



Assessment of Knowledge and Attitude to Palliative Care among Undergraduate Clinical Physiotherapy Students in Nigerian Universities

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Abstract

Background: Developing special skills and expertise for Palliative care (PC) begins with the right attitude and adequate knowledge during the training of various healthcare providers. Little is known about the knowledge and attitude of physiotherapists in training to PC. This study aimed to assess the knowledge and attitude of undergraduate clinical physiotherapy students in Nigerian universities towards PC. **Materials and Method:** This was a cross-sectional survey conducted with 281 students from 10 purposively selected universities across Nigeria. Knowledge regarding PC was measured using a structured questionnaire on knowledge of PC, while attitudes were assessed using the FROMMELT Attitude Towards Care of the Dying Scale (FATCOD). The questionnaires were administered online via Google Forms. The socio-demographic data of the respondents were also collected. The data obtained were analysed using descriptive and inferential statistics. The level of significance was set at $p < 0.05$. **Results:** Majority of respondents were males (53%), aged 21-25 years (87.9%), in the 4th year of study (50.9%), and from south-western Nigeria (61.9%). Over 40% are from Obafemi Awolowo University and had above-average knowledge (62%). Almost all (99.6%) of the respondents displayed a favourable attitude towards PC. There were significant associations between knowledge and university of training of respondents ($p=0.001$), and between attitude and age ($p=0.003$) and geopolitical zone of origin ($p=0.006$) of respondents. There was also a significant correlation

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between knowledge and attitude of respondents ($r = 0.441$, $p = 0.001$). **Conclusion:** Clinical physiotherapy undergraduates in Nigerian universities demonstrated above-average knowledge and positive attitudes towards PC. This may imply that these future physiotherapists are likely to contribute positively to multidisciplinary PC teams, and suggest a readiness to advocate for and expand PC services in the country.

Keywords: Knowledge; Attitude; Palliative-Care; Physiotherapy; Undergraduates

Introduction

The number of patients with cancer and other terminal diseases continues to rise in the last decades, leading to rapid growth in concern for severely ill and dying patients (Etkind *et al.*, 2017). Palliative Care (PC) is a method that improves the quality of life of patients with life-threatening illness and their families through prevention and relief of distress by early identification, comprehensive assessment and treatment of pain and other physical, psychosocial and spiritual problems (Radbruch *et al.*, 2020). PC comprises an interdisciplinary team of experts, including physicians, nurses, social workers, chaplains, pharmacists, rehabilitation therapists, direct care workers, and family members (Adams *et al.*, 2011).

PC education in the economically advanced world indicated that 28 European countries have palliative medicine in the curriculum of at least one medical university. Palliative medicine is taught in all medical schools in 13 countries; whereas in 14 countries, it is included in the undergraduate medical curriculum (Carrasco *et al.*, 2015). Higher-level education in PC is now available in several countries in Africa, including South Africa, Uganda, and Tanzania (Centeno and Rhee, 2019). The Institute of Hospice and Palliative Care in Africa, in partnership with Makerere University, also provides training to healthcare professionals across Africa (Centeno & Rhee, 2019).

Professionals equipped with basic PC skills can deliver effective front-line supportive care (Adams *et al.*, 2011). The role of each healthcare professional in the delivery of PC to terminally ill patients is uniquely distinct and highly important, while an effective PC service delivery requires an informed health sector (Sadhu *et al.*, 2010). The roles become even more important with the increasing need for PC as a result of the ageing of populations and the rising burden of cancer, non-communicable diseases and some communicable diseases. Professionals in the PC team should have appropriate level of education and competence in handling the varying requirements of PC. This necessitates evidence-based PC knowledge, education level and training needs of these professionals (Suikkala *et al.*, 2021).

