Results

The study surveyed pharmacy students' self-perceived preparedness, attitudes, and barriers to providing pharmaceutical care. Participants included Year 4 and Year 5 students, with 41 responses out of 56 students approached, resulting in a response rate of 73%. Data distribution followed a normal distribution (Shapiro-Wilk test, $p > 0.05$), allowing for independent sample t-tests.

Sociodemographic Profile of Participants

Most participants were 20-24 years old, with 18 (43.9%) aged 20-21 and 21 (51.3%) aged 22-24. Emirati nationality was the most prevalent, comprising 22.0% of respondents. Most participants (97.6%) were single, and the majority (70.7%) were in Year 5 of their degree. As of the survey's administration, 95.1% of respondents were not working in the pharmaceutical industry in any capacity.

Students' Attitudes towards Pharmaceutical Care (PC)

The Pharmaceutical Care Attitudes Survey (PCAS) assessed students' attitudes toward pharmaceutical care. Table 2 presents the distribution of responses, expressed as counts and percentages, along with the median and interquartile range (IQR) scores for each item. Responses were rated on a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." Notably, scoring for items 6 and 13 was reversed due to the negatively worded statements.

Participants generally demonstrated positive attitudes towards pharmaceutical care, with median scores indicating agreement or strong agreement with statements across most items. For example, most students agreed or strongly agreed that all pharmacists should perform pharmaceutical care (median = 4, IQR = 3-5) and that the practice of pharmaceutical care is valuable (median = 5, IQR

= 4-5). However, there were some areas where disagreement was notable, such as the perception that providing pharmaceutical care takes too much time and effort (median = 2, IQR = 2-3.5).

Further Analyses of Students' Attitudes: An independent samples t-test was conducted to compare the attitudes towards pharmaceutical care between Year 4 and Year 5 students. The results indicated no significant difference in attitudes towards pharmaceutical care between Year 4 and Year 5 students, as evidenced by the t-test ($t = -0.157$, $df = 39$, $p = .876$). The mean attitude score for Year 4 students was 3.65 (SD = 1.09), while for Year 5 students, it was 3.70 (SD = 0.93).

Table 1. Sociodemographic Characteristics of Participants

Characteristics	**n (%)**
Age	
20-21	18 (43.9)
22-24	21 (51.3)
25-26	2 (4.8)
Nationality	
Emirati	9 (22.0)
Jordanian	2 (4.9)
Palestinian	1 (2.4)
Syrian	6 (14.6)
UAE	16 (39.0)
Yemeni	7 (17.1)
What is your reason for studying for a pharmacy degree?	
Self-will	37 (62.7)
Influence of Family	14 (23.7)
no other choices suited me	1 (1.7)
Influence of friends or seniors	4 (6.8)
Forced by family	2 (3.4)
Curiosity	1 (1.7)
What is your marital status?	
Married	1 (2.4)

Single	40 (97.6)
Which year of your degree are you currently in?	
Year 4	12 (29.3)
Year 5	29 (70.7)
Are you currently engaged in any pharmacy-related job?	
No	39 (95.1)
Yes	2 (4.9)
What kind of pharmaceutical job are you engaged with?	
Hospital pharmacy	1 (2.4)
Safety and management	1 (2.4)
What is the field of preference after the completion of your pharmacy degree?	
Clinical pharmacy	1 (2.4)
Cosmeceutical	1 (2.4)
Hospital Pharmacy	33 (80.5)
Non-pharmaceutical industry	1 (2.4)
Pharmaceutical marketing	4 (9.8)
Research and Development	1 (2.4)

Perception of Preparedness to Deliver Pharmaceutical Care (PC)

Table 3 illustrates students' perception of preparedness to provide pharmaceutical care across various aspects, including technical, psychological, communication, and administrative aspects. Responses and median and interquartile range (IQR) scores are presented as counts and percentages. Participants rated their level of agreement with statements on a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree."

Students reported their perception of preparedness to deliver pharmaceutical care across multiple dimensions. In terms of technical aspects, the median score ranged from 2.96 to 4.08, with an overall median of 3.54 (IQR = 3.00-4.08). Similarly, psychological aspects yielded a

Table 2. Students' Attitude towards pharmaceutical care.

