(RESEARCH ARTICLE)

Knowledge and attitudes of undergraduate medical students towards palliative Care in Karachi, Pakistan

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Abstract

Background: Palliative care is a critical component of healthcare, especially for patients with life-limiting illnesses. However, the knowledge and attitudes of future healthcare providers, particularly medical students, towards palliative care remain underexplored in low- and middle-income countries like Pakistan.

Objective: This study aims to assess the knowledge and attitudes of final-year medical students in Karachi, Pakistan, towards palliative care and explore the association of demographic factors with these perceptions.

Methods: A cross-sectional, questionnaire-based study was conducted from July 2022 to July 2023, involving 400 final-year medical students from five universities in Karachi. The participants were selected using a non-probability convenience sampling method. Data were collected through an online questionnaire assessing knowledge and attitudes towards palliative care. The association between demographic factors and students' knowledge and attitudes was analyzed using SPSS version 26.

Results: The study population consisted of 70.8% female and 29.3% male students, with 79.3% aged 20-25 years. A majority (53.7%) of participants demonstrated good knowledge of palliative care, while 46.3% had poor knowledge. Attitudinal analysis revealed that 74.7% had a moderate attitude towards palliative care, 24.3% had a favorable attitude, and 1.0% had an unfavorable attitude. Significant associations were found between university type, upbringing, and national origin with both knowledge and attitudes. Students from government universities and those with urban upbringing were more likely to have good knowledge and favorable attitudes. Additionally, gender was significantly associated with attitudes, with females showing more favorable attitudes towards palliative care (p<0.001).

Conclusion: The study highlights the need for targeted educational interventions to improve knowledge and attitudes towards palliative care among medical students in Pakistan. The findings suggest that demographic factors play a crucial role in shaping students' perceptions, underscoring the importance of curriculum reforms that address these disparities to prepare future healthcare providers for delivering effective palliative care.

Keywords: Palliative Care; Knowledge; Attitude; Quality of Life

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1. Introduction

Palliative care, as defined by the World Health Organization (WHO), is an approach that improves the quality of life of patients and their families who are facing life-threatening illnesses by preventing and relieving suffering through early identification and impeccable assessment and treatment of pain and other physical, psychosocial, and spiritual problems [1]. Globally, the need for palliative care is immense and growing. Globally, around 56.8 million people require palliative care per year, and among them, 78% are from low- and middle-income countries (LMICs) [2]. Despite this significant need, only about 14% of these individuals receive the palliative care they need, with services being heavily concentrated in high-income countries [3]. This stark disparity highlights the global inequity in healthcare services and the critical need for developing robust palliative care systems, particularly in LMICs.

In Pakistan, the healthcare system faces severe challenges, including insufficient public healthcare facilities, poorly regulated private sectors, and low government spending on health, which currently stands at about 1.2% of the GDP [4]. The country's healthcare infrastructure is further strained by a high burden of disease, with non-communicable diseases (NCDs) such as cancer, cardiovascular diseases, and chronic respiratory diseases accounting for 58% of all deaths [5]. Despite the high prevalence of life-limiting conditions, palliative care services are almost non-existent in Pakistan, with only a handful of facilities offering such care, primarily in large urban centers. This translates to an alarming ratio of 1 palliative care service per 90 million people, leaving the vast majority of the population without access to essential end-of-life care [6].

The cultural context in Pakistan also plays a significant role in the delivery of palliative care. There is a strong cultural emphasis on family-based care, which often delays the recognition of the need for professional palliative care services. Additionally, the lack of awareness about palliative care among both healthcare providers and the public exacerbates the problem, leading to inadequate management of symptoms and poor quality of life for patients with terminal illnesses [7].

Despite these challenges, there have been some efforts to introduce palliative care services in Pakistan, albeit on a very limited scale. These initiatives are often hindered by the lack of trained healthcare professionals, insufficient resources, and cultural barriers that prevent the acceptance of palliative care as a necessary component of the healthcare system [8].

Given the critical need for palliative care, the incorporation of palliative care education into medical curricula is of paramount importance. Medical students are the future healthcare providers who will be responsible for delivering palliative care to patients in need. Studies have shown that the integration of palliative care education into medical curricula significantly improves students' knowledge and attitudes towards palliative care, leading to better patient outcomes [9]. For instance, in the UK, medical students who received palliative care training reported improved confidence in managing end-of-life care, communicating with patients and their families, and working within multidisciplinary teams [10]. However, in Pakistan, palliative care education is not formally integrated into medical curricula, resulting in healthcare professionals who are ill-equipped to meet the complex needs of patients requiring palliative care [6].

