

Pathway to Success: Exploring Students' Perspectives on Career Aspirations in Pharmacy

Mohd Izani Othman^{1*}, Mohd Nadzri Mohd Najib², Suraya Sulaiman³, Mohd Ikhmal Hanif Abdul Khalid⁴, Muhammad Irfan Daniel Zamri⁵, Muhammad Shazani Mohd Shakri⁶, Muhammad Akmal Mohd Izzudin⁷

^{1,2,3,4,5,6,7}Faculty of Pharmacy, Universiti Teknologi MARA, Cawangan Pulau Pinang, Kampus Bertam, 13200 Kepala Batas, Pulau Pinang, Malaysia

Email Address: ¹mohdizani.othman@uitm.edu.my, ²mohdna2857@uitm.edu.my, ³suraya.sulaiman@uitm.edu.my, ⁴mohdikhmal@uitm.edu.my, ⁵maneuverirfan@gmail.com, ⁶shazanimuhd3@gmail.com, ⁷akmalhasssan2162@gmail.com

Received Date: 2 November 2023

Accepted Date: 18 December 2023

Revised Date: 29 December 2023

Published Date: 31 January 2024

*Corresponding Author

ABSTRACT

Embarking on a career in pharmacy is a dynamic and engaging journey, making it imperative to delve deeper into students' viewpoints. This study holds paramount significance as it seeks to unravel the students' perspectives on choosing pharmacy as a career. Understanding these viewpoints becomes pivotal for academic institutions, guiding them to navigate and align seamlessly with the ever-evolving landscape of pharmacy careers. The objectives of this study include to explore students' attitudes towards pharmacy as their future career aspiration and to determining the relation between students' academic performance and their attitudes towards pharmacy as their future career aspiration. Using a cross-sectional survey design, data were collected through Google Forms from ninety Diploma in Pharmacy students of Universiti Teknologi MARA Cawangan Pulau Pinang, Kampus Bertam. Employing a convenient sampling, data tabulation and statistical analysis were executed using SPSS. Results from this study indicate that pharmacy students generally express a high level of pride (88.9%) in their field of study and a strong commitment (88.9%) to the values of the pharmacy profession. Additionally, a significant portion sees being a pharmacist as an integral part of their identity (74.5%). A majority agreed that pharmacy is an ideal lifelong career (76.7%) and expressed contentment with their choice to study pharmacy (68.9%). While a notable percentage would still choose pharmacy if given the chance again (53.4%), there is a consensus (81.1%) that a career in pharmacy is desirable. Importantly, the overall score of 4.07 suggests a general agreement with the positive statements about studying pharmacy. In conclusion, this study illuminates the positive inclinations and affirmations that students hold regarding pharmacy as a career choice. The findings not only contribute valuable insights into the attitudes and perspectives of pharmacy students but also underscore a predominantly optimistic outlook on their chosen profession.

Keywords: attitudes, career, diploma, pharmacy.

INTRODUCTION

The need for pharmacists has seen a notable increase since a few decades ago (Knapp, 1999). This underscores the importance of preparing students with education and training that equips them for the demands of the profession (Lebovitz & Eddington, 2019). Pharmacy education's evolution necessitates a regular assessment of students' perceptions of the curriculum to ensure its alignment with the ever-changing needs of the field.

The pivotal role of pharmacy education lies in shaping future pharmacists for their professional journeys. Designed to impart knowledge, skills, and competencies essential for safe and effective patient care, the pharmacy curriculum holds immense significance (Rosenthal et al., 2010). In a dynamic healthcare landscape, it is paramount to continually gauge students' perceptions of the curriculum and their inclinations towards a career in pharmacy (Musa et al., 2021; Sajjad et al., 2021; Silverthorne et al., 2003).

Furthermore, comprehending students' attitudes towards a pharmacy career holds a key to decoding the factors influencing their career choices (Wigger & Mrtek, 1994). This insight can debunk misconceptions and bolster recruitment and retention of pharmacy students. Pharmacists' role in ensuring safe medication use and patient-centric care is irreplaceable (Palombi et al., 2013). Found in diverse settings including community pharmacies (Balkhi et al., 2020), hospitals, and healthcare facilities, they spearhead medication therapy management, disease state oversight, and health advocacy services (Kokane & Avhad, 2016).

