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Providing Care to Patients with AIDS: How Prepared are Nigerian Physiotherapists

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ABSTRACT

Purpose: Adequate knowledge and core affective traits are important for effective management of patients with contagious diseases or conditions like AIDS. This study aimed to assess Nigerian physiotherapists' cognitive and affective traits in providing care to patients living with AIDS (PWA). **Methods:** Physiotherapists across Nigeria (N=132) were surveyed using a 43-item questionnaire that elicited information on their demographic characteristics, knowledge of transmission, universal precaution and pathophysiology on AIDS, their feeling of preparedness, comfort, ethical disposition to care for PWA and their willingness to assess and provide intervention to PWA in different clinical scenarios. **Results:** The physiotherapists' knowledge of AIDS pathophysiology was unsatisfactory, half of them did not have satisfactory knowledge of precaution, one-third recorded unsatisfactory score on feeling of comfort and ethical disposition, and one-fifth did not feel adequately prepared to care for PWA. Knowledge of transmission, pathophysiology and ethical disposition were respectively influenced by physiotherapists' religious affiliation, rank and gender. Marital status, previous experience in caring for PWA, and gender were influential to willingness to evaluate and treat in two and three clinical scenarios respectively. Physiotherapists were less willing to provide whirlpool wound care procedures compared to other procedural interventions. **Conclusions:** The study identified improvement need in the cognitive and affective domain of learning among these practitioners in the care of PWA.

INTRODUCTION

A competent clinician must be equipped with adequate knowledge and core affective traits. In managing contagious diseases or conditions such as AIDS, fear of the disease and nature of the specific interventions involved in managing the disease or condition are important factors that could impact the thoroughness and efficiency with which an intervention could be administered. Advances in AIDS pathophysiology and treatment has led to the understanding of AIDS as a chronic progressive disease, with many health professionals including physiotherapists making contributions in the care of patients living with AIDS (PWA) by remediating impairments, restoring functions, and improving the general health and health related quality of life of survivors.¹⁻³

In some countries, including the United States where physiotherapy professionals are being prepared at the doctoral level, these professionals are able to practice on a first contact basis, and may be the first healthcare professionals to identify patients' functional limitations with underlying medical problems for which a patient may need referral to a physician.¹ Also, many PWA

often present with conditions that warrant referral to physiotherapy such as sensory neuropathies, pain, extremity paralysis and bell's palsy, integumentary conditions such as decubitus, and pulmonary conditions such as tuberculosis and pneumocystis carinii pneumonia.^{2,3} It is imperative that physiotherapists be equipped with adequate knowledge and affective traits in order to render competent and compassionate care to PWA.

In February of 2006, Medline and CINAHL databases were searched for literature dated between 1996 and 2006 on knowledge, disposition, AIDS, and physiotherapists, and subsequently nurses and physicians were substituted for physiotherapists. After reviewing a total of 194 abstracts for their titles, eight relevant articles were obtained and three more were added through cross referencing.⁴⁻¹⁴ Practicing health professionals showed mixed responses ranging from good AIDS knowledge among physicians in Canada, US, India and China,^{7,15} to inadequate knowledge or knowledge gap among physicians in Kuwait and health professionals in Nigeria.^{11,16} Physicians and nurses were fearful of AIDS,^{9,17} Nurses would hesitate to administer care and would not participate in birth delivery involving PWA.¹⁶ Physicians were judgmental in their evaluations of PWA,⁹ and nurses' unwillingness to provide care to PWA was attributed to feeling of not being prepared, anxiety, and fears of cross infection with HIV.¹⁸ Nigerian nurses' knowledge on AIDS was inadequate, their attitude was poor and were not comfortable caring for PWA,¹⁹ and many physicians in Nigeria were uncomfortable with performing mouth-to-mouth resuscitation on PWA.²⁰ Widespread fears of contracting AIDS exists among health personnel in Zimbabwe despite their adequate knowledge of transmission and 11.8% even felt there was no need to treat PWA.²¹