The attitudes and knowledge of medical students towards palliative care are critical determinants of the quality of care they will provide in the future. Research conducted across various countries indicates that positive attitudes towards palliative care are associated with better patient outcomes, including improved symptom management and enhanced quality of life for patients [11]. However, these attitudes can fluctuate during medical training. A longitudinal study in the UK found that while students generally started their medical education with positive attitudes towards palliative care, these attitudes became more negative during the preclinical years, only to improve again during clinical rotations [12]. This highlights the need for continuous reinforcement of palliative care principles throughout medical education to ensure that future healthcare providers are adequately prepared to deliver high-quality palliative care.

Despite the global recognition of the importance of palliative care, there is a significant gap in research on the knowledge and attitudes of medical students in LMICs, including Pakistan. A systematic review of palliative care in South Asia highlighted the scarcity of research in this area, particularly in Pakistan, where the healthcare system is already struggling to cope with the demands of a growing population [13]. Studies conducted in neighboring countries like India and Bangladesh have revealed that healthcare students often have limited knowledge of palliative care and hold misconceptions about its purpose and scope [14, 15].

This lack of awareness and understanding underscores the urgent need for comprehensive palliative care education in medical schools across the region. This study aims to address these gaps by assessing the knowledge and attitudes of

undergraduate medical students in Karachi, Pakistan, towards palliative care. By providing a detailed analysis of current educational practices and student perceptions, this research will contribute to the development of more effective palliative care education programs in Pakistan. The findings of this study could have significant implications for the future of palliative care in the country, potentially leading to improved patient care outcomes and a more compassionate healthcare system that adequately addresses the needs of terminally ill patients.

2. Methods

2.1. Study Design

This study was a cross-sectional, questionnaire-based survey conducted over a one-year period, from July 2022 to July 2023, among final-year medical students in Karachi, Pakistan. The study aimed to assess the knowledge and attitudes of these students towards palliative care.

2.2. Study Population

The study population comprised 400 final-year (5th-year MBBS) medical students from five universities in Karachi. These included three private institutions—Bahria University Health Sciences (BUHS), Ziauddin University, and The Aga Khan University Hospital—and two public institutions—Dow Medical University and Jinnah Sindh Medical University. An accidental sampling method was used, where participants self-selected by voluntarily responding to an open survey link distributed to all eligible students. Only those students who provided informed consent were included in the study.

2.3. Ethical Considerations

The study protocol was approved by the Ethics Research Committee of Bahria University Health Sciences Karachi (BUHS) under approval number ERC 49/2022. Informed consent was obtained from all participants before their inclusion in the study, and confidentiality was ensured by anonymizing participant data using numerical identifiers during data analysis.

2.4. Sample Size Calculation

The sample size was determined using World Health Organization (WHO) software for sample size calculation. This calculation was based on an anticipated 50% level of knowledge about palliative care, as suggested by previous studies [16,17]. A 5% level of significance was considered, with a precision of 6.5% to accommodate for variability in response accuracy and the anticipated sample size limitations. This decision was made to account for potential attrition due to incomplete responses, which was estimated at around 10%. The final sample size was set at 400 students to balance these practical constraints and increase the reliability of the study's results.

2.5. Data Collection

Data were collected using an online questionnaire developed with Google Forms. The questionnaire comprised three main sections:

- Demographic Information: This section collected data on participants' age, gender, institution, location, and nationality.
- Knowledge Assessment: This section included 36 true/false questions designed to assess the participants' knowledge of palliative care. A scoring system was employed, where each correct answer was awarded a score of '1' and each incorrect answer a score of '0'. The overall cut-off score for categorizing participants as having good or poor knowledge was set at 22, based on preliminary analysis from a pilot test to ensure a meaningful distinction between knowledge levels.
- Attitude Assessment: This section contained 30 questions rated on a 5-point Likert scale, designed to evaluate participants' attitudes towards palliative care.

The questionnaire underwent a pre-test with 15 participants to evaluate its clarity, reliability, and relevance. Based on the feedback, minor adjustments were made to improve question comprehension. The internal consistency of the questionnaire was assessed using Cronbach's alpha, which yielded a value of 0.74, indicating acceptable reliability.