Although available evidence supports the role of physiotherapists and rehabilitation in PC, literature describing knowledge, role and view of physiotherapy about palliative care is scarce (Horne-Thompson & Bramley,

2011; Nelson *et al.*, 2012; Cobbe *et al.*, 2013). Physiotherapy in PC aims to maintain quality of life (QOL) by relieving stress from pain and side effects of treatment delivered at four levels of prevention, pre- and post-operative care, acute institutional and community-based rehabilitation (Nelson *et al.*, 2012). Thus, appropriate referral to PC physiotherapy is critical for optimal and patient-centred care. Education and training in PC impact the level of care provided and team participation of physiotherapists. Thus, PC education is important for physiotherapy students at the undergraduate level to train competent and responsible members of the PC team in the society who lead the physiotherapy profession successfully by providing useful information and realistic implementation (VeqAR, 2013). Little is known about the knowledge of PC among physiotherapists in Nigeria at all levels of intervention. Therefore, specific objective of this study was to assess knowledge and attitude of clinical undergraduate students of physiotherapy in Nigerian Universities towards PC. We hypothesised that there would be no significant correlation between the knowledge and attitude of Nigerian physiotherapy undergraduates towards PC.

Methods

This was a cross-sectional web-based survey on the target population of 1,152 clinical undergraduate physiotherapy students from Nigerian universities who were on clinical postings in accredited secondary and tertiary hospitals as part of their training programme. The study included 214 students from Obafemi Awolowo University (OAU), Ile-Ife, 90 students from University of Ibadan (UI), Oyo state, 80 students from University of Lagos (UNILAG), Lagos state, 95 students from Bowen University, Iwo, Osun state, and 67 students from University of Medical Sciences (UNIMED) Ondo, Ondo state (all in southwestern Nigeria); 145 students from University of Nigeria Nsukka (UNN), 130 students from Nnamdi Azikiwe University (UNIZIK) Anambra state (southeastern Nigeria), 72 students from University of Benin (south-southern Nigeria); 157 students from Bayero University, Kano (BUK), Kano state, (north-western Nigeria); 102 students from University of Maiduguri, Borno state (UNIMAID) (north-eastern Nigeria). Eligible respondents were in clinical years and active in clinical postings, while those on leave of absence, or yet to undergo clinical postings for other reasons, were excluded.

Sample size Calculation

Based on a sample size calculation by Johnson (2010) with a 95% confidence level, a margin of error of 5%, and a population size of 1000-1499, 278 respondents were required for the study. A total of 281 respondents (132 females and 149 males), which included the total number of required sample, completed the questionnaire. Out of a total of 308 questionnaires that were sent out (sample size of 278 with 10% to cater for non-response), a 91% response rate was achieved.

Instrument

The instruments for data collection were

- i. Structured questionnaire on knowledge of PC Kassa *et al.* (2014). The FROMMELT attitude towards care of the dying (FATCOD) scale Sadhu *et al.*, (2010).
- ii. The questionnaire was divided into three sections: SECTION A collected socio-demographic information, SECTION B was a 39-item questionnaire with 10 subdivisions assessing knowledge of palliative care (PC), and SECTION C used the 30-item FATCOD scale to evaluate attitudes towards PC. In SECTION B, respondents answered with "yes" or "no," with scores calculated by adding correct responses from each item on the questionnaire Kassa *et al.*, (2014). SECTION C responses were rated on a 5-point Likert scale from "strongly disagree" to "strongly agree," with scoring based on basic additions, percentages, and fractions, as used in a previous study by Sadhu *et al.* (2010).

Procedure

The study procedure was explained to respondents, and written informed consent was obtained, ensuring anonymity and the freedom to withdraw at any stage. For online respondents, information on the study procedure with ethical considerations was provided with the questionnaires. The research protocol was approved by the appropriate Health and Research Ethics Committee. With protocol number ERC/2021/05/10. OAU respondents completed the questionnaire by paper and pen, lasting 15 to 20 minutes, while those from nine other universities used a Google Forms link shared via each clinical level class WhatsApp group in the respective universities. Information about clinical physiotherapy students was gathered at the 2021 National Association of Physiotherapy Students convention in OAU. The questionnaire was completed online over two months, from August to September 2021.