The decision to pursue a career in pharmacy is shaped by a multifaceted interplay of factors, with various aspects of students' attitudes demanding consideration. These encompass career aspirations (Siracuse et al., 2004), prospects for future employment (Alshehri et al., 2021; Davey et al., 2006), and financial considerations such as salary (Alshehri et al., 2021; Almaghaslah et al., 2021). Nevertheless, certain misconceptions about the pharmacy profession, such as the perception of limited scope beyond medication dispensing (Jesson et al., 2008) and concerns regarding workload (Abdu-Aguye et al., 2023), can dissuade potential candidates. Additionally, the cost of pharmacy education (Cain et al., 2014; Loo et al., 2017) and the duration of required training (Gargalicano et al., 2023) may impact students' willingness to embark on this career path. Furthermore, the ever-evolving healthcare and pharmaceutical landscape, along with its associated challenges (Shen et al., 2014), demands adaptability and continuous learning, potentially posing challenges for certain students. Lastly, cultural (Choi et al., 2021), personal (Arbab et al., 2022), and societal perceptions (Ubaka et al., 2013) of the pharmacy field can significantly influence students' attitudes, either reinforcing or challenging their career choices.

Therefore, the aim of this study is to deepen our understanding of final-year students' evolving career aspirations in pharmacy, aligning with the dynamic landscape of the field (Musa et al., 2021; Sajjad et al., 2021; Silverthorne et al., 2003). By specifically focusing on students in their final semester, who have completed their studies at the diploma level and are poised to join the workforce upon graduation, we aim to explore the 'how' and 'why' their interests in pursuing pharmacy careers may have transformed over the course of their education. Recognizing that students' career aspirations might shift and evolve from the beginning to the conclusion of their studies, the study seeks to capture this dynamic aspect of this evolution. Through understanding the changing dynamics of students' career preferences, will inform the development of targeted strategies aimed at attracting and retaining students in this noble profession.

Ultimately, the study's results will enrich our insight into pharmacy students' attitudes and experiences, culminating in the enhancement of pharmacy education programs. This information will be invaluable

to universities, healthcare organisations, and policymakers dedicated to advancing the quality and accessibility of pharmacy education and healthcare services.

The objectives of this study include:

- a) Exploring students' attitudes towards pharmacy as their future career aspiration.
- b) Determining the association between students' academic performance (Cumulative Grade Point Average – CGPA) and their attitudes towards pharmacy as their future career aspiration.

LITERATURE REVIEW

Pharmacy Career Perceptions and Expectations

Understanding students' perceptions and expectations of the pharmacy profession is crucial in evaluating their motivations and career aspirations. Several studies have examined students' perspectives on the pharmacy profession, shedding light on their reasons for choosing pharmacy as a career and their desired career paths. It was found that the primary motivations for choosing pharmacy as a course of study and career were multifaceted (Capstick et al., 2007). They identified the top reasons of why students choose pharmacy as a course of study and career. These reasons include the potential for high remuneration, a personal interest in human biology, a desire to assist patients, and a strong inclination towards interpersonal communication. These findings emphasize the multifaceted nature of students' motivations and expectations in pursuing a career in pharmacy.

Hanna et al. (2016) explored the career aspirations of pharmacy students, indicating that altruistic and clinical reasons primarily drive their career choice. Enjoyment of science during their school years, a desire to improve people's health and well-being, and a passion for working in the healthcare sector were highlighted as significant factors. Furthermore, the study revealed a preference for careers in hospital or community pharmacy, with less inclination towards pursuing careers in industry or academia highlighting the career paths that students envision for themselves. In a study conducted among final year pharmacy students in Sudan, Yousif et al. (2014) found that over 75% of the participants had chosen pharmacy as their first choice of study. These students expressed a positive belief in the potential of pharmacy to offer a promising future career. The study also identified a significant association between students' satisfaction with their choice of pharmacy as a career and their current academic performance.

Factors Affecting Students' Career Choices in Pharmacy

Students' career choices in pharmacy are influenced by various factors, including personal, social, and environmental aspects. Understanding these factors is essential in providing guidance and support to students as they navigate their career paths. Abduelkarem and Hamrouni (2016) highlighted the importance of family encouragement, personal interest, and the aspiration to obtain a medical professional degree as significant factors influencing students' decision to pursue pharmacy as a career. These findings underscore the impact of personal motivations and support systems in shaping students' career choices in the field of pharmacy. In a study carried out by Isah et al. (2021) among students from three universities in Nigeria, it was revealed that a significant majority of the participants held a positive view of pharmacy as an ideal profession. They expressed satisfaction with their choice of studying pharmacy and expressed a desire to pursue a career in the field. The motivation to study pharmacy was influenced by various factors, including family influence, the close association of pharmacy with the medical profession, having a role model who is a pharmacist, family ownership of a pharmacy, and the perception of good job opportunities in the field.

Career preferences of pharmacy students in Malaysia was also explored by Hasan et al. (2010). The study found that students from different university settings had varying career interests, with public university students showing a greater preference for hospital pharmacy practice and private university students exhibiting a stronger interest in community pharmacy. Additionally, extrinsic factors such as salary, benefits, and geographical location were identified as influential factors in students' career choices. Nevertheless, the findings of Ooi et al. (2021) indicated that students from both public and private universities showed a strong preference for a career in public hospitals. The study identified several influential factors in selecting a future career, including the working environment, job security, opportunities for professional development, and attractive salary packages. The acceptable starting monthly salaries reported by students from both public and private universities ranged between RM 3001 to RM 4000. Figure 1 highlights the key elements of pharmacy career decision-making from the literature review.