2.6. Data Dissemination

The survey link was distributed electronically to all final-year medical students across the five universities via institutional email addresses and student groups on social media platforms. This broad dissemination ensured that all eligible students had an equal opportunity to participate, reinforcing the study's inclusive approach.

2.7. Data Analysis

Data were entered and analyzed using SPSS version 26 (IBM Corp., Armonk, NY, USA). Descriptive statistics were employed to summarize the demographic characteristics, as well as the knowledge and attitudes of the participants towards palliative care. The chi-square test was used to assess the associations between demographic variables and participants' knowledge and attitudes. A p-value of <0.05 was considered the threshold for statistical significance

3. Results

Table 1 shows the baseline characteristics of the study participants. The study population predominantly comprised female participants (n=283, 70.7%) and students aged 20-25 years (n=317, 79.3%). A majority of the students were enrolled in government universities (n=249, 62.3%) and reported an urban upbringing (n=332, 83.0%). Nearly all participants were of Pakistani origin (n=389, 97.3%), with a small minority being non-Pakistani (n=11, 2.7%).

Table 1 Distribution of baseline characteristics among the participants (N=400)

Baseline Characteristics	n	%
Gender		
Female	283	70.7%
Male	117	29.3%
Age		
20-25	317	79.3%
35-40	83	20.7%
Medical University type		
Government	249	62.3%
Private	151	37.7%
Upbringing		
Rural	68	17.0%
Urban	332	83.0%
Origin Prior to joining		
Pakistani	389	97.3%
Non-Pakistani	11	2.7%

Table 2 shows the assessment of knowledge regarding various factors in palliative care among the study participants. Participants demonstrated a high level of understanding of several key aspects of palliative care, with the majority correctly identifying that it is a team-based approach (n=362, 90.5%), that it can be administered at home (n=358, 89.5%), and that its goals include helping patients better understand treatment options (n=343, 85.8%) and improving daily activities (n=346, 86.5%). However, misconceptions were also common; a significant number of students incorrectly believed that palliative care aims to cure serious illnesses (n=253, 63.2%), focuses only on physical symptoms (n=249, 62.3%), and is exclusively for people in the last six months of life (n=145, 36.3%). Despite these misunderstandings, a large proportion recognized that palliative care helps the whole family cope with serious illness (n=301, 75.3%) and emphasized its role in making informed decisions about treatment cessation (n=318, 79.5%).

Table 2 Assessment of knowledge regarding palliative care in final year medical students of Pakistan (N=400)

Criteria	TRUE n (%)	FALSE n (%)
Goals and Scope of Palliative Care		
A goal of palliative care is to address any psychological issues brought up by serious illness.	290 (72.5%)	110 (27.5%)
A goal of palliative care is to address any spiritual issues associated with serious illness.	175 (43.7%)	225 (56.3%)
A goal of palliative care is to address any social issues related to having a serious illness, such as community involvement and relationships.	230 (57.5%)	170 (42.5%)
A goal of palliative care is to help people better understand their treatment options.	343 (85.8%)	57 (14.2%)
A goal of palliative care is to improve a person's ability to participate in daily activities.	346 (86.5%)	54 (13.5%)
A goal of palliative care is to prolong life for people with serious illness.	224 (56.0%)	176 (44.0%)
A goal of palliative care is to cure serious illness.	253 (63.2%)	147 (36.8%)
Misconceptions and Misunderstandings		
Addressing feelings of depression brought up by serious illness is not a part of palliative care.	258 (64.5%)	142 (35.5%)
Palliative care focuses exclusively on physical symptoms.	249 (62.3%)	151 (37.7%)
When people receive palliative care, they must stop treatments aimed at curing their illness.	146 (36.5%)	254 (63.5%)
Hospice care is another name for palliative care.	138 (34.5%)	262 (65.5%)
Palliative care is exclusively for people who are in the last six months of life.	145 (36.3%)	255 (63.7%)
Palliative care is specifically for people with cancer.	242 (60.5%)	158 (39.5%)
Palliative care encourages people to stop treatments aimed at curing their illness.	123 (30.7%)	277 (69.3%)
Palliative care is not designed to address practical issues (for example, housing, transportation, finances, and insurance) associated with serious illness.	141 (35.3%)	259 (64.7%)
Delivery and Timing of Palliative Care		
People can receive palliative care at any time during a serious illness.	217 (54.3%)	183 (45.7%)
Palliative care can have the most impact when it starts at the time a serious illness is diagnosed.	210 (52.5%)	190 (47.5%)
People can receive palliative care at home.	358 (89.5%)	42 (10.5%)
People must be in the hospital to receive palliative care.	280 (70.0%)	120 (30.0%)
Palliative care is designed specifically for older adults.	277 (69.3%)	123 (30.7%)
In order to receive palliative care, people must have been diagnosed with a serious illness for at least 2 months.	131 (32.7%)	269 (67.3%)
In order to receive palliative care, people must have been hospitalizedfor their serious illness.	111 (27.7%)	289 (72.3%)
Roles and Team Dynamics in Palliative Care		
Palliative care is a team-based approach to care.	362 (90.5%)	38 (9.5%)
A health care provider must be a physician in order to be on a palliative care team.	111 (27.7%)	289 (72.3%)
There is a specific test doctors have to pass in order to become a palliative care doctor.	236 (59.0%)	164 (41.0%)
When people receive palliative care, they must give up their other doctors.	198 (49.5%)	202 (50.5%)

