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Original Research

Knowledge and Attitude of Pharmacy Students Regarding Geriatrics Care and Elderly in Saudi Arabia

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Abstract

Background: The global increase in the elderly population necessitates that pharmacy students are well-equipped to meet the unique healthcare needs of older adults. In Saudi Arabia, there is limited information on pharmacy students' knowledge and attitudes towards geriatric care. **Objectives:** This study aims to evaluate the knowledge and attitudes of PharmD students in Saudi universities regarding geriatric care and elderly patients. **Methods:** A cross-sectional survey was conducted among PharmD students from various universities in Saudi Arabia. The survey included sections on demographics, knowledge of geriatrics, and attitudes towards elderly patients. Knowledge was assessed through a series of multiple-choice questions, and attitudes were measured using a Likert scale. Data were analyzed using descriptive statistics and inferential tests to determine the significance of differences between groups. **Results:** Out of 141 respondents, 89 completed the survey. The average knowledge score was 8 (SD 1.6), with 58% of students demonstrating high knowledge levels. A positive attitude towards elderly patients was prevalent, with over half of the respondents believing in societal responsibility for elderly care. Majority of high-knowledge respondents were male, fourth-year students, and those with prior experience with older adults. However, the differences between high and moderate to low knowledge groups were not statistically significant. **Conclusion:** The study reveals that many PharmD students have moderate to low knowledge about geriatric, despite having a generally positive attitude towards elderly patients. It is recommended that policymakers recruit geriatricians into health colleges to advocate for and enhance geriatric content in pharmacy programs.

Keywords: Pharmacy Education, Geriatrics, PharmD, Education, Curriculum Design

INTRODUCTION

In January 2022, Saudi Arabia introduced the Elderly Rights and Care Act. This legislation focuses on empowering older adults by ensuring they live in environments that respect their rights and uphold their dignity.[1] It also aims to raise societal awareness and educate the public about the rights of elderly individuals living in Saudi Arabia, among other objectives. Currently, the Kingdom of Saudi Arabia has 1.5 million people aged 60 and above, accounting for about 4% of the total Saudi population. According to recent United Nations statistics, this number is projected to rise dramatically to 14 million by 2050, making up 16% of the population.[2,3] As part of the Saudi Vision 2030, one of the goals is to extend the average life expectancy to 78 years by 2030.[4,5] Presently, Saudi Arabia is predominantly a young nation, with 70% of its citizens being 30 years old or younger. Despite this youthful demographic, the majority of hospital admissions are for older adult patients. Bridging the generational gap is crucial to ensure that high-quality care is provided to the elderly population.

The geriatric population possesses distinctive characteristics that set them apart from other age groups.[6] As individuals age, there is a decline in various organ functions, such as those of the kidneys and liver, which are crucial for metabolizing and clearing medications.[6] Additionally, pharmacodynamics and pharmacokinetics in elderly patients differ significantly from younger individuals and must be carefully considered when prescribing medications to ensure safety and efficacy.[7] Furthermore, older adults are more susceptible to multiple chronic conditions and often engage in polypharmacy, heightening the risk of adverse drug reactions, drug-drug interactions, and drug-disease interactions.[8,9] It is vital for healthcare providers to comprehend these complexities to deliver the highest standard of care to older patients.

Education plays a crucial role in facilitating a smooth transition and advocating for the rights of the elderly. Recent research indicates that medical interns possess limited knowledge about geriatric care.[10] Similar findings were observed in a study involving nursing students.[11] Despite these findings, geriatric care is not a required subject by accreditation bodies like the Accreditation Council for Pharmacy Education (ACPE).[12] Instead, it is suggested under broader topics such as special populations, which include pregnant women and pediatric patients.[12] Currently, there is a noticeable lack of information on the extent of geriatric knowledge among healthcare providers and students in Saudi Arabia.

Therefore, this study aims to evaluate the knowledge of Pharm.D students at universities in Saudi Arabia. Additionally, it seeks to assess the attitudes of these Pharm.D students toward elderly patients. Achieving these two goals will significantly contribute to the existing literature on geriatric education that's currently lacking, particularly within the context of pharmacy schools in Saudi Arabia.

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METHODS

Study Design

This study is a cross-sectional survey-based study.

Settings

Participants were recruited from pharmacy schools across various universities throughout Saudi Arabia. The primary researcher reached out to faculty members at these universities—either directly or through colleagues with existing contacts—to help disseminate the survey to all pharmacy students. Furthermore, pharmacy students were encouraged to share the survey with their peers both within and outside their colleges. Additionally, the main author sought the assistance of volunteer students to distribute the survey during a local conference attended by over 2,000 Pharm.D students in Saudi Arabia. This strategy was aimed at increasing the survey's reach and ensuring broader and more representative findings.