Fifty-seven and 75% of the physiotherapists in Nigeria and Zimbabwe respectively were able to list five manifestations of AIDS, and 68% and 76% of physiotherapists in these countries respectively would not want to work in the special care centers for PWA.²² Physiotherapists in the United Kingdom showed satisfactory knowledge on AIDS, have poor perceptions about PWA, but regarded their profession as of low risk compared to nursing, dentistry, general practice medicine and surgery.²³ However, positive attitudes towards PWA was prevalent and female physiotherapists showed more positive attitudes than their male counterparts in the country.²⁴ Although the majority (78%) of South African physiotherapists in a study could identify eight modes of transmission, male physiotherapists were less aware of the mode of transmission of HIV compared to their female counterparts, and 26% of the physiotherapists knew that there is less than one percent chance of contracting HIV from a needle stick injury.²⁵

Physiotherapists knowledge of AIDS has mostly been assessed using questions on modes of transmission and knowledge of support structures provided by employers, mode of transmission and complications, and perceptions of risks of transmission, while attitude has been assessed using a couple of items on precautions and on risks associated with the disease, items on fears, the need to treat and isolate PWA, infection control precautions and on keeping up with current information on AIDS.^{21,23-25} No study was found that reported on physiotherapists' affective traits and willingness to provide care in specific clinical scenarios involving PWA, and only one study reported on the psychometric properties of the instruments utilized to assess physiotherapists knowledge and attitude.²⁴

The present study focused on the components of knowledge, and affective traits and on the willingness to provide care in specific clinical scenarios involving PWA. In this study, the term affective trait is used to qualify attributes such as positive ethical disposition, feeling of comfort and preparedness, and willingness to provide care for PWA. Ethical disposition is operationally defined as the degree to which a person identifies with or conform to the accepted principle of right or wrong as it relates to a decision to provide care to patients. A caregiver with a positive ethical disposition subordinates self-interest and personal preferences to the ethical duty and obligation to provide care regardless of the status of a patient or the condition.

The purpose of this study was therefore to assess (1) Nigerian physiotherapists' knowledge levels on AIDS transmission, universal precaution and pathophysiology, (2) their feeling of preparedness, level of comfort, and ethical disposition to care for PWA and their willingness to evaluate and administer procedural intervention on PWA in different clinical scenarios.

METHODS

Sample

Questionnaires were mailed to 10 randomly selected physiotherapists on the register of the Medical Rehabilitation Therapist Board of Nigeria, but after a six-week period, no response was obtained from any of those sampled. Rank-ordered listings of physiotherapists were then obtained through contact persons in the six geopolitical zones in the country, from which every third physiotherapist in each of the six zones was surveyed.²⁶

Instrument

A two-part questionnaire with items culled from a previously developed instrument with permission from the originating author

was utilized in the study.²⁷ The 46-item instrument was assessed for content validity by two physicians, two physiotherapists and two behavioral scientists. The criteria for recruiting the panel for the instrument validation include previous experience in rendering services to PWA and having more than 10 years post qualification experience in their disciplines. The panel jointly reviewed the instrument's items for relevance of subject theme, appropriateness of contents and agreed on the items to be included in the questionnaire. The questionnaire was then pretested among 10 selected Physiotherapists for two-week test-retest reliability. This time frame was selected to forestall the carry over effect that may be associated with a shorter time frame and exaggerate resulting reliability coefficients. Following the administration of the questionnaire, correlation coefficient of the subscales ranged between 0.72 to 0.88, indicating moderate reproducibility of the knowledge and affective subscales and also establishing their summative values.

Part I of the survey questionnaire elicited sociodemographic information and previous experience with PWA, previous AIDS educational instructions, instructional mode and its effectiveness. Participants were asked whether they knew any family member or another person with AIDS, ever provided services to PWA and whether they ever refused to provide care to PWA. The responses were either "Yes" or "No". Part two of the questionnaire comprised three subscales that evaluated knowledge of transmission (eight questions), universal precaution (six questions) and pathophysiology of HIV/AIDS (six questions), and four affective traits subscales assessing comfort (five questions), preparedness (four questions), ethical disposition (four questions) and willingness to assess and provide intervention in five clinical scenarios involving PWA (Appendix A).

The questions on the knowledge subscales were framed to elicit "Yes", "No" or "Not sure" responses. Only the correct answers were counted and "Not Sure" responses were not given any credit. A high score indicates good knowledge on each of the components. Responses on the affective subscales were rated on a five-point Likert scales ranging from strongly agree (1) to strongly disagree (5). The maximum scores were 20, 25 and 20 for preparedness, comfort, and ethical disposition subscales respectively. Questions on these subscales were worded negatively, therefore the higher the subjects' total score, the better their feeling of preparedness, comfort, and ethical disposition.