Palliative care helps the whole family cope with a serious illness.	301 (75.3%)	99 (24.7%)
Improving communication among people, their family, and their healthcare team is a focus of palliative care.	147 (36.8%)	253(63.2%)
People can learn more about their illness from palliative care professionals.	341 (85.3%)	59 (14.7%)
Palliative care helps people decide if and when to stop treatments aimed at curing their illness.	318 (79.5%)	82 (20.5%)
Palliative care ends when a person with serious illness dies.	134 (33.5%)	266 (66.5%)

Figure 1 shows the overall knowledge levels of the participants. Out of the 400 participants, 53.7% (n=215) were classified as having "Good Knowledge" with a score greater than 21, while the remaining 46.3% (n=185) were classified as having "Poor Knowledge" with a score of 21 or lower
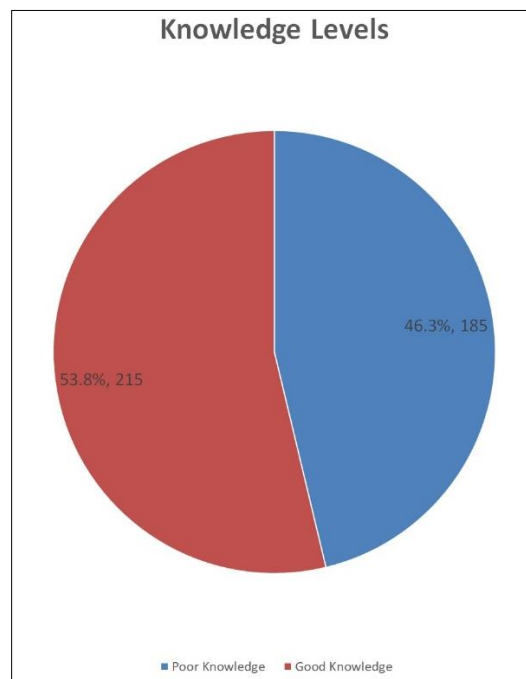

Figure 1 Distribution of overall knowledge level among the participants (N=400)

3.1. *Calculating the correct answers as '1' and wrong answers as '0'

Participants generally exhibited positive attitudes towards palliative care, with a majority agreeing that providing care to a dying person is a worthwhile experience (n=171, 42.7% agree; n=160, 40.0% strongly agree) and supporting the involvement of family members in the physical care of the dying person (n=308, 77.0%). A significant number felt that dying persons should receive honest answers about their condition (n=287, 71.8% agree), and that care should extend to the family throughout grief and bereavement (n=216, 54.0% agree; n=126, 31.5% strongly agree). However, some discomfort was noted, as many participants expressed unease about discussing death (n=223, 55.7%) and forming close relationships with dying individuals (n=172, 43.0% agree; n=116, 29.0% strongly agree).