Population

The study targeted all pharmacy students across all academic levels in the Pharm.D program, including those in their internship year. Participants needed to be proficient in reading and writing in English to complete the survey. There were no exclusions based on GPA or specific university affiliation.

Sample Size Calculation

The estimated number of pharmacy students in Saudi Arabia is 6,000 students Using the following formula Sample Size (n) = [(Z^2) * (p) * (1-p)] / E^2). If we consider a 95% confidence interval and 5% precision. After applying the equation.

Thus, the sample size required to achieve a 95% confidence interval with a 5% margin of error for a population of around 6,000 is equal to 385.

Study Tool

The survey was structured into three main sections. The first section collected demographic data, including age, gender, academic level, the university attended, prior experiences with geriatrics or older adults, specific coursework on geriatrics, and any experience as a caregiver for a family member. The second section assessed the participants' knowledge regarding geriatric care and essential clinical skills required for working with the elderly. This section comprised 10 multiple-choice questions developed by two experts in pharmacy and geriatrics. The questions varied in type, including recall questions, clinical scenarios, and fundamental questions about the biology and physiology of aging. To ensure consistency and validity, a test-retest analysis was conducted with five students. Each question was scored as one point, with a maximum possible score of 10. Then knowledge levels were classified into two categories: high knowledge (scores of 8 and above) and moderate to low knowledge (scores of 7 and below). These cutoff points were chosen based on the question difficulty. The third section focuses on evaluating attitudes towards the elderly. This segment uses a modified version of a tool originally developed in 1998 by Reuben, David B., and colleagues.[13] It consists of 14 questions using a Likert scale to measure attitudes towards the older adult population. However, two of these questions were excluded because they were not relevant to the Saudi Arabian context. For each statement, participants could choose from five response options: Strongly Disagree, Somewhat Disagree, Neutral, Somewhat Agree, and Strongly Agree.

Statistical Analysis

The questionnaire data were analyzed using SAS on Demand, a publicly available software for educators and students. For continuous variables, the mean and standard deviation were calculated, while categorical variables were expressed as frequencies and percentages. To determine statistical differences in demographic variables between the high and moderate to low knowledge levels, a chi-square test was conducted with a significance level set at 0.05.

Ethical Considerations

The study is conducted after getting the approval from the IAU Scientific Committee's Institutional Review Board (IRB) with IRB # is IRB-2023-05-550, which was issued on December 12th, 2023. The survey was anonymous, with no personal data collected beyond what participants consented to provide. Participants were fully informed about the study details and chose to participate voluntarily. They also retained the right to withdraw from the study at any time without facing any repercussions.

RESULTS

Demographic Characteristics

A total of 272 students viewed the survey, with 141 responses received. Of these, 89 students completed the questionnaire. The average time taken to complete the survey was six minutes. The participants' average age was 22 years old. Among the respondents, 52% were female, and the majority (58.5%) were third-year students in a six-year Pharm.D program. Nearly 80% of the pharmacy students were from Imam Abdulrahman Bin Faisal University (IAU), followed by 7% from Hafer Albatin University. The remaining universities were represented by a single student each. **Table 1** details the demographic characteristics in relation to the knowledge variable.

Knowledge

Among all participants, the average knowledge score was 8 (SD 1.6), indicating a high level of knowledge. When categorizing the results, 58% of participants scored 8 or higher, which we classified as a high level of knowledge, while 42% scored in the moderate to low knowledge range. Notably, the majority of those with high knowledge were male (53%), fourth-year Pharm.D students (62%), had prior experience with older adults (54%), and about half of them acquired this knowledge through coursework in their Pharm.D program. The differences between the high knowledge group and the moderate to low knowledge group were not statistically significant.