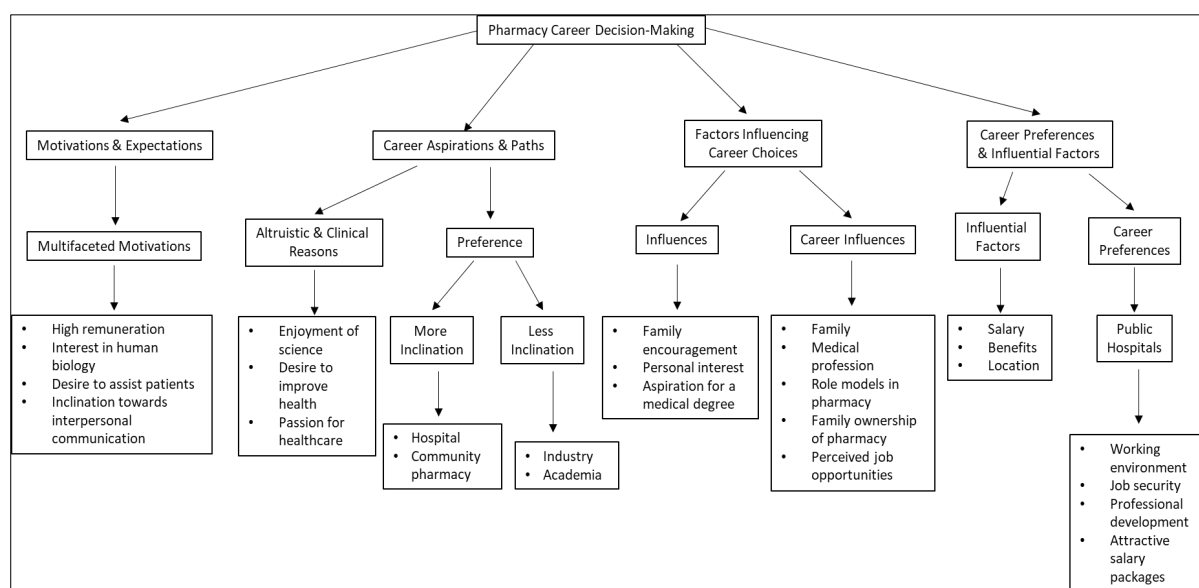


Figure 1: Framework of pharmacy career decision-making

RESEARCH METHODOLOGY

Study Design and Samples

The research employed a cross-sectional survey design to explore final-year pharmacy students' perspectives on their perceptions of the pharmacy curriculum and attitudes towards a career in pharmacy. The study was conducted among students enrolled in the Diploma in Pharmacy program at Universiti Teknologi MARA, Cawangan Pulau Pinang, Kampus Bertam (Othman et al., 2022a; Othman et al., 2022b; Othman et al., 2023). A purposive sampling method was used, with a calculated sample size of 84 participants (95% confidence level and 5% margin error).

Data Collection and Analysis

Data were collected through a self-administered questionnaire distributed online, garnering responses from 90 participants. The 8-item questionnaire was adapted from various sources (Beedemariam et al., 2014; James et al., 2018; Wilson et al., 2006), included demographic information and utilised a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) to assess students' perceptions. The calculated mean score (Table 1) was interpreted based on

Pimentel (2010). Likewise, descriptive statistics and inferential analysis, such as Chi-Square, were employed for data analysis using SPSS version 22.

Table 1: Interpretation of calculated mean scores

Mean range	Interpretation
1.00 - 1.80	Strongly disagree
1.81 - 2.60	Disagree
2.61 - 3.40	Neutral
3.41 - 4.20	Agree
4.21 - 5.00	Strongly agree

Reliability Analysis

The reliability analysis assessed the internal consistency of the 8-item questionnaire, yielding Cronbach's alpha coefficients of 0.861 and 0.863 when considering standardized items. These coefficients indicate strong inter-item correlations, signifying the scale's reliability in measuring a consistent underlying construct whereby a Cronbach's alpha value of more than 0.70 shows that the data is reliable (Taber, 2018). These results support the scale's suitability for continued use in our research, instilling confidence in the reliability and consistency of the measurements it provides.

Ethical Considerations

Ethical approval was obtained from the Universiti Teknologi MARA, Cawangan Pulau Pinang Research Ethics Committee (BERC) – BERC/4/2023 (UG/MR/169). Participants were informed of the study's purpose, gave consent, and were assured of confidentiality and anonymity.