Table 3 Assessment of attitude regarding palliative care in final year medical students of Pakistan (N=400)

Attitude level	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
Attitudes Toward Caring for the Dying					
Giving care to the dying person is a worthwhile experience	17 (4.3%)	22 (5.5%)	30 (7.5%)	171 (42.7%)	160 (40.0%)
I would not want to care for a dying person	53 (13.3%)	200 (50.0%)	41 (10.3%)	99 (24.7%)	7 (1.7%)
I would hope the person I'm caring for dies when I am not present	15 (3.7%)	156 (39.0%)	60 (15.0%)	158 (39.5%)	11 (2.8%)
I am afraid to become friends with a dying person	21 (5.3%)	56 (14.0%)	82 (20.5%)	231 (57.7%)	10 (2.5%)
I would feel like running away when the person actually died	18 (4.5%)	186 (46.5%)	48 (12.0%)	138 (34.5%)	10 (2.5%)
The length of time required to give care to a dying person would frustrate me	30 (7.5%)	162 (40.5%)	39 (9.7%)	165 (41.3%)	4 (1.0%)
Communication and Emotional Responses					
I would be uncomfortable talking about impending death with the dying person	5 (6.3%)	32 (8.0%)	100 (25.0%)	223 (55.7%)	20 (5.0%)
It is difficult to form a close relationship with the dying person	14 (3.5%)	57 (14.2%)	41 (10.3%)	172 (43.0%)	116 (29.0%)
I would be upset when the dying person I was caring for gave up hope of getting better	10 (2.5%)	24 (6.0%)	60 (15.0%)	242 (60.5%)	64 (16.0%)
I would be uncomfortable if I entered the room of a terminally ill person and found him or her crying	16 (4.0%)	51 (12.8%)	51 (12.7%)	272 (68.0%)	10 (2.5%)
When a patient asks, "Am I dying?", I think it is best to change the subject to something cheerful	25 (6.2%)	165 (41.3%)	62 (15.5%)	138 (34.5%)	10 (2.5%)
Dying persons should be given honest answers about their condition	6 (1.5%)	29 (7.2%)	40 (10.0%)	287 (71.8%)	38 (9.5%)
Roles and Responsibilities in Palliative Care					
Caring for the patient's family should continue throughout the period of grief and bereavement	14 (3.5%)	17 (4.3%)	27 (6.7%)	216 (54.0%)	126 (31.5%)
The non-family caregivers should not be the ones to talk about death with the dying person	22 (5.5%)	190 (47.5%)	57 (14.2%)	121 (30.3%)	10 (2.5%)
As a patient nears death, the non-family caregiver should withdraw from his or her involvement with the patient	18 (4.5%)	181 (45.3%)	45 (11.2%)	150 (37.5%)	6 (1.5%)
Educating families about death and dying is not a non-family caregiver's responsibility	18 (4.5%)	188 (47.0%)	52 (13.0%)	61 (15.2%)	81 (20.3%)
Family members who stay close to a dying person often interfere with the professional's job with the patient	11 (2.7%)	29 (7.2%)	68 (17.0%)	277 (69.3%)	15 (3.8%)
Family and Patient Involvement					
The family should be involved in the physical care of the dying person	7 (1.8%)	19 (4.7%)	29 (7.2%)	308 (77.0%)	37 (9.3%)

Families need emotional support to accept the behaviour changes of the dying person	6 (1.5%)	17 (4.3%)	27 (6.7%)	303 (75.8%)	47 (11.7%)
Families should be concerned about helping their dying member make the best of his or her remaining life	6 (1.5%)	22 (5.5%)	33 (8.3%)	295 (73.7%)	44 (11.0%)
Families should maintain as normal an environment as possible for their dying member	7 (1.7%)	72 (18.0%)	39 (9.7%)	245 (61.3%)	37 (9.3%)
The dying person and his or her family should be the in- charge decision- makers	7 (1.8%)	24 (6.0%)	32 (8.0%)	311 (77.7%)	26 (6.5%)
Care should extend to the family of the dying person	6 (1.5%)	23 (5.8%)	35 (8.7%)	301 (75.3%)	35 (8.7%)
Beliefs About End-of-Life Care					
Death is not the worst thing that can happen to a person	26 (6.5%)	131 (32.7%)	37 (9.3%)	186 (46.5%)	20 (5.0%)
There are times when death is welcomed by the dying person	9 (2.2%)	16 (4.0%)	72 (18.0%)	282 (70.5%)	21 (5.3%)
Addiction to pain-relieving medication should not be a concern when dealing with a dying person	9 (2.2%)	40 (10.0%)	48 (12.0%)	278 (69.5%)	25 (6.3%)
It is possible for non-family caregivers to help patients prepare for death	6 (1.5%)	25 (6.3%)	48 (12.0%)	232 (58.0%)	89 (22.2%)
Dying persons should be given honest answers about their condition	6 (1.5%)	29 (7.2%)	40 (10.0%)	287 (71.8%)	38 (9.5%)
Caregivers should permit dying persons to have flexible visiting schedules	5 (1.3%)	16 (4.0%)	39 (9.7%)	314 (78.5%)	26 (6.5%)