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Table 1. Demographic Characteristics of PharmD students n=89			
Characteristics	**High Knowledge Level**	**Moderate to low Knowledge level**	**P value**
Age			
means (SD)	22 (1.96)	22 (2.30)	
Gender			
Female	24 (46.15)	19 (51.35)	0.6287
Male	28 (53.85)	18 (48.65)	
Educational level			
2nd year	0	2 (5.41)	0.2758
3rd year	1 (1.92)	3 (8.11)	
4th year	32 (61.54)	20 (54.05)	
5th year	13 (25.00)	9 (24.32)	
Interns	6 (11.54)	3 (8.11)	
Affiliated University			
Imam Abdulrahman Bin Faisal University	45 (86.53)	26 (70.27)	
Hafer Albatin University	1 (1.92)	5 (13.51)	
Jazan University	1 (1.92)	3 (8.10)	
King Faisal University	1 (1.92)	3 (8.10)	
King Saud University	1 (1.92)	0	
Taif University	1 (1.92)	0	
Umm AlQura University	1 (1.92)	0	
Tabouk Univeristy	1 (1.92)	0	
Prior experience with older adults			
Yes	28 (53.85)	18 (48.65)	0.6287
No	24 (46.15)	19 (51.35)	
The duration of the proir experience working with older adults			
Less than 3 months	19 (36.54)	11 (29.73)	0.3774
3-6 months	5 (9.62)	4 (10.81)	
6-12 months	0	2 (5.41)	
More than a year	4 (7.69)	1 (2.70)	
NA	24 (46.15)	19 (51.35)	
Number of courses taking in the pharmacy school?			
Part of a course	26 (50.00)	19 (51.35)	0.9674
One course	19 (36.54)	12 (32.43)	
More than one course	7 (13.47)	6 (16.22)	

Attitude Towards Older Adults*:*

As illustrated in **Figure 1**, the majority of respondents hold a positive attitude towards the elderly population. For example, half of the student respondents feel that elderly patients are enjoyable to be around, and 35% prefer seeing elderly patients over younger ones. Nearly 80% of pharmacy student respondents agree or strongly agree that it is society's responsibility to provide care for elderly patients. More than half of the participants disagree or strongly disagree with the statement that treating older adults is hopeless. Additionally, 80% of the pharmacy student respondents enjoy listening to elderly patients and find their life experiences interesting.

DISCUSSION

This study aimed to explore pharmacy students' knowledge and attitudes towards the elderly population in Saudi Arabia, an area with limited prior research. Additionally, assessing the attitudes of pharmacy students was a key objective. To the best of our knowledge, this is the first study to examine and evaluate the knowledge and attitudes of PharmD students concerning the elderly in Saudi universities.

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The findings from our survey indicate that a significant number of pharmacy students possess limited basic knowledge about geriatrics and elderly, a trend observed in various countries and disciplines.[14,15] Although Saudi Arabia is predominantly a young country, with 70% of the population under 30, the majority of patients healthcare providers care for are older adults, highlighting the critical need for geriatric knowledge among healthcare professionals. Furthermore, most participants reported that their knowledge of geriatrics was covered only as part of a course during their Pharm.D studies, underscoring the necessity of incorporating this topic into the Pharm.D curriculum in Saudi Arabia.

On the other hand, among the 12 statements evaluating Pharm.D students' attitudes towards the elderly in Saudi society, the majority exhibited a positive point of view towards geriatric patients. This favorable attitude could stem from cultural, religious, or personal influences.[16] Such a positive perspective aids educators in developing and delivering relevant scientific content effectively. Furthermore, over half of the respondents believe that society has a responsibility to care for the elderly, aligning with previous findings.[14]

Based on our limited findings, we propose several recommendations to enhance the geriatric content in the PharmD curriculum in Saudi Arabia. Firstly, it is essential to