Item	Response, n (%)					Median (IQR) Scores
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1. All pharmacists should perform pharmaceutical care.	5 (12.2)	3 (7.3)	4 (9.8)	11(26.8)	18(43.9)	4 (3-5)
2. The primary responsibility of pharmacists in all healthcare settings should be to prevent and solve medication-related problems.	7 (17.1)	2 (4.9)	3 (7.3)	13 (31.7)	16 (39)	4 (3-5)
3. Pharmacists' primary responsibility should be to practice pharmaceutical care.	5 (12.2)	1 (2.4)	5 (12.2)	15 (36.6)	15 (36.6)	4 (3-5)
4. Pharmacy student can perform pharmaceutical care during their experiential training (placements).	4 (9.8)	1 (2.4)	7 (17.1)	14 (34.1)	15 (36.6)	4 (3-5)
5. I think the practice of pharmaceutical care is valuable.	5 (12.2)	1 (2.4)	3 (7.3)	11 (26.8)	21 (51.2)	5 (4-5)
6. Providing pharmaceutical care takes too much time and effort.	8 (19.5)	14 (34.1)	9 (22.0)	6 (14.6)	4 (9.8)	2 (2-3.5)
7. I would like to perform pharmaceutical care as a pharmacist practitioner.	6 (14.6)	1 (2.4)	6 (14.6)	14 (34.1)	14 (34.1)	4 (3-5)
8. Providing pharmaceutical care is professionally rewarding.	6 (14.6)	2 (4.9)	6 (14.6)	11 (26.8)	16 (39)	4 (3-5)
9. I feel that pharmaceutical care is the right direction for the provision.	5 (12.2)	0 (0)	10 (24.4)	14 (34.1)	12 (29.3)	4 (3-5)
10. I feel that the pharmaceutical care movement can benefit pharmacists.	6 (14.6)	0 (0)	4 (9.8)	15 (36.6)	16 (39)	4 (3.5-5)
11. I feel that the pharmaceutical care movement will improve patients' health.	6 (14.6)	0 (0)	3 (7.3)	13 (31.7)	19 (46.3)	4 (4-5)
12. I feel that practising pharmaceutical care would benefit my professional pharmacy career as a pharmacy practitioner.	6 (14.6)	1 (2.4)	5 (12.2)	12 (29.3)	17 (41.5)	4 (3-5)
13. Providing pharmaceutical care is not worth the additional workload It places on the pharmacist.	7 (17.1)	4 (9.8)	10 (24.4)	8 (19.5)	12 (29.3)	3 (2-5)

* Due to the negative tone of the remarks, the scoring for item 6 and 13 has been reversed.
IQR, Interquartile range.

Table 3. Perception of Preparedness to Provide Pharmaceutical Care (PREP)

Item	Response, n (%)					Median (IQR) Scores
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Technical Aspects						
1. Recommend appropriate drug therapy.	0 (0)	7 (17.1)	20 (48.8)	10 (24.4)	4 (9.8)	3 (3-4)
2. Evaluate patient pharmacotherapeutic regimens to prevent or resolve medication-related problems.	1 (2.4)	5 (12.2)	18 (43.9)	12 (29.3)	5 (12.2)	3 (3-4)
3. Determine the drug delivery system.	0 (0)	5 (12.2)	18 (43.9)	13 (31.7)	5 (12.2)	3 (3-4)
4. Recommend medication doses/ dose schedules.	3 (7.3)	8 (19.5)	15 (36.6)	12 (29.3)	3 (7.3)	3 (2-4)
5. Identify/ collect information to prevent or resolve a drug therapy problem.	0 (0)	7 (17.1)	14 (34.1)	14 (34.1)	6 (14.6)	3 (3-4)
6. Evaluate laboratory tests for a specific patient.	0 (0)	8 (19.5)	14 (34.1)	15 (36.6)	4 (9.8)	3 (3-4)
7. Calculate/ evaluate pharmacokinetic properties.	2 (4.9)	8 (19.5)	20 (48.8)	7 (17.1)	4 (9.8)	3 (2.5-4)
8. Evaluate information from the patient's history and assessment.	0 (0)	4 (9.8)	12 (29.3)	15 (36.6)	10 (24.4)	4 (3-4.5)
9. Make reasonable conclusions when data is incomplete.	0 (0)	9 (22)	16 (39)	12 (29.3)	4 (9.8)	3 (3-4)
10. Provide counselling to patients.	0 (0)	3 (7.3)	11 (26.8)	13 (31.7)	14 (34.1)	4 (3-5)
11. Recommend methods to seek patient compliance.	0 (0)	3 (7.3)	10 (24.4)	13 (31.7)	15 (36.6)	4 (3-5)
12. Monitor therapeutic plan for a patient.	0 (0)	6 (14.6)	14 (34.1)	9 (22)	12 (29.3)	4 (3-5)
13. Document information on drug-related problems.	0 (0)	7 (17.1)	12 (29.3)	11 (26.8)	11 (26.8)	4 (3-5)
Psychological Aspects						
14. Identify the appropriate information to decide a course of action for a problem.	1 (2.4)	7 (17.1)	11 (26.8)	13 (31.7)	9 (22)	4 (3-4)
15. Contribute opinions/ insights to healthcare team.	1 (2.4)	5 (12.2)	18 (43.9)	9 (22)	8 (19.5)	3 (3-4)
16. Promote public awareness of health.	0 (0)	4 (9.8)	13 (31.7)	10 (24.4)	14 (34.1)	4 (3-5)
17. Data/ computer use in professional practice.	1 (2.4)	4 (9.8)	15 (36.6)	10 (24.4)	11 (26.8)	4 (3-5)
Communication Aspects						
18. Communicate medical records information to health professionals.	1 (2.4)	7 (17.1)	9 (22)	17 (41.5)	7 (17.1)	4 (3-4)
19. Communicate medical records information to patients.	0 (0)	5 (12.2)	12 (29.3)	17 (41.5)	7 (17.1)	4 (3-4)