The overall attitude levels of the participants towards palliative care shown in figure 2 were categorized into three distinct groups based on their total scores: Unfavorable Attitude (≤70), Moderate Attitude (71-110), and Favorable Attitude (>110). As depicted in Figure 2, the majority of the participants (74.7%, n=299) exhibited a moderate attitude towards palliative care. A smaller proportion (24.3%, n=97) demonstrated a favorable attitude, reflecting a more positive and supportive outlook towards palliative care practices. However, only 1.0% (n=4) of the participants displayed an unfavorable attitude, indicating significant apprehension or negativity towards palliative care
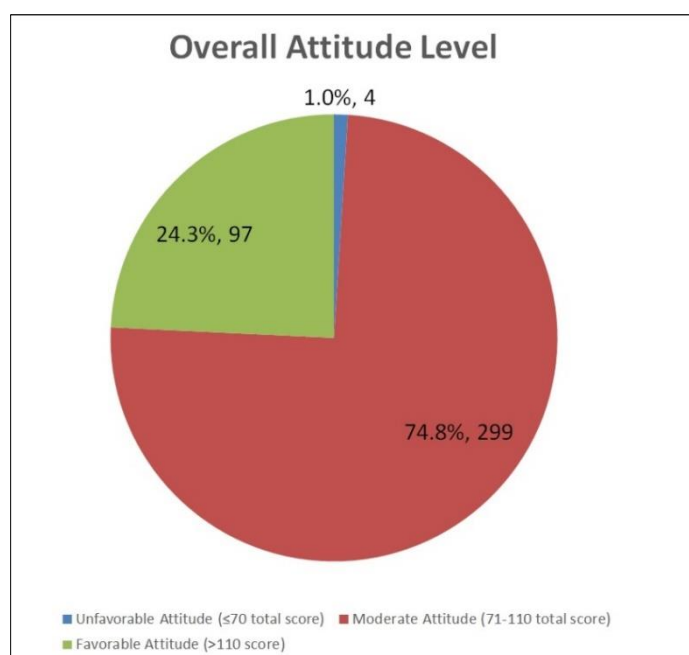
Figure 2 Distribution of overall attitude level among the participants (N=400)

The analysis of the association between knowledge and attitude towards palliative care presented in table 4 showed no statistically significant correlation (p=0.113). Among students with poor knowledge (n=185), 1.6% (n=3) had an unfavorable attitude, 70.3% (n=130) had a moderate attitude, and 28.1% (n=52) had a favorable attitude. For students with good knowledge (n=215), 0.5% (n=1) had an unfavorable attitude, 78.6% (n=169) had a moderate attitude, and 20.9% (n=45) had a favorable attitude.

Table 4 Association between knowledge and attitude of palliative care (N=400)

Attitude	Poor Knowledge n=185		Good Knowledge n=215		p-value
	n	%	n	%	
Unfavorable	3	1.6%	1	0.5%	0.113
Moderate	130	70.3%	169	78.6%	
Favorable	52	28.1%	45	20.9%	

The analysis indicated that students from government universities were more likely to have poor knowledge of palliative care (n=128, 69.2%) compared to those from private universities (n=57, 30.8%). Conversely, a higher proportion of students from private universities demonstrated good knowledge (n=94, 43.7%) compared to those from government institutions (n=121, 56.3%), with this difference being statistically significant (p=0.008). Participants with an urban upbringing were also more likely to demonstrate good knowledge (n=188, 87.4%) than those from rural areas (n=27, 12.6%) (p=0.011). No significant associations were observed between knowledge level and gender (p=0.493), age (p=0.732), or national origin (p=0.505), with similar distributions of knowledge levels across these variables.