RESULTS AND DISCUSSION

Table 2 indicates the demographics of respondents. This study surveyed a total of 90 final year students enrolled in the Diploma in Pharmacy program at Universiti Teknologi MARA, Cawangan Pulau Pinang, Kampus Bertam. Most respondents were female (68.9%, 62) while 31.1%, 28 were male. In terms of age, most respondents were 21 years old (82.2%), followed by 20 years old (13.4%) and 22 years old (4.4%). In terms of current Cumulative Grade Point Average (CGPA), 36.7% of respondents had a CGPA of at least 3.50, while 57.8% had a CGPA between 3.00 to 3.49. Only 5.5% of respondents had a CGPA between 2.49 to 3.00. These demographic characteristics provide an overview of the sample population that participated in the study.

Table 2: Demographics of respondent (n=90)

Demographic	Frequency (n)	Percentage (%)
Gender		
Male	28	31.1
Female	62	68.9
Age (years old)		
20	12	13.4
21	74	82.2
22	4	4.4
Current Cumulative Grade Point Average (CGPA)		
3.50 – 4.00	33	36.7
3.00 – 3.49	52	57.8

2.49 – 3.00	5	5.5
-------------	---	-----

This study assesses students' attitudes towards a career in pharmacy and their overall satisfaction with their chosen field of study. The findings provide valuable insights into students' perceptions and attitudes, shedding light on their pride in studying pharmacy, commitment to the profession, career aspirations, and overall satisfaction with their decision (Table 3).

Table 3: Analysis of students' attitudes towards a career in pharmacy

Item	Strongly Disagree (1) N (%)	Disagree (2) N (%)	Neutral (3) N (%)	Agree (4) N (%)	Strongly Agree (5) N (%)	Mean	Interpretation
I am proud to tell others that I am studying pharmacy	2 (2.2)	0 (0.0)	8 (8.9)	31 (34.4)	49 (54.5)	4.48	Strongly Agree
I am strongly committed to the values and ideals of the pharmacy profession	2 (2.2)	2 (2.2)	6 (6.7)	45 (50.0)	35 (38.9)	4.30	Strongly Agree
Being a pharmacist/pharmacist assistant is an important part of who I want to be	2 (2.2)	2 (2.2)	19 (21.1)	29 (32.2)	38 (42.3)	4.16	Agree
Pharmacy is the ideal profession for a career for life	2 (2.2)	4 (4.4)	15 (16.7)	32 (35.6)	37 (41.1)	4.09	Agree
If I could do it all again, I would still choose to study pharmacy	4 (4.4)	7 (7.8)	31 (34.4)	26 (28.9)	22 (24.5)	3.61	Agree
I want a career in pharmacy	2 (2.2)	3 (3.3)	12 (13.4)	36 (40.0)	37 (41.1)	4.20	Agree
I do not regret that I have chosen to study pharmacy	2 (2.2)	1 (1.1)	25 (27.8)	32 (35.6)	30 (33.3)	3.97	Agree
If I could pick a different field of study which paid the same salary, I would not change my pharmacy field of study	2 (2.2)	7 (7.8)	30 (33.3)	26 (28.9)	25 (27.8)	3.72	Agree
Overall score						4.07	Agree

Most students expressed a high level of pride in their choice to study pharmacy, with 54.5% strongly agreeing and 34.4% agreeing (a total of 88.9%). Our findings revealed a higher percentage compared to James et al. (2018) who garnered only 60.8% and agrees with Wilson et al. (2006), Beedemariam et al. (2014) and Abduelkarem & Hamrrouni (2016). This indicates that they take pride in their academic pursuit and see value in their chosen field of study. Such pride can have a positive impact on students' motivation and dedication to their studies, as well as their representation of the pharmacy profession to others. According to a study conducted by Pekrun et al. (2004), students who take pride in their studies exhibit higher levels of academic interest, motivation, and dedication. This suggests that feeling proud of one's chosen field of study can positively impact academic performance and career pursuits.

Furthermore, the survey revealed that a significant proportion of students (50.0% agreeing and 38.9% strongly agreeing – a total of 88.9%) strongly committed to the values and ideals of the pharmacy

profession. Our results agree with Beedemariam et al. (2014), Abduelkarem & Hamrrouni (2016) and yielded a higher percentage than James et al. (2018) who scored 70.3%. This finding suggests that students have a strong sense of alignment with the professional values, ethics, and principles associated with pharmacy practice. This commitment is essential for the development of competent and ethical pharmacists who prioritize patient care and professional integrity. According to Hussain et al. (2021), students choose pharmacy as a profession to make a positive impact on community health, pursue a career in healthcare, and secure a stable income. This highlights their recognition of the core values of the pharmacy profession and their desire to serve the community while ensuring financial stability.