Data Analysis

Socio-demographic variables of respondents were summarised using descriptive statistics of frequencies and percentages. Chi-square test was used to assess the association between each of the knowledge and attitude with socio-demographic variables. Spearman's correlation method was used to test the correlation between knowledge and attitude. Data was analysed using Statistical Package for Social Sciences (SPSS) software version 22. The level of significance was set at $p < 0.05$.

Results

The majority of respondents were males (53%), aged 21-25 (87.9%), Christians (73.7%), in their 4th year of study (50.9%), and from southwestern Nigeria (61.9%). The frequency distribution of respondents by institution is shown in Figure 1. The distribution of respondents' knowledge about PC is presented in

Figure 2. Over half (62%) of respondents had above-average knowledge of PC, and nearly all (99.6%) displayed a favourable attitude towards PC. Respondents showed positive knowledge about PC, with over 50% correctly answering 29 out of 39 knowledge items. Less than 50% chose incorrect responses for 28 out of 39 items (Table 1). Regarding attitudes towards PC, over half of the respondents agreed with the most preferred choices on seven out of 30 attitude items, while the remaining attitude items were favoured by less than 50% of respondents (Table 2). There was a moderate and significant correlation between respondents' knowledge and attitude towards palliative care ($r = 0.441$, $p = 0.001$). Significant associations were also found between knowledge and the university attended (p -value=0.001) (Table 3), and between attitude and both age (p -value =0.003) and geopolitical zone of origin (p -value=0.006) (Table 4).

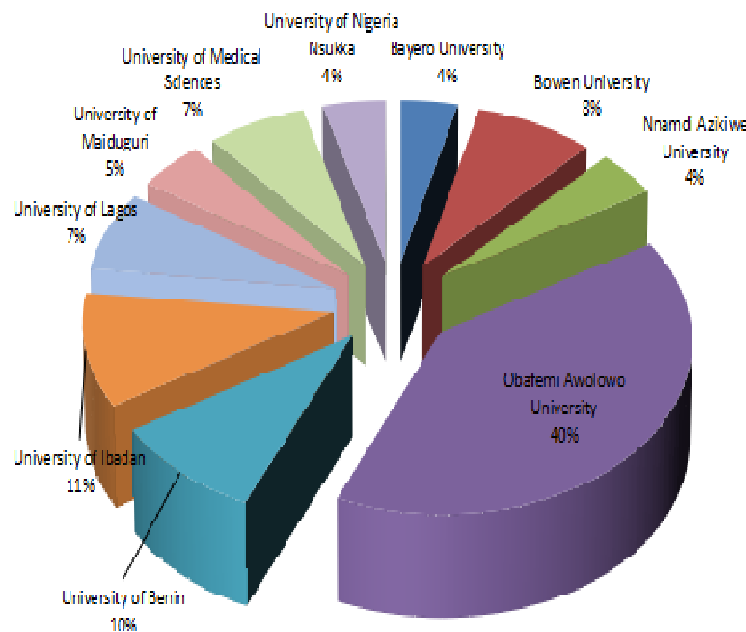


Figure 1: *Distribution of Clinical Undergraduate Students of Physiotherapy in Nigeria by University that Participated in the Study*

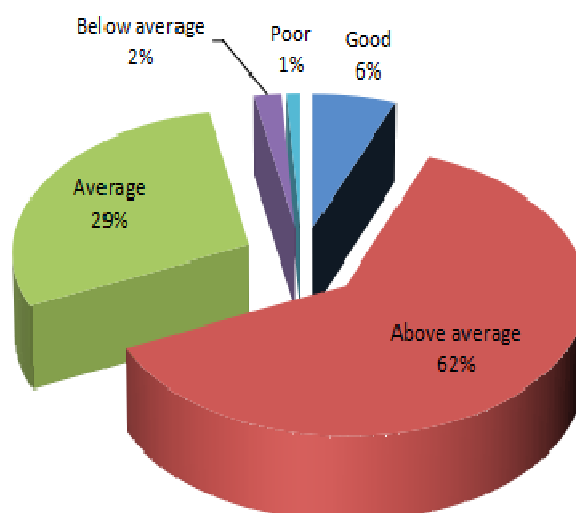


Figure 2: Distribution of Knowledge about PC among Clinical Undergraduate Students of Physiotherapy in Nigeria