One clinical scenario on the willingness subscale described a patient fictitiously named Matt with diagnosis of AIDS and AIDS-Related Dementia, hypertonia, personality changes with periods of confusion and agitation, dysarthria, incontinence, and seizure and referred for home physical therapy treatment to reduce tone, improve activities of daily living skills and a general exercise program. Respondents were asked if they would be willing to evaluate and treat in each clinical scenarios on a five-point Likert scale ranging from strongly willing (1) to strongly unwilling (5). All five items on the subscale were worded positively to minimize the inherent contamination and response shift bias due to social desirability phenomenon.²⁸ The minimum and maximum score for this subscale are 5 and 25, respectively and the higher the subjects total score, the less the willingness to provide service for PWA.

Procedure

A sample of physiotherapists practicing across Nigeria was surveyed between March and May 2006. A cover letter assures anonymity and that completion of the questionnaire implied consent. Following approval by the Ethics Committee of the principal author's institution, questionnaires were mailed to contact persons in each of the zones who then provided the sample with the survey packet that included a consent letter and a return envelope by mail or direct contact. With less than 600 registered physiotherapists' count in single digits,²⁶ a minimum sample of 100 participants was proposed for this study.

Data Computation and Statistical Analysis

For each completed questionnaire, the number of correct responses on the knowledge subscale was determined. Similarly, we summed the ratings separately for the affective attitude subscales. For the knowledge subscale, 75% correct score on transmission (6 out of 8) and universal precaution (3 of 4) were considered satisfactory, while 80% correct score was considered satisfactory (5 of 6) on pathophysiology. As a result of the negative wording of these three affective subscale items, responses were considered positive if the respondents strongly disagreed or disagreed on the questions. Satisfactory score on preparedness and ethical disposition was 75% positive (3 of 4), while 80% positive response was considered satisfactory (4 of 5) for comfort. The thresholds of 75% to 80% were selected based on a description of satisfactory responses in a previous study.²⁷

Using Analyse-It Statistical Software (Analyse-It Ltd, Leeds, United Kingdom) descriptive statistics was computed and t-test was used to determine the influence of sociodemographic variables on knowledge and affective traits. Proportional differences were explored using chi statistics, and analysis of variance (ANOVA) was utilized to assess differences in willingness in the clinical scenarios, at an alpha level of 0.05.

RESULTS

A total of 132 out of 151 physiotherapists surveyed returned usable questionnaires (all items completed), giving a response rate of 87.4%. The participants' age ranged between 24 and 51 (mean=22.7, SD=5.8), and majority were male (64.4%) and were married (52.3%). Majority (56.8%) hold the rank of physiotherapist grade I or interneer physiotherapists (lower cadre) and 43.2% are senior, principal or chief physiotherapists (higher cadre). Overwhelming majority (83.3%) will care for PWA if asked, have received instructions on AIDS (74.2%), were satisfied with instructions received (97.9%), and have previously cared for PWA (85.6%) (Table 1). Women participants tend to be in the higher cadre, tend to be single and tend to say no when asked whether they would provide care for PWA if asked than their male counterparts (not shown in table).

The mean knowledge score of the subjects were 6.8 (SD=1.0), 2.5 (SD=1.1) and 3.3 (SD=1.1) for transmission, precaution and pathophysiology respectively, indicating overall satisfactory scores on knowledge of transmission, and unsatisfactory knowledge of universal precaution and pathophysiology. While 93.9% of the physiotherapists gave 75% correct response (satisfactory score) on transmission, only 15.9% scored to the satisfactory level on pathophysiology (Table 2). The mean score on affective components are 18.1 (SD=7.8), 14.8 (SD=5.1) and 16.7 (SD=4.7) for comfort, ethical disposition and preparedness respectively. Majority of the respondents showed satisfactory response on feeling of comfort, ethical disposition and preparedness (64.5%, 71.2% and 84.7% respectively).

Table 3 showed the physiotherapists' willingness to evaluate and provide intervention in different patient scenarios. Highest willingness (least score) was found in the scenario involving Joe with progressive symmetrical paraparesis, weakness, parasthesia, gait difficulties, muscle deterioration and incontinence, referred for therapeutic exercises, and activities of daily living and gait training, and in the scenarios involving a one year old Sarah with delayed motor development, extreme spasticity, feeding difficulties, and respiratory disease, and referred to physiotherapy for a program to reduce tone, facilitate normal movement and oral control, and chest care (mean=1.6, SD=0.7 and 0.6 respectively). Willingness was lowest ($p<0.001$) in the scenarios involving Tim with open wound and who was referred for whirlpool wound treatment (mean= 2.7, SD=1.2).