20. Identify/ collect information to respond to health professional drug information requests.	0 (0)	4 (9.8)	14 (34.1)	12 (29.3)	11 (26.8)	4 (3-5)
21. Respond to information requests from a patient.	0 (0)	7 (17.1)	11 (26.8)	14 (34.1)	9 (22)	4 (3-4)
Administrative aspects						
22. Evaluate, select, and purchase pharmaceuticals.	2 (4.9)	4 (9.8)	18 (43.9)	6 (14.6)	11 (26.8)	3 (3-5)
23. Develop/ implement a pharmacy inventory system.	1 (2.4)	8 (19.5)	19 (46.3)	5 (12.2)	8 (19.5)	3 (3-4)
24. Manage fiscal and human resources.	3 (7.3)	8 (19.5)	21 (51.2)	2 (4.9)	7 (17.1)	3 (2-3)
25. Develop/ implement a drug formulary service.	2 (4.9)	11 (26.8)	17 (41.5)	4 (9.8)	7 (17.1)	3 (2-4)

IQR, Interquartile range

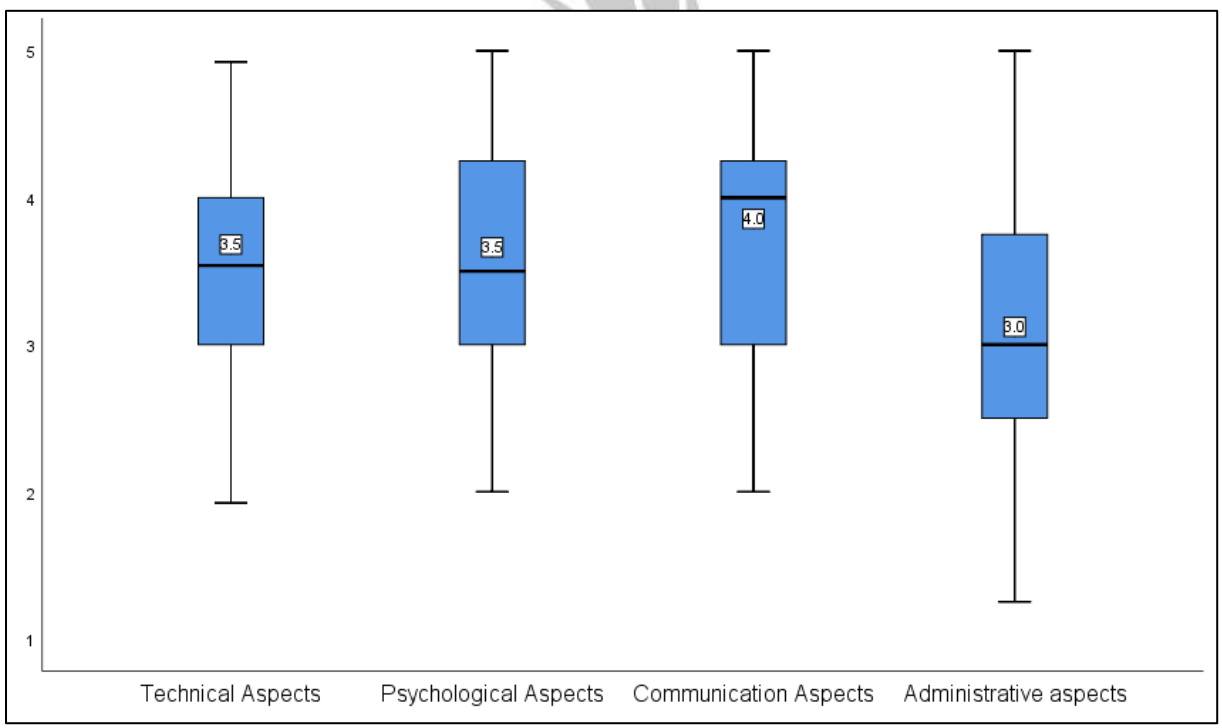

Figure 1. The box plot represents the median (IQR) scores of the constructs of Preparedness

median score of 3.50 (IQR = 3.00-4.38), communication aspects had a median score of 4.00 (IQR = 3.00-4.25), and administrative elements had a median score of 3.00 (IQR = 2.50-3.88).

Further Analyses of Students' Perception: An independent samples t-test compared the perception of preparedness between Year 4 and Year 5 students. The results showed no significant difference in perceived preparedness between the two groups, as indicated by the t-test ($t = -0.161$, $df = 39$, $p = .873$). The mean perception of preparedness score for Year 4 students was 3.45 (SD = 0.94), while for Year 5 students, it was 3.50 (SD = 0.81).

Table 4. Students perceived barriers to the provision of pharmaceutical care

Item	Response, n (%)					Median (IQR) Scores
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
1. Inadequate drug information resources in the pharmacy	3 (7.3)	11 (26.8)	11 (26.8)	9 (22)	7 (17.1)	3 (2-4)
2. Lack of access to the patient's medical record in the pharmacy.	6 (14.6)	12 (29.3)	11 (26.8)	7 (17.1)	5 (12.2)	3 (2-4)
3. Lack of therapeutic knowledge.	6 (14.6)	15 (36.6)	8 (19.5)	6 (14.6)	6 (14.6)	2 (2-4)
4. Lack of understanding of pharmaceutical care.	7 (17.1)	15 (36.6)	9 (22)	6 (14.6)	4 (9.8)	2 (2-3.5)