Table 1: Distribution of Respondents' Knowledge about Palliative Care on

Item Number	Question	Correct Answer	Correct Answers F (%)	Incorrect Answers F (%)
A)	Palliative care is			
	Pain medicine	No	111(39.5)	170(60.5)
	Geriatric medicine	No	151(53.7)	130(46.3)
	Rehabilitation medicine	No	119(42.3)	162(57.7)
B)	Active care of the dying	Yes	204(72.6)	77(27.4)
		Yes	176(62.6)	105(37.4)
	Philosophy of palliative care	Yes	195(69.4)	86(30.6)
	Affirms life	No	240(85.4)	41(14.6)
C)	Recognises dying as a normal process	No	97(34.5)	184(65.5)
	Hastens death	No	46(16.4)	235(83.6)
		Yes	239(85.1)	42(14.9)
	Prolongs life	Yes	230(81.9)	51(18.1)
D)	Palliative care is needed for	No	143(50.9)	138(49.1)
	All dying patients	No	247(87.9)	34(12.1)
		Yes	177(63.0)	104(37.0)
	Metastatic cancer with uncontrolled pain	No	64(22.8)	217(77.2)
E)	End-stage heart failure	Yes	100(35.6)	181(64.4)
		Yes	162(57.7)	119(42.3)
		Yes	122(43.4)	159(56.6)

	Three days after gall bladder surgery with pain	Yes	220(78.3)	61(21.7)
		No	60(21.4)	221(78.6)
F)	Morphine			
	Causes death in all dying patients	Yes	203(72.2)	78(27.8)
	Improves quality of life	Yes	149(53.0)	132(47.0)
	Relieves all kinds of pain	Yes	162(57.7)	119(42.3)
	Relieves breathlessness in heart failure	Yes	164(58.4)	117(41.6)
G)	Common side effects of morphine in palliative care setting	Yes	226(80.4)	55(19.6)
		Yes	214(76.2)	67(23.8)
	Nausea and vomiting	Yes	208(74.0)	73(26.0)
H)	Constipation			
		No	142(50.5)	139(49.5)
	Drowsiness	No	184(65.5)	97(34.5)
		Yes	221(78.6)	60(21.4)
	Addiction	No	138(49.1)	143(50.9)
I)	Common non-pain symptoms encountered in palliative care	Yes	259(92.2)	22(7.8)
	Delirium	No	160(56.9)	121(43.1)
		Yes	236(84.0)	45(16.0)
	Constipation	Yes	260(92.5)	21(7.5)
J)	Vomiting	Yes	250(89.0)	31(11.0)
	Breathlessness	Yes	265(94.3)	16(5.7)
		No	92(32.7)	189(67.3)
	Components of a good death	Yes	216(76.9)	65(23.1)
	Pain and symptom management			
	Clear decision-making			
	Preparation for death			
	Resuscitation in cancer patients			
	Resuscitation is always appropriate in advanced metastatic cancer.			
	Outcomes of resuscitation in advanced metastatic cancer are always good.			
	Patients and relatives should always be involved in decision-making of “not for resuscitation”.			
	Nigerian legal system at present has laid down clear guidelines about the end of life and not for resuscitation.			

Communicating prognosis

Prognosis should always be clearly communicated.

Prognosis should only be informed to family members.

Not communicating the prognosis could lead to a lack of trust.

Patient's wishes and choices should be clearly communicated.