Higher cadre physiotherapist scored significantly higher ($p<0.05$) on knowledge of precaution than those in the lower cadre (2.8, SD=0.9 vs. 2.3, SD=1.1), and male physiotherapists were better ethically disposed ($p<0.01$) than their female counterparts (15.5, SD=4.7 vs. 13.6, SD=5.7). Those who answered "Yes" to the question "Are you willing to care for PWA if asked" showed better ethical disposition, preparedness and comfort ($p<0.01$) than those who answered "No" or were undecided (Appendix B-Table 4).

Male physiotherapists were more willing to evaluate and provide intervention in the scenarios of Joe, Sarah and Matt than their female counterparts. Those who responded they would care for PWA if asked showed better willingness in all scenarios than those who responded No. Significant correlation was found among the affective traits ($r=0.33-0.42$, $p<0.01$), but not among the knowledge components. Except for the willingness scores on scenarios involving Joe and Tim that is not positively related, scores on all other scenarios correlates with each other ($r=0.33-0.65$, $p<0.01$) (Appendix B-Table 5).

Table 1: Physiotherapists' demographic characteristics and previous experience and encounters with persons living with AIDS (N=132)

Independent Variable	Frequency	Percentage	Chi Statistics
Rank of Clinician			10.20*
Higher Cadre	57	41.2	
Lower Cadre	76	56.8	
Marital Status			15.28*
Married	61	46.2	
Single	69	42.3	
Divorced/Separated	2	1.5	
Religion			2.13
Christianity	103	78.0	
Islam	29	22.0	
Ever been asked to provide services for PWA			0.32
Yes	110	83.3	
No	22	16.7	
Ever refused to provide service to PWA			0.04
Yes	5	3.8	
No	127	96.2	
Ever cared for PWA			0.16
Yes	113	85.6	
No	19	14.4	
Know someone living with AIDS			0.04
Yes	83	62.9	
No	49	37.1	
Will care for PWA if asked			12.22*
Yes	110	83.3	
No	22	16.7	
Ever received instructions on HIV/AIDS			0.21
Yes	98	74.2	
No	34	25.8	
Satisfied with instructions on HIV/AIDS			0.04
Yes	96	97.9	
No	2	2.1	

*Indicates significant gender differences in the observed proportions for the indicated variable

Subtotals on 'satisfied with instructions on HIV/AIDS' do not add up to 132 because this question does not apply to those who have not received instructions on AIDS.

Table 2: Physiotherapists scores on knowledge and three affective traits components

Subscale	Mean (SD)	Satisfactory*		Unsatisfactory	
		n	%	n	%
Knowledge Components					
Knowledge of Transmission	6.8 (1.0)	124	(93.9)	8	(6.9)
Knowledge of Precaution	2.5 (1.1)	68	(51.5)	64	(48.5)
Knowledge of Pathophysiology	3.3 (1.1)	21	(15.9)	111	(84.1)
Affective Components					
Comfort with care of PWA	18.1 (7.8)	85	(64.5)	47	(35.6)
Ethical Disposition	14.8 (5.1)	94	(71.2)	38	(28.8)
Preparedness	16.7 (4.7)	111	(84.1)	21	(15.9)

*-Those who score 75% correct score on Transmission and Precaution or 80% score on pathophysiology on knowledge components, or those who responded positively (Disagree or Strongly Disagree) on 75% (3 of 4) of items on Comfort and Ethical Disposition or 80% (4 of 5) on items on Preparedness of the attitude components. Satisfactory score were values based on reports by Balogun et al.²⁷

The higher the mean score the more knowledgeable and the better the affective attitude toward persons with AIDS (PWA).