5. Inadequate training in pharmaceutical care.	4 (9.8)	10 (24.4)	14 (34.1)	6 (14.6)	7 (17.1)	3 (2-4)
6. Lack of workplace for counselling in the pharmacy.	4 (9.8)	10 (24.4)	8 (19.5)	10 (24.4)	9 (22)	3 (2-4)
7. Inadequate technology in the pharmacy.	4 (9.8)	9 (22)	15 (36.6)	6 (14.6)	7 (17.1)	3 (2-4)
8. Lack of self-confidence.	14 (34.1)	10 (24.4)	9 (22)	4 (9.8)	4 (9.8)	2 (1-3)
9. Time constraints	3 (7.3)	11 (26.8)	10 (24.4)	6 (14.6)	11 (26.8)	3 (2-5)
10. Poor image of pharmacist's role in society.	9 (22)	5 (12.2)	8 (19.5)	9 (22)	10 (24.4)	3 (2-4.5)

IQR, Interquartile range

Students Perceived Barriers to Provide Pharmaceutical Care

Table 4 presents students' perceived barriers to providing pharmaceutical care, as assessed by responses to various items. Responses and median and interquartile range (IQR) scores are reported as counts and percentages. Participants rated their agreement with statements on a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree."

Students identified several barriers to providing pharmaceutical care, as reflected in their responses to the survey items. The most commonly cited barriers included inadequate drug information resources in the pharmacy (median = 3, IQR = 2-4), lack of access to patient medical records (median = 3, IQR = 2-4), and a perceived lack of therapeutics knowledge (median = 2, IQR = 2-4). Other significant barriers included inadequate training in pharmaceutical care (median = 3, IQR = 2-4) and time constraints (median = 3, IQR = 2-5).

Further Analyses of Students' Perceived Barriers: An independent samples t-test was conducted to compare the barriers to providing pharmaceutical care between Year 4 and Year 5 students. The results revealed no significant difference in perceived barriers between the two groups, as indicated by the t-test ($t = 0.550$, $df = 39$, $p = .586$). The mean perceived barriers score for Year 4 students was 3.09 (SD = 0.96), whereas for Year 5 students, it was 2.90 (SD = 1.06).