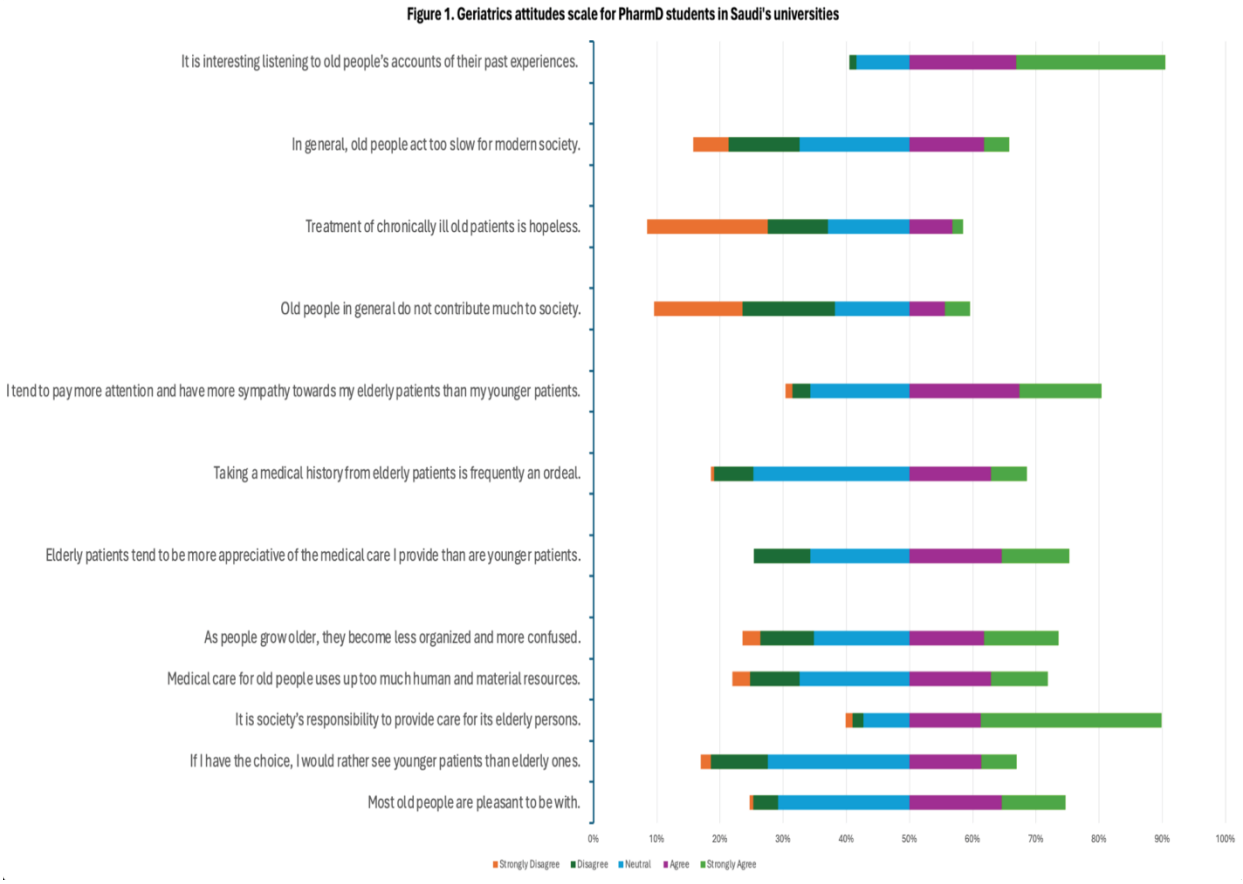

Figure 1. Geriatrics attitudes scale for Pharm.D students in Saudi's universities

recruit clinicians with a geriatrics background into pharmacy schools. This will aid in providing healthcare services to the elderly, conducting research on geriatric issues, trends, and advocating for the rights of older adults in healthcare and society. Secondly, establishing interprofessional development programs for those specializing in geriatrics curriculum design like the program established by Virginia Commonwealth University.[17] These programs should provide necessary training to healthcare providers from various fields, such as physicians, nurses, and physiotherapists. Such initiatives will produce well-trained healthcare professionals and academicians capable of creating and updating curricula across different health colleges in Saudi Arabia. Thirdly, the pharmacy curriculum should be updated to include at least one comprehensive course on geriatrics, addressing all relevant problems, issues, and trends. This update will improve healthcare quality by reducing adverse drug reactions, drug-drug interactions, and inappropriate medication prescriptions prevalent among older adults in this community. Lastly, we recommend establishing a forum for individuals interested in geriatric education from various fields to regularly exchange innovative teaching strategies and assessment methods in higher education, and to publish best practices within Saudi universities.

Our study has several strengths. Firstly, to the best of our

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knowledge, this is the first study to examine and evaluate geriatric knowledge among pharmacy students in Saudi Arabia. Secondly, it employs a validated tool to assess participants' attitudes towards older adults. However, there are also several limitations. The study utilized a new knowledge test that has not been previously used and requires validation in different cultures and student groups. Additionally, the small sample size limits the generalizability of the results across the entire Kingdom, potentially due to the survey length and the busy schedules of Pharm.D students. Lastly, recall bias may have occurred due to the nature of the test, students' rankings, and their academic year in the Pharm.D program.

CONCLUSION

Our study concludes that a significant number of Pharm.D students possess moderate to low knowledge about geriatrics, though most exhibit a positive attitude towards elderly patients. It is recommended that policymakers recruit geriatricians into health colleges to enhance and advocate for the inclusion of geriatric content in their programs.

AUTHORS' CONTRIBUTIONS

Alotaibi FM conceptualize the study design, run the statistical analysis, and wrote the paper.

CONFLICT OF INTEREST

The author declares no conflict of interest

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