at Riyadh, Saudi Arabia. *Saudi Pharm J*. 2012;20(4):323-330. <https://doi.org/10.1016/j.jsps.2012.05.007>
18. El Hajj MS, Salem S, Mansoor HJPP adherence. Public's attitudes towards community pharmacy in Qatar: a pilot study. *Patient Prefer Adherence*. 2011;5:405-422. <https://doi.org/10.2147/PPA.S22117>
19. TEH R, CHEN T, KRASS IJJoPP. Consumer perspectives of pharmacist-delivered health information and screening services. 2001;9:261-267.
20. Khudair IF, Raza SAJJoHCqa. Measuring patients' satisfaction with pharmaceutical services at a public hospital in Qatar. *Int J Health Care Qual Assur*. 2013;26(5):398-419. <https://doi.org/10.1108/IJHCOA-03-2011-0025>
21. Kvedar J, Coye MJ, Everett W. Connected health: a review of technologies and strategies to improve patient care with telemedicine and telehealth. *Health Aff (Millwood)*. 2014;33(2):194-199. <https://doi.org/10.1377/hlthaff.2013.0992>
22. Flint L, Kotwal A. The New Normal: Key Considerations for Effective Serious Illness Communication Over Video or Telephone During the Coronavirus Disease 2019 (COVID-19) Pandemic. *Ann Intern Med*. 2020;173:486-488. <https://doi.org/10.7326/M20-1982>
23. Fischer SH, Ray KN, Mehrotra A, et al. Prevalence and Characteristics of Telehealth Utilization in the United States. *JAMA network open*. 2020;3:e2022302.
24. Ramirez AV, Ojeaga M, Espinoza V, et al. Telemedicine in Minority and Socioeconomically Disadvantaged Communities Amidst COVID-19 Pandemic. *Otolaryngol. Head Neck Surg*. 2021;164:91-92. <https://doi.org/10.1177/0194599820947667>
25. Reed ME, Huang J, Graetz I, et al. Patient Characteristics Associated With Choosing a Telemedicine Visit vs Office Visit With the Same Primary Care Clinicians. *JAMA network open*. 2020;3:e205873. <https://doi.org/10.1001/jamanetworkopen.2020.5873>
26. Lam K, Lu AD, Shi Y, et al. Assessing Telemedicine Unreadiness Among Older Adults in the United States During the COVID-19 Pandemic. *JAMA internal*