Possible range of scores for Transmission= 0-8, Precaution 0-4, Pathophysiology 0-6; Comfort =5-25, Ethics and Rights =5-20; Competence and preparedness 5-20

Table3: Physiotherapists rating of their willingness to evaluate and treat persons living with AIDS

Scenarios	SA (%)	AG (%)	ND (%)	DA (%)	SD (%)	Mean (SD)
Joe ¹	47.6	42.9	8.0	1.5	0	1.6 (0.7) ^a
Frank ²	34.8	36.6	17.0	9.8	1.8	2.1 (1.0) ^b
Sarah ³	46.4	48.2	4.5	0.9	0	1.6 (0.6) ^a
Tim ⁴	17.0	31.3	25.0	17.9	8.8	2.7 (1.2) ^c
Matt ⁵	29.5	45.5	18.8	3.6	2.6	2.0 (1.0) ^b

SA= Strongly Agree, AG= Agree ND=Neither Agree nor Disagree, DA=Disagree, SD=Strongly Disagree

¹Joe is a patient with a diagnosis of AIDS and progressive symmetrical paraparesis. He presents with weakness, parasthesias, gait difficulties, muscle deterioration, and incontinence. Joe has been referred to physiotherapy (PT) for gait and ADL training, and a therapeutic exercise program. I would be willing to evaluate and treat Joe.

² Frank is a patient with a diagnosis of AIDS and pneumocystis carinii pneumonia. He has been referred for bedside chest PT consisting of postural drainage, percussion and vibration, and breathing and coughing exercises. I would be willing to evaluate and treat Frank for chest PT.

³ Sarah is a 1 year old child with AIDS. She presents with delayed motor development, extreme spasticity, feeding difficulties, and respiratory disease. She has been referred to PT for a program to reduce tone, facilitate normal movement and oral control, and chest care. I would be willing to evaluate and treat Sarah.

⁴ Tim is a patient with a diagnosis of AIDS who has been referred to PT for treatment of his skin lesions, decubiti and pain due to peripheral sensory neuropathies. I would be willing to treat Tim with whirlpool and TENS.

⁵ Matt is a patient with a diagnosis of AIDS and AIDS-Related Dementia. He is currently being cared for at home and presents with hypertonia, personality changes with periods of confusion and agitation, dysarthria, incontinence, and seizure. He has been referred for home physical therapy treatment to reduce tone, improve activities of daily living skills and a general exercise program. I would be willing to evaluate and treat Matt with home physiotherapy.

Mean with different letter superscript are significantly different ($p < 0.01$) from each other while those with the same superscript are not. For example the level of willingness in the scenario involving Frank is lower than in the scenario involving Joe, but not different from that of Sarah.

All names are fictitious.

DISCUSSION

Information on physiotherapist knowledge and behavior in providing care to PWA is important especially in Nigeria, where an estimate of five million, of the 130 million population, are infected with HIV, and less than 1600 physiotherapists are available to service this population.²⁹⁻³¹ In search of greener pastures, young physiotherapists from this country continued to take advantage of the US, Canadian, and British immigration programs that attract highly skilled personnel from the developing countries.³²⁻³⁴

Perspectives of health professionals such as physiotherapists from countries like Nigeria, where AIDS is still regarded as death sentence, may also offer useful insights into the orientation, assignment, and posting needs of foreign educated personnel upon emigration to other countries. Insights into the knowledge and affective traits of other health professionals could serve to enhance communications among health professionals within and across national boundaries.

Knowledge of Transmission, Precaution and Pathophysiology

Many of the physiotherapists did not score to a satisfactory level on universal precaution and most of them did not have adequate knowledge of pathophysiology. Unsatisfactory performance by many of the Nigerian physiotherapists reflects a general trend among health professionals including physicians and nurses in several countries.^{8,11,13,14} While the immediate impact of unsatisfactory knowledge of pathophysiology may not be obvious, unsatisfactory knowledge of universal precaution is serious and unacceptable from the stand point of the clinicians safety and the patient's right to the best care from a knowledgeable and competent clinician.

Knowledge of transmission, universal precaution and pathophysiology belong in cognitive domain in the theory of learning but may not be placed on the same levels of complexity. Pathophysiology is abstract knowledge, and may be deemed difficult to grasp or master than knowledge of transmission and universal precaution. Unsatisfactory performance on pathophysiology may therefore be attributed to its relative complexity compared to the other knowledge components.

Physiotherapists Affective Traits

Some Nigerian physiotherapists were not comfortable, did not show satisfactory ethical disposition and did not feel prepared to care for PWA. Performance on these affective traits may be attributed to fears of contracting HIV, a common trend among health professionals.^{7,17,35} The physiotherapists dismal level of willingness to provide whirlpool wound care procedures compared to other procedures may be attributed to a perceived risk of exposure to blood in open wound treatment that may not be associated with other procedural interventions such as therapeutic exercises, gait and activities of daily living training, and chest physiotherapy.