The survey also explored students' perceptions of pharmacy as an integral part of their identity. Likewise, majority of students (42.3% strongly agreeing and 32.2% agreeing – a total of 74.5%) indicated that being a pharmacist/pharmacist assistant is an important part of who they want to be. This finding is in line with James et al. (2018), Abduelkarem & Hamrrouni (2016) and Wilson et al. (2006) who obtained 70.3% and more than 80%, respectively. This suggests that students have a strong sense of identity and personal connection with their future profession. Such identification with the profession can contribute to their motivation, job satisfaction, and dedication to lifelong learning and professional growth.

If you have more than one paragraph, please insert a line spacing between the paragraphs. Do not insert any space before and after the paragraph. Please insert a line spacing after each paragraph, before the next section.

Regarding students' views on pharmacy as an ideal profession for a lifelong career, a considerable percentage of students (41.1% strongly agreeing and 35.6% agreeing – a total of 76.7%) expressed agreement which is in line with James et al. (2018) who obtained 75.7%. This finding suggests that students recognize the potential for long-term career prospects and stability within the pharmacy profession. It indicates that they view pharmacy as a viable and rewarding career choice with opportunities for growth and fulfilment. According to Khamis et al. (2020), implementing continuous professional development enhances students' behaviour, skills, and knowledge for lifelong learning. This enables students to achieve their career goals and ensures professional growth and opportunities throughout their lives.

Nonetheless, a considerable portion of the students (46.6%) expressed a lower level of agreement when asked if they would choose to study pharmacy again if given the chance (comprising 34.4% neutral, 7.8% disagree, and 4.4% strongly disagree). In the current scenario, most students intend to pursue further studies at the degree level especially at the beginning of their diploma journey. However, the regulations set by the Pharmacy Board of Malaysia stipulate that only those with a CGPA of 3.50 and above after completing the diploma level will qualify, while a CGPA below 3.50 may hinder their chances. It's noteworthy that only 36.7% of this cohort of students achieved a CGPA of 3.50 and above, as indicated in Table 2, which might influence the students' preferences for advancing their studies hence the lower agreement for this statement. Moreover, in our experience, not all students with a CGPA of 3.50 and above will necessarily opt to pursue further studies at the degree level.

This finding agrees with a study by Mukattash et al. (2015) who found that only 47.55% of final year pharmacy students in Jordan would choose to study pharmacy again if given the opportunity, while 31.67% would opt for a different career path. Additionally, 72% of respondents would still opt to study pharmacy due to job opportunities, service to community, pharmacy was their first choice and the experience they had while undertaking the course (Modipa & Dambisya, 2008). Meanwhile, Beedemariam et al. (2014) and indicates that despite some reservations, most students remain satisfied with their decision to pursue pharmacy as their field of study. These suggest that a significant number of students remain confident in their ability to pursue their desired career within the pharmacy field.

Moreover, the survey examined students' career aspirations, with a significant proportion (41.1% agreeing and 40.0% agreeing – a total of 81.1%) expressing a desire for a career in pharmacy. This finding further emphasizes students' alignment with their chosen profession and their intentions to pursue pharmacy as their long-term career path. Our findings align with the studies conducted by Beedemariam et al. (2014) and Wilson et al. (2006), indicating that the pharmacy profession offers a wide range of career opportunities that attract students with varying preferences and aspirations for long-term success in the field. Additionally, more than half of the respondents (56.7% - 27.8% strongly agreeing and 28.9% agreeing) expressed their strong commitment to the pharmacy profession, stating that they would not choose a different occupation even if it offered the same level of income. This finding is consistent with the results reported by Abduelkarem & Hamrrouni (2016), who obtained a similar percentage of respondents expressing the same level of dedication to the pharmacy profession.

While a small percentage of students expressed some degree of regret or uncertainty about their decision to study pharmacy, the overall findings indicate that a majority of students (with a mean score of 3.97) do not regret their choice. This aligns with the findings of Beedemariam et al. (2014) and Wilson et al. (2006), suggesting that despite the potential challenges and uncertainties, most students remain satisfied with their career choice in pharmacy. However, Joshi and Pant (2011) found that some pharmacy students expressed dissatisfaction with their decision and expressed a preference for engineering courses instead. Similarly, Abduelkarem & Hamrrouni (2016) reported that a significant proportion of their respondents believed that their decision to pursue pharmacy as a major was incorrect and expressed regret. These findings suggest that the perception of pharmacy as a favourable profession may vary in different regions, potentially influencing students' career decisions in the field of pharmacy and other health science disciplines.

Next, we examined the relationship between students' attitudes and their current CGPA. To assess students' attitudes, the scores for all eight statements were totalled and averaged, resulting in the mean total of attitude towards pharmacy as a career (Mean Total Attitude – MTA) score. We then analysed the association between MTA and CGPA to explore any potential relationship.