- medicine. 2020;180:1389-1391. <https://doi.org/10.1001/jamainternmed.2020.2671>
27. Nieman CL, Oh ES. Connecting With Older Adults via Telemedicine. *Ann Intern Med.* 2020;173:831-832. <https://doi.org/10.7326/M20-1322>
28. Roberts ET, Mehrotra A. Assessment of Disparities in Digital Access Among Medicare Beneficiaries and Implications for Telemedicine. *JAMA internal medicine.* 2020;180(10):1386-1389. <https://doi.org/10.1001/jamainternmed.2020.2666>
29. Romano MF, Sardella MV, Alboni F, et al. Is the digital divide an obstacle to e-health? An analysis of the situation in Europe and in Italy. *Telem J. E Health.* 2015;21(1):24-35. <https://doi.org/10.1089/tmj.2014.0010>
30. Reiners F, Sturm J, Bouw LJW, et al. Sociodemographic Factors Influencing the Use of eHealth in People with Chronic Diseases. *Int J Environ Res. Public Health.* 2019;16(4):645. <https://doi.org/10.3390/ijerph16040645>
31. Hong YA, Zhou Z, Fang Y, et al. The Digital Divide and Health Disparities in China: Evidence From a National Survey and Policy Implications. *J Med Internet Res.* 2017;19(9):e317. <https://doi.org/10.2196/jmir.7786>
32. Schumm MA, Pyo HQ, Ohev-Shalom R, et al. Patient experience with electronic health record-integrated postoperative telemedicine visits in an academic endocrine surgery program. *Surgery.* 2021;169(5):1139-1144. <https://doi.org/10.1016/j.surg.2020.11.019>
33. Reed ME, Huang J, Parikh R, et al. Patient-Provider Video Telemedicine Integrated With Clinical Care: Patient Experiences. *Ann Intern Med.* 2019;171(3):222-224. <https://doi.org/10.7326/M18-3081>
34. Kruse CS, Krowski N, Rodriguez B, et al. Telehealth and patient satisfaction: a systematic review and narrative analysis. *BMJ Open.* 2017;7(8):e016242. <https://doi.org/10.1136/bmjopen-2017-016242>
35. Orlando JF, Beard M, Kumar S. Systematic review of patient and caregivers' satisfaction with telehealth videoconferencing as a mode of service delivery in managing patients' health. *PLoS One.* 2019;14(8):e0221848. <https://doi.org/10.1371/journal.pone.0221848>
36. Wosik J, Fudim M, Cameron B, et al. Telehealth transformation: COVID-19 and the rise of virtual care. *J Am Med Inform Assoc.* 2020;27(6):957-962. <https://doi.org/10.1093/jamia/ocaa067>
37. Kakani P, Sorensen A, Quinton JK, et al. Patient Characteristics Associated with Telemedicine Use at a Large Academic Health System Before and After COVID-19. *J Gen Intern Med.* 2021;36(4):1166-1168. <https://doi.org/10.1007/s11606-020-06544-0>
38. Eberly LA, Kallan MJ, Julien HM, et al. Patient Characteristics Associated With Telemedicine Access for Primary and Specialty Ambulatory Care During the COVID-19 Pandemic. *JAMA network open.* 2020;3(12):e2031640. <https://doi.org/10.1001/jamanetworkopen.2020.31640>
39. Kuperman EF, Linson EL, Klefstad K, et al. The Virtual Hospitalist: A Single-Site Implementation Bringing Hospitalist Coverage to Critical Access Hospitals. *J Hosp Med.* 2018;13(11):759-763. <https://doi.org/10.12788/jhm.3061>
40. Lakkireddy DR, Chung MK, Gopinathannair R, et al. Guidance for Cardiac Electrophysiology During the COVID-19 Pandemic from the Heart Rhythm Society COVID-19 Task Force; Electrophysiology Section of the American College of Cardiology; and the Electrocardiography and Arrhythmias Committee of the Council on Clinical Cardiology, American Heart Association. *Circulation.* 2020;141:e823-e831. <https://doi.org/10.1016/j.hrthm.2020.03.028>
41. Lefever S, Dal M, Matthíasdóttir Á. Online data collection in academic research: advantages and limitations. *British Journal of Educational Technology.* 2007;38:574-582.
42. Perraudin C, Brion F, Bourdon O, et al. The future of pharmaceutical care in France: a survey of final-year pharmacy students' opinions. *BMC Clin. Pharmacol.* 2011;11:6. <https://doi.org/10.1186/1472-6904-11-6>
43. Katoue MG, Awad Al, Schwinghammer TL, et al. Pharmaceutical care education in Kuwait: pharmacy students' perspectives. *Pharm Pract (Granada).* 2014;12(3):411. <https://doi.org/10.4321/s1886-36552014000300002>
44. El Hajj MS, Hammad AS, Afifi HM. Pharmacy students' attitudes toward pharmaceutical care in Qatar. *Ther Clin Risk Manag.* 2014;10:121-129. <https://doi.org/10.2147/TCRM.S56982>
45. Baral SR, Parajuli DR, Shrestha S, et al. Undergraduate pharmacy students' attitudes and perceived barriers toward provision of pharmaceutical care: a multi-institutional study in Nepal. *Integrated pharmacy research & practice.* 2019;8:47-59. <https://doi.org/10.2147/IPRPS203240>