The physiotherapists' low willingness to provide chest physiotherapy in the scenarios involving Frank may be attributed to a plausible erroneous notion that they could be exposed through contact with the sputum of PWA. Nevertheless, the physiotherapists' low willingness to provide chest physiotherapy should be interpreted with caution because this response may not be attributed to fears alone. Physiotherapist may be unwilling to provide postural drainage, percussion and vibration if they believe the pneumonia is of interstitial type for which, unlike in the lobal type, the procedures may not be of any benefit.³⁶

Better willingness in the scenario of a one year old Sarah with chest physiotherapy not extended to the scenario involving Frank, a presumed adult for whom chest physiotherapy is also indicated suggests affective traits may be mediated by other survivor factors. A toddler may be viewed as helpless and deserving of empathy more than adults, who may erroneously be presumed to be deserving of blame for contracting HIV through promiscuous sexual behavior. Our finding of varying willingness among physiotherapists in clinical scenarios is in agreement with the willingness among nurses which varies according to the nature of the nursing intervention in three European countries and patients' injection drug use and commercial sex habit in Thailand.^{37,38}

Differences by Demographics and Previous Encounter with PWA

The reason why male participants were more ethically disposed to provide care for PWA and were absolutely more willing to evaluate and provide intervention in all five scenarios (significant at $p < 0.01$ in three scenarios), than their female counterparts is unclear. One plausible explanation is that men could be less fearful or more daring than their female counterparts when faced with perceived dangers or uncertainties as in managing contagious conditions such as AIDS.

Possible benefits of previous experience in managing PWA on behavior is evidenced by our finding that those who have ever cared for PWA reported better willingness in all five scenarios (significant at $p < 0.01$ in three scenarios). Significantly better affective traits ($p < 0.01$) in all scenarios shown by those who responded they would care for PWA if asked than those who responded 'No' shows the value of intention or accepting to care on affective traits. Intention not to care expressed by participants who answered 'No' may not be a valid indication of a future refusal. It is however an overt sign that may be used to identify those who in the future may be reluctant or are at risk of providing suboptimal care to patients with known or suspected HIV status, and perhaps other contagious condition.

Implications of Findings

Perhaps health professionals' knowledge gap reported in this and many previous studies is not peculiar to AIDS condition alone. Other than bubonic plague, no condition attracted such an extensive attention and investigation as AIDS. It may be argued that existence of knowledge gap is not of any major consequence to care outcome. It can also be argued that detailed pathophysiology is not a working knowledge required for a successful administration of procedural intervention in physiotherapy. Perhaps knowledge gap will always exist among health practitioners and may only be minimized. A pragmatic step is therefore to challenge professionals to keep up to date with relevant knowledge on conditions at all times.

While lack of adequate knowledge on pathophysiology and transmission of AIDS may not be passed for incompetence, inadequate knowledge of universal precaution is unacceptable as this is important for the clinician's self-protection. Behaviors such as unwillingness to administer whirlpool treatment to PWA with open wound is an overt sign of knowledge gap that if perceived by a patient could negatively impact confidence in the practitioner and care outcome.

Based on our findings, there is the need for measures to ensure continuing competence especially in core areas such as universal precaution and to improve affective traits through learning behavior including relevant skill acquisitions and updates. Future study to compare response on PWA, similarly transmissible contagious condition and non-contagious condition may elucidate knowledge and affective traits as it relates to care in general.

CONCLUSION

Physiotherapy in Nigeria showed unsatisfactory knowledge of universal precaution and AIDS pathophysiology, and many of them did not feel comfortable and showed low ethical disposition when it comes to caring for PWA. Nigerian physiotherapists were less willing to evaluate and provide intervention to PWA with open wounds or pulmonary conditions than those with musculoskeletal or neurological impairments. The study found influence of gender, previous experience and intention to care for PWA on affective traits. It identified the need to ensure continuing competence in core area of universal precaution and admonished physiotherapists to cultivate humanistic core values including higher ethics.

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APPENDIX A

Questionnaire Items (Exclude sociodemographic information and previous experience with patients living with AIDS, and AIDS educational instructions).