Palliative care multidisciplinary team comprises

Medical social worker

Nurse

Radiotherapist

Occupational therapist

Table 2: Respondents' Most Preferred Choices on Attitude Towards Palliative Care

Item No.	Question	Most Preferred choice	Frequency (%)
1.	Giving care to the dying person is a	agree	113(40.2)
2.	worthwhile experience.	agree	98(34.9)
3.	Death is not the worst thing that can happen	agree	115(40.9)
4.	to a person	agree	127(45.2)
5.	I would be uncomfortable talking about		
	impending death with the dying person.	disagree	87(31.0)
6.	Caring for the patient's family should	uncertain	83(29.5)
	continue throughout the period of grief and		
7.	bereavement.	disagree	96(34.2)
8.	I would not want to care for a dying person.	agree	96(34.2)
	The non-family caregivers should not be the		
9.	ones to talk about death with the dying	disagree	99(35.2)
10.	person.	agree	158(56.2)
11.	The length of time required to give care to a	uncertain	93(33.1)
	dying person would frustrate me.		
12.	I would be upset when the dying person I	agree	147(52.3)
	was caring for gave up hope of getting		
13.	better.	uncertain	86(30.6)
14.	It is difficult to form a close relationship	disagree	85(30.2)
15.	with the dying person.	uncertain	92(32.7)
16.	There are times when death is welcomed by	agree	141(50.2)

	the dying person.		
17.	When a patient asks, “Am I dying?” I think it is best to change the subject to something cheerful.	disagree	103(36.7)
18.	The family should be involved in the physical care (feeding, personal hygiene) of the dying person.	agree	135(48.0)
19.	I would hope the person I’m caring for dies when I am not present	disagree	98(34.9)
20.	I am afraid to become friends with a dying person.	agree	144(51.2)
21.	I would feel like running away when the person actually died.	agree	146(52.0)
22.	Families need emotional support to accept the behaviour changes of the dying person.	agree	155(55.2)
23.	As a patient nears death, the non-family caregiver should withdraw from his or her involvement with the patient.	agree	152(54.1)
24.	Families should be concerned about helping their dying member make the best of his or her remaining life.	agree	117(41.6)
25.	The dying person should not be allowed to make decisions about his or her physical care.	disagree	93(33.1)
26.	Families should maintain as normal an environment as possible for their dying member.	agree	96(34.2)
27.	It is beneficial for the dying person to verbalise his or her feelings.	agree	122(43.4)
28.	Care should extend to the family of the dying person.	disagree	102(36.3)
29.	Caregivers should permit dying persons to have flexible visiting schedules.	uncertain	96(34.2)
30.	The dying person and his or her family should be the in-charge decision makers.	agree	128(45.6)
	Addiction to pain-relieving medication should not be a concern when dealing with a dying person.		
	I would be uncomfortable if I entered the room of a terminally ill person and found him/her crying		
	Dying persons should be given honest answers about their condition.		
	Educating families about death and dying is		

not a non-family caregiver's responsibility.
Family members who stay close to a dying
person often interfere with the
professional's job with the patient.
It is possible for non-family caregivers to
help patients prepare for death.

Table 3: Association between Knowledge and Socio-demographic Variables of Respondents