Table 4: Chi-Square Tests – CGPA vs MTA towards a career in pharmacy

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	31.006 ^a	36	0.705
Likelihood Ratio	34.050	36	0.562
N of Valid Cases	90		

To analyse the relationship between CGPA and Mean Total Attitude, chi-square tests were conducted. The Pearson Chi-Square and Likelihood Ratio tests both yielded p-values greater than 0.05, indicating that there is no significant association between CGPA and Mean Total Attitude scores (Table 4). The analysis of the CGPA and mean total of attitude towards pharmacy as a career score suggests that there is no significant relationship between these variables.

While the findings provide valuable insights into students' perceptions, it is important to acknowledge the limitations of this study. First, the study relied on self-reported data obtained through a survey, which may be subject to response biases or inaccuracies. The results may reflect participants' subjective perceptions rather than objective evaluations of the program. Additionally, the study focused on a specific cohort of pharmacy students and may not fully represent the views and experiences of all pharmacy students or other educational institutions. The findings may be influenced by contextual factors, such as the specific curriculum and teaching methods employed in the program under study.

CONCLUSION

The results of this study highlight a prevalent sense of pride, commitment, and alignment with the core values of the pharmacy profession among most pharmacy students. For these students, pharmacy is not merely an educational pursuit but an integral aspect of their identity, seen as a fitting and enduring career path. Despite a minority expressing reservations, overall satisfaction rates remain high (mean overall score of 4.07), emphasizing the importance of fostering a supportive educational environment that nurtures students' pride, dedication, and contentment with their chosen academic journey. Future studies should investigate deeper into the factors influencing this dissenting minority. Employing qualitative research methods can illuminate specific concerns and barriers that need to be addressed. Longitudinal research, tracking changes in students' perspectives over time, can assess the effectiveness of interventions aimed at enhancing their academic experiences. Additionally, conducting comparative studies across different institutions and cultural contexts may provide a broader perspective. This study underscores the ongoing need for research to ensure the success and meaningful contributions of pharmacy students by understanding their experiences and guiding instructional practices. Additionally, the factors contributing to lower satisfaction of the students on choosing pharmacy again as their field of study should be further investigated.

ACKNOWLEDGEMENTS

The authors expressed their gratitude to all the participants for their valuable time and sincere efforts in sharing their thoughtful responses during the survey. They also extended their appreciation to University Teknologi MARA Cawangan Pulau Pinang for facilitating the opportunity to undertake this research.

FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

AUTHORS' CONTRIBUTION

The roles and contributions of each author in this study are as follows: Othman, M.I. was responsible for conceptualization and supervision. Najib, M.N.M, Sulaiman, S. and Khalid, M.I.H.A. were in charge of methodology and formal analysis. Zamri, M.I.D., Shakri, M.S.M., and Izzudin, M.A.M. were responsible for data collection and tabulation. The manuscript was collectively written by Othman, M.I., Zamri, M.I.D., Shakri, M.S.M., and Izzudin, M.A.M. Othman, M.I. also supervised the entire research process. All authors offered valuable feedback, reviewed, and approved the manuscript.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the Authors' and Co-Authors' original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research/manuscript has not been submitted for publication nor has it been published in whole or in part elsewhere. We testify to the fact that all Authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