Table 5 Association between knowledge of palliative care and baseline characteristics (N=400)

Baseline Characteristics	Poor Knowledge n=185		Good Knowledge n=215		p-value
	n	%	n	%	
Gender					
Female	134	72.4%	149	69.3%	0.493
Male	51	27.6%	66	30.7%	
Age					
20-25	148	80.0%	169	78.6%	0.732
35-40	37	20.0%	46	21.4%	
Medical University type					
Government	128	69.2%	121	56.3%	0.008
Private	57	30.8%	94	43.7%	
Upbringing					
Rural	41	22.2%	27	12.6%	0.011
Urban	144	77.8%	188	87.4%	
Origin Prior to joining					
Pakistani	181	97.8%	208	96.7%	0.505
Non-Pakistani	4	2.2%	7	3.3%	

Table 6 showed the association between baseline characteristics and attitude towards palliative care. Gender showed a significant association with attitude (p<0.001), where all students with an unfavorable attitude were male, and the majority of those with a favorable attitude were female (n=71, 81.4%). There was also a significant association with the type of medical university (p=0.001); all students with an unfavorable attitude attended private universities, while the

majority of students with a favorable attitude attended government universities (n=73, 75.3%). Upbringing also played a significant role (p<0.001), with 50% (n=50) of students with an unfavorable attitude coming from rural backgrounds, whereas a larger proportion of those with a favorable attitude were from urban areas (n=62, 63.9%). The origin prior to joining medical school was also associated with attitude (p=0.014); most students with a favorable attitude were Pakistani (n=96, 99.0%), compared to a small minority with unfavorable attitudes being non- Pakistani (n=1, 25.0%). Age was not significantly associated with attitude (p=0.063), though there was a trend showing younger students (20-25 years) having more favorable attitudes (n=84, 86.6%).

Table 6 Association between attitude towards palliative care and baseline characteristics

Baseline Characteristics	Unfavorable Attitude (n=4)		Moderate Attitude (n=299)		Favorable Attitude (n=97)		p-value	
	n	%	n	%	n	%		
Gender								
Female	0	0.0%	204	68.2%	79	81.4%	<0.001	
Male	4	100.0%	95	31.8%	18	18.6%		
Age								
20-25	4	100.0%	229	76.6%	84	86.6%	0.063	
35-40	0	0.0%	70	23.4%	13	13.4%		
Medical University type								
Government	0	0.0%	176	58.9%	73	75.3%	0.001	
Private	4	100.0%	123	41.1%	24	24.7%		
Upbringing								
Rural	2	50.0%	31	10.4%	35	36.1%	<0.001	
Urban	2	50.0%	268	89.6%	62	63.9%		
Origin Prior to joining								
Pakistani	3	75.0%	290	97.0%	96	99.0%	0.014	
Non-Pakistani	1	25.0%	9	3.0%	1	1.0%		

4. Discussion

This study aimed to assess the knowledge and attitudes of final-year medical students in Karachi, Pakistan, towards palliative care, focusing on the potential influence of demographic factors such as gender, university type, upbringing, and national origin. The findings revealed significant variations in both knowledge and attitudes, with several demographic factors playing a crucial role.

A notable finding in our study was the gender distribution among participants, with a majority being female (n=283, 70.7%). This gender distribution is consistent with trends observed in other studies focusing on palliative care and healthcare education, where females often constitute a larger proportion of participants. For instance, Barclay et al. found in their study that while attitudes towards palliative care were generally positive among medical students, gender did not significantly affect these attitudes in their study population [10]. However, in our study, gender was significantly associated with attitude, with females showing a more favorable attitude towards palliative care (n=79, 81.4%) compared to males, all of whom had unfavorable attitudes (p<0.001). This finding aligns with Liu et al., who reported that female medical students in China exhibited more patient-centered attitudes compared to their male counterparts [20]. These findings are significant because it aligns with the broader global pattern of increasing female representation in medical and healthcare professions. Women tend to show higher levels of empathy and communication skills, qualities that are particularly valued in palliative care settings. Understanding this trend is crucial for designing educational interventions and training programs that cater to the strengths and needs of female medical students,

ensuring they are well-prepared to meet the demands of palliative care delivery. The observed gender differences in attitudes suggest that cultural and educational factors might influence how male and female students perceive and engage with palliative care.

The type of university attended by the participants also played a significant role in shaping their knowledge and attitudes towards palliative care. Students from government universities were more likely to have good knowledge of palliative care (n=94, 43.7%) compared to those from private universities (n=121, 56.3%) (p=0.008). This difference could be attributed to the varying curricular focus and resource availability between private and public institutions. Mutto et al. noted that students who chose palliative care as an elective in a Latin American university showed significant improvements in both knowledge and attitudes, underscoring the impact of targeted education on student outcomes [21]. Furthermore, the type of university was also significantly associated with attitudes towards palliative care in our study, with all students with unfavorable attitudes hailing from private universities, while a majority of those with favorable attitudes were from government universities (p=0.001). This contrast might reflect differences in exposure to clinical practice and palliative care education between these institutions, as highlighted by studies that emphasize the importance of clinical exposure in shaping positive attitudes towards palliative care [22].