Variables	Good	Above Average	Average	Below Average	Poor	Total n (N)	χ^2	p-value
Gender								
Female	9(6.82)	88(66.7)	29(22.0)	2(1.52)	4(3.03)	132	9.995	0.41
Male	7(4.70)	87(58.4)	52(35.0)	3(2.01)	0(0.00)	149		
Level of study								
400	6(4.20)	84(58.7)	51(35.6)	0(0.00)	2(1.40)	143	11.639	0.200
500	10(7.25)	91(66.0)	30(21.7)	5(3.62)	2(1.45)	138		
Age (years)								
20 and below	1(5.26)	8(42.1)	9(46.4)	0(0.00)	1(5.26)	19	15.810	0.200
21-25	15(6.07)	161(65.2)	64(26.0)	4(1.62)	3(1.21)	247		
26-30	0(0.00)	6(42.9)	7(50.0)	1(7.14)	0(0.00)	14		
Above 30	0(0.00)	0(0.00)	1(100)	0(0.00)	0(0.00)	1		
Religion								
Christianity	12(5.80)	129(62.3)	60(29.0)	3(1.45)	3(1.45)	207	3.293	0.915
Islam	4(6.35)	40(63.49)	16(25.4)	2(3.17)	1(1.59)	63		
Other	0(0.00)	6(54.5)	5(45.5)	0(0.00)	0(0.00)	11		
Geopolitical zone								
North central	0(0.00)	7(100)	0(0.00)	0(0.00)	0(0.00)	7	93.151	0.149
North-east	0(0.00)	2(100)	0(0.00)	0(0.00)	0(0.00)	2		
North-west	1(4.16)	10(4.16)	12(50.0)	1(4.16)	0(0.00)	24		
South-south	0(0.00)	9(50.0)	7(38.9)	0(0.00)	2(11.1)	18		
South-east	4(7.27)	32(58.2)	15(27.3)	2(3.64)	2(3.64)	55	74.781	0.001
South-west	11(6.32)	114(65.5)	47(27.0)	2(1.15)	0(0.00)	174		
Foreign	0(0.00)	1(100)	0(0.00)	0(0.00)	0(0.00)	1		
Institution								
Bayero	1(3.33)	21(70.0)	8(26.7)	0(0.00)	0(0.00)	130	74.781	0.001
University	1(4.76)	10(47.6)	9(42.9)	1(4.76)	0(0.00)	113		
Bowen	0(0.00)	5(38.5)	7(63.8)	1(7.70)	0(0.00)	27		
University	2(10.5)	8(42.1)	9(47.4)	0(0.00)	0(0.00)	72		
Nnamdi	0(0.00)	5(41.7)	4(33.3)	1(8.33)	2(16.7)	30		

Azikiwe	(90)
University	21
Obafemi	(80)
Awolowo	13
University	(102)
University of	19
Benin	(67)
University of	
Ibadan	12
University of	(145)
Lagos	
University of	
Maiduguri	
University of	
Medical	
Sciences	
University of	
Nigeria,	
Nsukka	

Table 4: Association between Attitude and Socio-Demographic Variables of Respondents

Variables	Favourable Frequency (%)	Unfavourable Frequency (%)	Total n (N)	χ^2	p- value
Gender					
Female	131(99.2)	1(0.76)	132	1.133	0.287
Male	149(100)	0(0.00)	149		
Level of study					
400	142(99.3)	1(0.70)	143	0.968	0.325
500	138(100)	0(0.00)	138		
Age (years)					
20 and below	18(94.7)	1(5.26)	19	13.839	0.003
21-25	247(100)	0(0.00)	247		
26-30	14(100)	0(0.00)	14		
Above 30	1(100)	0(0.00)	1		
Religion					
Christianity	207(100)	0(0.00)	207	3.473	0.176
Islam	62(98.4)	1(1.60)	63		
Other	11(100)	0(0.00)	11		
Geopolitical zone of the tribe					
	7(100)	0(0.00)	7	39.283	0.006
North central	2(100)	0(0.00)	2		
North-east	24(100)	0(0.00)	24		
North-west	17(94.4)	1(5.56)	18		
South-south	55(100)	0(0.00)	55		
South-east	174(100)	0(0.00)	174		
South-west	1(100)	0(0.00)	1		
Foreign					