REFERENCES

- Abdu-Aguye, S.N., Suleiman, M.M., Shehu, A., & Mohammed, E. (2023). Factors influencing choice of a pharmacy degree and career preferences of final year pharmacy students in Northern Nigeria: A multi-institutional study. *Nigerian Journal of Pharmaceutical Research*, 18(2), 125-134.
- Abduelkarem, A.R., & Hamrouni, A. (2016). The choice of pharmacy profession as a career: UAE experience. *Asian Journal of Pharmaceutical and Clinical Research*, 9, 220-226.
- Alshehri, A., Elsawaf, L.A., Alzaid, S.F., Almogbel, Y.S., Alminggash, M.A., Almalki, Z.S., & Algarni, M.A. (2021). Factors affecting pharmacy students' decision to study in pharmacy colleges in Saudi Arabia: A cross-sectional questionnaire-based analysis. *Healthcare*, 9, 1651.
- Almaghaslah, D., Alsayari, A., Almanasef, M., & Asiri, A. (2021). A cross-sectional study on pharmacy students' career choices in the light of Saudi Vision 2030: Will community pharmacy continue to be the most promising, but least preferred, sector? *International Journal of Environmental Research and Public Health*, 18, 4589.
- Arbab, A.H., Eltahir, Y.A., Elsadig, F.S., & Yousef, B.A. (2022). Career preference and factors influencing career choice among undergraduate pharmacy students at University of Khartoum, Sudan. *Pharmacy: Journal of Pharmacy Education and Practice*, 10, 26.
- Balkhi, B., Al-Ghamdi, A.A., Alhossan, A., Alhamami, A.H., & Asiri, Y. (2020). Pharmacy students' attitude and perception toward working in community pharmacy in Saudi Arabia. *Saudi Pharmaceutical Journal*, 28, 397-402.
- Beedemariam, G., Ebro, M., Ageze, H., Weldegerima, B., Legesse, B., & Tilahun, G. (2014). Pharmacy students' attitude and future career choices: a survey of four public schools of pharmacy in Ethiopia. *Ethiopian Pharmaceutical Journal*, 30, 57-63.
- Cain, J., Campbell, T.R., Congdon, H.B., Hancock, K., Kaun, M.A., Lockman, P.R., & Evans, R.L. (2014). Pharmacy student debt and return on investment of a pharmacy education. *American Journal of Pharmaceutical Education*, 78(1), 5.
- Capstick, S.B., Green, J.A., & Beresford, R. (2007). Choosing a course of study and career in pharmacy — student attitudes and intentions across three years at a New Zealand School of Pharmacy. *Pharmacy Education*, 7, 359-373.
- Choi, Y.C., Wang, J., Zhu, Y., & Lai, W. (2021). Students' perception and expectation towards pharmacy education: a qualitative study of pharmacy students in a developing country. *Indian Journal of Pharmaceutical Education and Research*, 55, 63-69.
- Davey, A.K., Evans, A.M., & Stupans, I. (2006). Pharmacy: factors that influence the choice of career and study options. *Pharmacy Education*, 6, 21-26.
- Gargalicano, C.A., De Oca, P.R., Galicia, H.J., Arosa, A.A., Radadon, S.T., & Gargalicano, F.G. (2023). Factors that influence career choice of graduating pharmacy students. *International Journal of Multidisciplinary: Applied Business and Education Research*, 4(2), 663-670.
- Hanna, L., Askin, F., & Hall, M. (2016). First-year pharmacy students' views on their chosen professional career. *American Journal of Pharmaceutical Education*, 80.
- Hasan, S.S., Kwai Chong, D.W., Ahmadi, K., Se, W.P., Hassali, M.A., Hata, E.M., Hadi, M.A., Sridhar, S.B., Ahmed, S.I., Yean, L.B., & Efendie, B. (2010). Influences on Malaysian pharmacy students' career preferences. *American Journal of Pharmaceutical Education*, 74(9), 166.
- Hussain, M., Sahudin, S., Fauzi, S.M., Manaf, N.A., & Wahab, M.H.A. (2021). Exploring pharmacy students chosen career path: a year-on-year perspective. *Higher Education*, 81(9), 1257-1272.
- Isah, A., Mosanya, A.U., Enwereakuh, U.A., Ma'aji, H.U., Ukoha-Kalu, O.B., Ibezim, I.C., Anene-Okeke, C.G., & Ubaka, C.M. (2021). Choice of pharmacy, professional perceptions, and career plans of students in three Nigerian schools of pharmacy. *Pharmacy Education*, 21, 65-72.
- James, P.B., Batema, M.N.P., Bah, A.J., Brewah, T.S., Kella, A.T., Lahai, M. & Jamshed, S.Q. (2018). Was pharmacy their preferred choice? assessing pharmacy students' motivation to study pharmacy, attitudes and future career intentions in Sierra Leone. *Health Professions Education*, 4, 139-148.