46. Shafie AA, Hassali MA. Willingness to pay for a pharmacist's dispensing service: a cross-sectional pilot study in the state of Penang, Malaysia. *Pharm Pract (Granada).* 2010;8(2):116-121. <https://doi.org/10.4321/s1886-36552010000200006>
47. Jaber D, Aburuz S, Hammad EA, et al. Patients' attitude and willingness to pay for pharmaceutical care: An international message from a developing country. *Res Social Adm Pharm.* 2019;15(9):1177-1182. <https://doi.org/10.1016/j.sapharm.2018.10.002>
48. Abd Ghani MK, Jaber MM. Willingness to Adopt Telemedicine in Major Iraqi Hospitals: A Pilot Study. *International journal of telemedicine and applications.* 2015;2015:136591. <https://doi.org/10.1155/2015/136591>
49. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics.* 1977;33:159-174.
50. Tristán-López A. Modificación al modelo de Lawshe para el dictamen cuantitativo de la validez de contenido de un instrumento objetivo. *Avances en medición.* 2008;6:37-48.
51. Tavakol M, Dennick R. Making sense of Cronbach's alpha. *International journal of medical education.* 2011;2:53-55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
52. Streiner DL. Starting at the beginning: an introduction to coefficient alpha and internal consistency. *J. Pers. Assess.* 2003;80(1):99-103. [https://doi.org/10.1207/S15327752JPA8001\\_18](https://doi.org/10.1207/S15327752JPA8001_18)
53. Al-Arifi MN. Patients' perception, views and satisfaction with pharmacists' role as health care provider in community pharmacy setting at Riyadh, Saudi Arabia. *Saudi pharmaceutical journal: SPI: the official publication of the Saudi Pharmaceutical Society.* 2012;20(4):323-330. <https://doi.org/10.1016/j.jsps.2012.05.007>
54. El Hajj MS, Salem S, Mansoor H. Public's attitudes towards community pharmacy in Qatar: a pilot study. *Patient preference and adherence.* 2011;5:405-422. <https://doi.org/10.2147/PPA.S22117>
55. El-Sharif SI, Abd Alrahman N, Khaled N, et al. Assessment of Patient's Satisfaction with Pharmaceutical Care Services in Community Pharmacies in the United Arab Emirates. 2017;8.
56. Teh R, Chen T, Krass I. Consumer perspectives of pharmacist-delivered health information and screening services. *Int J Pharm Pract.* 2001;9:261-267.
57. Khudair IF, Raza SA. Measuring patients' satisfaction with pharmaceutical services at a public hospital in Qatar. *Int J Health Care Qual Assur.* 2013;26(5):398-419. <https://doi.org/10.1108/IJHCQA-03-2011-0025>
58. Wazaify M, Al-Bsoul-Younes A, Abu-Gharbieh E, et al. Societal perspectives on the role of community pharmacists and over-the-counter drugs in Jordan. *Pharm World Sci.* 2008;30(6):884-891. <https://doi.org/10.1007/s11096-008-9244-1>
59. Bashedi IA, Qunaibi EA, Hamadi SA, et al. Patient perspectives of the role of the community pharmacist in the Middle East: Jordan, United Arab Emirates and Iraq. *Pharmacology & Pharmacy.* 2014;5:588.
60. Painter JT, Gressler L, Kathe N, et al. Consumer willingness to pay for pharmacy services: An updated review of the literature. *Res. Social Adm. Pharm.* 2018;14:1091-1105.
61. Wang J, Hong SH. Contingent valuation and pharmacists' acceptable levels of compensation for medication therapy management services. *Res. Social Adm.*

Alsayed AR, Halloush S, Hasoun L, Alnatour D, Al-Dulaimi A, Alnajjar MS, Blaibleh A, AL-Imam A, Alshammari F, Khader HA. Perspectives of the community in the developing countries toward telemedicine and pharmaceutical care during the COVID-19 pandemic. *Pharmacy Practice* 2022 Jan-Mar;20(1):2618.

<https://doi.org/10.18549/PharmPract.2022.1.2618>

*Pharm.* 2015;11(12):e121-132. <https://doi.org/10.1016/j.sapharm.2018.01.010>

62. Almetwazi M, Alhammad A, Alhossan A, et al. Pharmacy students' satisfaction with Introductory Pharmacy Practice Experiences (IPPE) at community pharmacy: The case of Saudi Arabia. *Saudi pharmaceutical journal: SPJ: the official publication of the Saudi Pharmaceutical Society.* 2020;28(1):68-73. <https://doi.org/10.1016/j.jsps.2019.11.006>
63. Khader H, Hasoun LZ, Alsayed A, et al. Potentially inappropriate medications use and its associated factors among geriatric patients: a cross-sectional study based on 2019 Beers Criteria. *Pharmacia.* 2021;68:789-795.