Institution					
Bayero University	11(100)	0(0.00)	11 (157)	9.441	0.398
Bowen University	23(100)	0(0.00)	23 (95)		
Nnamdi Azikiwe	12(100)	0(0.00)	12 (130)		
University	113(100)	0(0.00)	113 (214)		
Obafemi Awolowo	26(96.3)	1(3.70)	27 (72)		
University	30(100)	0(0.00)	30 (90)		
University of Benin	21(100)	0(0.00)	21 (80)		
University of Ibadan	13(100)	0(0.00)	13 (102)		
University of Lagos	19(100)	0(0.00)	19 (67)		
University of	12(100)	0(0.00)	12 (145)		
Maiduguri					
University of					
Medical Sciences					
University of					
Nigeria, Nsukka					

Discussion

This study assessed knowledge and attitude towards PC among clinical undergraduates of physiotherapy in Nigerian universities. Above-average knowledge of PC was demonstrated by over half of the respondents. This appears better than inadequate basic PC knowledge among healthcare undergraduates in India (Sadhu *et al.*, 2012) and deficiencies in understanding various concepts of PC among students reported by Sujatha and Jayagowri, (2017). Although some respondents might have checked for some answers online since the questionnaires were also administered remotely. The gaps in PC knowledge among the current undergraduate sample may be a reflection in the PC education curriculum and training received by these students at undergraduate level. Findings from the previous studies in other countries demonstrated widespread deficiencies in understanding PC and its philosophy, pain and non-pain symptom assessment, understanding resuscitation in PC setting, communication, and interdisciplinary care for patients and their families Sadhu *et al.*, (2010). In light of the above, although better than other climates, this study also depicts some deficiencies in basic aspects of PC knowledge among undergraduate clinical physiotherapy students in Nigeria.

The research reveals a significant misunderstanding of PC among the respondents. While the majority recognised PC as care for the dying, over half of the respondents confused it with pain management or rehabilitation. More than half also mistakenly believed PC prolongs life, which contradicts its focus on affirming life and accepting death. Many wrongly assume all dying patients need PC, confusing it with acute pain management or hospice care. Additionally, over three-quarters mistakenly considered morphine as a universal analgesic, and only one-third understood its role in relieving breathlessness in heart failure. These findings highlight a pressing need for greater education and awareness surrounding the goals and appropriate application of palliative care.

Additionally, over half and three-quarters of respondents misunderstood common side effects and addiction risks of morphine, highlighting significant gaps in their knowledge of opioids and analgesics, likely due to inadequate pharmacology education at the undergraduate level.

Over half of respondents could appropriately identify non-pain symptoms in PC settings, and the majority correctly identified components of good death. A good number of physiotherapy students have better knowledge of resuscitation in PC as compared to a previous study that assessed PC knowledge among other healthcare students in India by Sadhu *et al.*, (2010). Over two-thirds of respondents thought patients and relatives should always be involved in the decision making of “not for resuscitation”. Almost half of the respondents correctly perceived that the statement “Nigerian legal system at present has laid down clear guidelines about end of life and not for resuscitation” is false. This uncertainty in knowledge might indicate a lack of exposure to the medical policies of the Nigerian legal system and the ineffectively implemented policies put in place by the Nigerian government concerning PC, as reported by Chukwunyere (2019). When communicating prognosis, a vast majority of respondents agreed that prognosis and the patient’s wishes and choices should be clearly conveyed, and that not communicating prognosis could lead to a lack of trust. However, below half respondents felt prognosis should only be informed to family members. This showed that students have a good understanding of communicating prognosis in PC, and results might be influenced by a mild sense of empathy. The majority of students correctly identified medical social worker, nurse and occupational therapist as part of the PC multidisciplinary team, but also included radiotherapist, who is a seldom part of the multidisciplinary PC team, as noted in the study by Sadhu *et al.* (2017). This inclusion may be a result of misunderstanding or implicit knowledge in differentiating between the roles of a radiologist and a radiotherapist. Favourable attitude of almost all respondents towards PC may indicate that many students were uncertain about a number of choices, and the most preferred choices still had below average ratings. This finding is fairly consistent with an earlier study by Sadhu *et al.* (2017) which suggested that students were still uncomfortable in facing matters of death and dying. This study however showed that some students displayed a certain sense of empathy and may be able to deal with PC in a professional and sensitive manner that meets the needs of both patients and family.