- Jesson, J.K., Wilson, K.A., Langley, C.A., & Hatfield, K. (2008). Images of pharmacy as a career: a survey among groups of year 12 students at school. *The Pharmaceutical Journal*, 280, 183-184.
- Joshi, Y. & Pant, R. (2011). A study to evaluate the perception of pharmacy students towards the pharmacy profession. *International Journal of Pharmaceutical Sciences and Research*, 2(12), 3114-3117.
- Khamis, S., Abdi, A.M., & Basgut, B. (2020). Preparing lifelong learners for delivering pharmaceutical care in an ever-changing world: a study of pharmacy students. *BMC Medical Education*, 20, 502.
- Knapp, K. (1999). Charting the demand for pharmacists in the managed care era. *Journal of the American Pharmaceutical Association*, 39(4), 531-536.
- Kokane, J., & Avhad, P.S. (2016). Role of pharmacist in health care system. *The Journal of Community Health Management*, 3(1), 37-40.
- Lebovitz, L. & Eddington, N.D. (2019). Trends in the pharmacist workforce and pharmacy education. *American Journal of Pharmaceutical Education*, 83.
- Loo, J.S., Lim, S.W., Ng, Y.K., & Tiong, J.J. (2017). Pharmacy students in private institutions of higher education: motivating factors when studying pharmacy and influences on university choice. *International Journal of Pharmacy Practice*, 25(6), 429-437.
- Modipa, S.I. & Dambisya, Y.M. (2008). Profile and career preferences of pharmacy students at the University of Limpopo, Turfloop Campus, South Africa. *Education for Health*, 20(3), 1-9.
- Mukattash, T.L., Nuseir, K.Q., Biltaji, E., Jarab, A.S., & Alefan, Q. (2015). Students' perceptions of pharmacy as a specialization and their future career, a cross sectional study of final year pharmacy students in Jordan. *Jordan Journal of Pharmaceutical Sciences*, 8(3), 195-205.
- Musa, A., Magaji, M.G., & Bello, R.M. (2021). Assessment of awareness of pharmacy profession as a career among secondary school students in Kaduna state, Nigeria. *Pharmacy Education*, 21, 803-809.
- Ooi, G.S., Ng, Y.P., Choo, J.Y., Balasubramanian, G.P., Paruchuri, S., Low, C.S., & Pillay, T.S. (2021). Future career preferences of final year Bachelor of Pharmacy Students upon graduation from public and private universities in the northern region of Malaysia. *Systematic Reviews in Pharmacy*, 12, 753-760.
- Othman, M.I., Najib, M.N.M., & Sulaiman, S. (2023). Forced transition into online assessments: exploring perceptions and challenges amongst pharmacy students. *International Journal of Modern Education*, 5(17), 228-243.
- Othman, M., Sulaiman, S., Mohd Najib, M., & Wan Ismail, W. (2022a). Forced online and distance learning (ODL) during Covid-19 pandemic: Revealing students' perceptions and experiences. *Asian Journal of University Education*, 18(4), 894-905.
- Othman, M.I., Sulaiman, S., Mohd Najib, M.N., & Wan Ismail, W.N. (2022b). COVID-19 transmission and prevention: Knowledge and awareness among Diploma in Pharmacy students. *International Journal of Education, Psychology and Counseling*. 7(46), 430-448.
- Palombi, L., Kading, M.L., & Hayes, C.J. (2013). The public health pharmacist and the role of the pharmacy curriculum: A call to action. *Currents in Pharmacy Teaching and Learning*, 5, 477-482.
- Pekrun, R., Goetz, T., Perry, R.P., Kramer, K., Hochstadt, M., & Molfenter, S. (2004). Beyond test anxiety: development and validation of the Test Emotions Questionnaire (TEQ). *Anxiety, Stress & Coping*, 17(3), 287-316.
- Pimentel, J. L. (2010). A note on the usage of Likert Scaling for research data analysis. *USM R & D*, 18(2), 109-112.
- Rosenthal, M.M., Austin, Z., & Tsuyuki, R.T. (2010). Are pharmacists the ultimate barrier to pharmacy practice change? *Canadian Pharmacists Journal / Revue des Pharmaciens du Canada*, 143, 37-42.
- Sajjad, B., Ishaq, R., Iqbal, Q., & Saleem, F. (2021). A progressive assessment of pharmacy undergraduates' motivation and satisfaction towards pharmacy as a professional choice. *Journal of Pharmacy Practice and Community Medicine*, 7(1), 14-18.
- Shen, G., Fois, R.A., Nissen, L.M., & Saini, B. (2014). Course experiences, satisfaction and career intent of final year pre-registration Australian pharmacy students. *Pharmacy Practice*, 12(2), 392.

- Silverthorne, J., Price, G., Hanning, L., Scanlan, J.C., & Cantrill, J.A. (2003). Factors that influence the career choices of pharmacy undergraduates. *Pharmacy Education*, 3, 161-167.
- Siracuse, M.V., Schondelmeyer, S., Hadsall, R.S., & Schommer, J.C. (2004). Assessing career aspirations of pharmacy students. *The American Journal of Pharmaceutical Education*, 68, 1-12.
- Taber, K.S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48, 1273-1296.
- Ubaka, C.M., Ochie, U.M., & Adibe, M.O. (2013). Student pharmacists' career choices: a survey of three Nigerian schools of pharmacy. *Pharmacy Practice*, 11, 149 - 155.
- Wigger, U., & Mrtek, R.G. (1994). Use of Q-technique to examine attitudes of entering pharmacy students toward their profession. *The American Journal of Pharmaceutical Education*, 58, 8-15.
- Wilson, K., Jesson, J., Langley, J., Hatfield, K. & Clarke, L. (2006). Pharmacy undergraduate students: career choices and expectations across a four-year degree programme. *London: Royal Pharmaceutical Society of Great Britain*, 74-93.
- Yousif, M.A., Eldalo, A.S., Albarraq, A.A., Sirag, N., & Ibrahim, M.S. (2014). Pharmacy students' perception about education and future career. *Archives of Pharmacy Practice*, 5, 72-77.