Upbringing was another significant factor influencing both knowledge and attitudes. Participants from urban areas were more likely to have good knowledge (n=188, 87.4%) compared to those from rural backgrounds (n=27, 12.6%) (p=0.011), and similarly, urban upbringing was associated with more favorable attitudes towards palliative care (n=62, 63.9%) compared to rural upbringing (n=35, 36.1%) (p<0.001). These findings resonate with the observations by multiple authorities, who found that students from urban settings often had more positive attitudes towards caring for terminally ill patients, possibly due to better access to healthcare resources and education in urban areas [23, 24]. The disparity between urban and rural students underscores the need for more inclusive and accessible palliative care education that addresses the unique challenges faced by students from rural backgrounds.

The association between national origin and attitudes towards palliative care also emerged as a significant finding in this study. A higher percentage of students with a favorable attitude were of Pakistani origin (n=96, 99.0%), while non-Pakistani students showed a higher proportion of unfavorable attitudes (p=0.014). This could be reflective of the cultural differences and varying levels of exposure to palliative care practices in different countries. Chen et al. found that international students in China had different attitudes towards general practice, including palliative care, compared to their Chinese counterparts, further highlighting how cultural and educational backgrounds can influence students' perspectives on palliative care [25].

Moreover, the overall knowledge levels of palliative care among the participants were moderate, with 53.8% (n=215) demonstrating good knowledge. However, there was no statistically significant association between knowledge levels and attitudes towards palliative care (p=0.113), suggesting that while knowledge is important, other factors such as personal experiences, cultural background, and educational environment may play a more critical role in shaping attitudes. This finding contrasts with the results of Dimoula et al., who found that greater knowledge was a weak but significant predictor of more liberal attitudes towards palliative care [13]. This discrepancy may indicate that the relationship between knowledge and attitudes towards palliative care is complex and influenced by multiple contextual factors.

The findings of this study underscore the importance of integrating comprehensive palliative care education into medical curricula, particularly in settings like Pakistan where palliative care services are still developing. The significant associations between demographic factors and both knowledge and attitudes highlight the need for targeted educational interventions that consider the diverse backgrounds of medical students. As highlighted by studies such as those by Mutto et al. and Liu et al., structured palliative care education that includes both theoretical and practical components can significantly improve students' knowledge and attitudes, ultimately leading to better patient outcomes [20, 21].

In conclusion, this study provides valuable insights into the knowledge and attitudes of final-year medical students towards palliative care in Karachi, Pakistan. The findings suggest that demographic factors such as gender, university type, upbringing, and national origin play significant roles in shaping students' perspectives on palliative care. These insights should inform the development of more inclusive and effective palliative care education programs that address the specific needs of diverse student populations.

4.1. Bias and Limitations

This study has some limitations that should be noted. The use of accidental sampling may have introduced sampling bias, as voluntary participation could lead to overrepresentation of students more interested in or knowledgeable about palliative care. Additionally, the focus on universities in Karachi limits the generalizability of the results to other regions of Pakistan, where educational resources and exposure to palliative care may differ. Broader geographic sampling and alternative methods could help improve the representativeness of future studies

5. Conclusion

This study provides a comprehensive assessment of the knowledge and attitudes towards palliative care among final-year medical students in Karachi, Pakistan. The findings highlight significant associations between demographic factors such as gender, university type, upbringing, and national origin with students' knowledge and attitudes.

While a majority of the students demonstrated moderate knowledge and attitudes towards palliative care, the study underscores the need for enhanced educational interventions tailored to address the specific gaps observed. The significant influence of demographic factors on students' perceptions of palliative care suggests that curriculum reforms should consider these variables to foster more favorable attitudes and improve overall knowledge. By addressing these disparities, medical education can better prepare future healthcare providers to deliver compassionate and effective palliative care, ultimately improving patient outcomes in Pakistan

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

The study protocol was approved by the Ethics Research Committee of Bahria University Health Sciences Karachi (BUHS) under approval number ERC 49/2022.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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