The university attended was the only socio-demographic factor influencing respondents' knowledge of PC, likely due to differences in teaching methods, resources, and the presence or absence of a PC curriculum across universities. This highlights the need to review and upgrade the PC curriculum in Nigerian universities. Respondents' attitudes towards PC were influenced by their age and tribe, with age possibly reflecting maturity levels, as older respondents may

have more exposure to and understanding of issues related to death and dying. This inference is in comparison with a study conducted at Obafemi Awolowo University on Nurses' attitude towards caring for dying patients in a Nigerian teaching hospital by Faronbi *et al.* (2021), where age was a major influencing factor of attitude. Belonging to an ethnically and culturally diverse country like Nigeria can also have a significant influence on respondents' attitudes towards PC. Some cultures may have certain beliefs regarding death and dying which are passed down to offspring. For instance, it may be considered inappropriate, insensitive or a bad omen to discuss impending death in a tribe or culture, while many cultures do not accept or encourage the use of opioids, which are the primary pharmacologic treatment for pain relief PC (Givler *et al.*, 2024). This shows how much of a challenging barrier, age and ethnicity, or tribes can have on the attitude and, invariably knowledge of respondents towards PC. Lastly, respondents' knowledge influenced their attitude towards PC and vice versa. This may imply that having above-average knowledge of PC in this sample of respondents resulted in a favourable attitude towards PC.

Clinical physiotherapy undergraduates in Nigerian universities demonstrated above-average knowledge and positive attitudes towards PC. This may imply that these future physiotherapists are likely to contribute positively to multidisciplinary PC teams, and suggest a readiness to advocate for and expand PC services in the country. Although respondents demonstrated some misunderstanding about PC, including its purpose, scope, and treatments. The respondents' knowledge and attitudes were influenced by factors such as the university attended, age, and geopolitical zone, emphasising disparities in education and cultural beliefs. This stresses the need for reforms in the physiotherapy curriculum to include better PC training. The newly approved Doctor of Physical Therapy (DPT) program in Nigeria, which includes comprehensive PC education, is expected to improve PC practice both locally and globally.

This study has limitations due to potential response bias from self-reported questionnaires and an uneven distribution of respondents across universities. The results may not accurately reflect the knowledge and attitudes of students from universities with fewer respondents, such as Bayero University, Kano. Consequently, the findings may be more representative of students from south-western Nigeria, where the majority of respondents were based. The generalizability of his study, conducted among clinical physiotherapy undergraduates with the majority in Nigerian federal universities, suggested that the findings can be applied to all Nigerian physiotherapy students. Respondents demonstrated above-average knowledge and positive attitudes towards PC, indicating that Nigerian-trained physiotherapists can perform well globally in PC with moderate post-qualification training.

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Declaration of Interest

This research received no financial assistance from any source. The authors declare no conflicts of interest.

Author Contributions

M.O.O. conceptualised the study, conducted the research, prepared the manuscript, and took part in data analysis and interpretation. J.C.N. was involved in the conceptualization of the study, data collection, provision of study material and preparation of the manuscript. A.M.O. and O.I.A. were involved in the research design, administrative support and proofreading the manuscript for intellectual contribution. A.M.O. assembled the data, was involved in data analysis and interpretation, and proofreading. All authors read and approved the final manuscript.

Data Citation

Data generated from this study are available on request from the corresponding author.

Conflicts of Interest

All authors have completed the ICMJE unified disclosure form. The authors have no conflict of interest to declare.

Ethical Statement

The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Written informed consent was obtained before data collection. This research was approved by the Health and Research Ethics Committee of the Institute of Public Health, Obafemi Awolowo University, Ile-Ife Ife Nigeria, with protocol number ERC/2021/05/10. Consent for publication does not apply to this study as no identifiable details of the respondent were collected or published.

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