Knowledge of Transmission (Yes, No or Not Sure)

The AIDS virus is found in high concentrations in saliva, tears and urine.
People can get AIDS by sharing a needle with a drug user who has AIDS.
Condoms give a person 100% protection against contracting AIDS from sexual practices.
The risk of contracting AIDS is believed to increase as the number of one's sexual partner's increases.
AIDS can be transmitted by blood and blood products.
AIDS can be transmitted by casual contact with persons who have the disease.
Consistent use of condoms may decrease transmission of the AIDS virus.
There is good evidence that AIDS cannot be transmitted to a fetus before birth.

Knowledge of Pathophysiology (Yes, No or Not Sure)

AIDS is a disease that strikes at the human immune system.
When the AIDS virus enters the bloodstream, it begins to attack certain blood cells called granulocytes.
A positive antibody test means the person has AIDS.
The helper/suppressor ratio of T-lymphocytes is usually reversed in patients with AIDS.
Symptoms of AIDS occur predictably within six months following infection with the AIDS virus.
Secondary infections are a major complication of AIDS.

Knowledge of Universal Precaution (True, False, Not sure)

Masks should be routinely worn when caring for all individuals with AIDS.
There is good evidence that AIDS cannot be transmitted to a fetus before birth
Eye protection should be worn with all patients in those situations where blood and body fluids can be splashed into the caregiver's eyes
It is necessary to wear complete protective coverings (ie. Mask, eyewear, cap, gown, and gloves) while treating an AIDS patient

Feeling of Preparedness (Strongly Agree [1] to Strongly Disagree [5])

Physical therapist are not trained to treat the disabilities/physical limitations which the AIDS patients present with.
I would not want to be assigned to patients with AIDS because I do not feel competent to meet their intense physical needs.
I would not want to be assigned to patients with AIDS because I do not feel competent to deal with their intense psychological needs.
I feel that I have not had sufficient information/ training to competently protect myself against infection while treating AIDS patient.

Feeling of Comfort (Strongly Agree [1] to Strongly Disagree [5])

Caring for a patient who is dying is uncomfortable to me.
I would feel uncomfortable providing service to: a child with AIDS.
I would feel uncomfortable providing service to: a hemophiliac AIDS patient
I would feel uncomfortable providing service to: a female prostitute with AIDS.
I would feel uncomfortable providing service to: an IV drug user with AIDS.

Ethical Disposition (Strongly Agree [1] to Strongly Disagree [5])

I should have the right to refuse to care for a person with AIDS.
I would refuse to care for a patient with AIDS.
Health care agencies should have the right to refuse to provide care to patients with AIDS.
Physical therapists should be assigned to care for patients with AIDS on a voluntary basis only.

Clinical Scenarios (Strongly Willing [1] to Strongly Unwilling [5])

Joe is a patient with a diagnosis of AIDS and progressive symmetrical paraparesis. He presents with weakness, parasthesias, gait difficulties, muscle deterioration, and incontinence. Joe has been referred to PT for gait and ADL training, and a therapeutic exercise program. I would be willing to evaluate and treat Joe.

Frank is a patient with a diagnosis of AIDS and pneumocystis carinii pneumonia. He has been referred for bedside chest PT consisting of postural drainage, percussion and vibration, and breathing and coughing exercises. I would be willing to evaluate and treat Frank for chest PT.

Sarah is a 1 year old child with AIDS. She presents with delayed motor development, extreme spasticity, feeding difficulties, and respiratory disease. She has been referred to PT for a program to reduce tone, facilitate normal movement and oral control, and chest care. I would be willing to evaluate and treat Sarah.

Tim is a patient with a diagnosis of AIDS who has been referred to PT for treatment of his skin lesions decubiti and pain due to peripheral sensory neuropathies. I would be willing to treat Tim with whirlpool and TENS.

Matt is a patient with a diagnosis of AIDS and AIDS-Related Dementia (ARD). He is currently being cared for at home and presents with hypertonia, personality changes with periods of confusion and agitation, dysarthria, incontinence, and seizure. He has been referred for home PT treatment to reduce tone, improve ADL'S and a general exercise program. I would be willing to evaluate and treat Matt with home PT.

Appendix B.

Table 4: Differences in knowledge and three affective traits by demographic variables and previous encounters with PWA

Variables	KTR		KPP		KUP		Preparedness		Comfort		Ethical Disposition	
	Mean (SD)	t-test	Mean (SD)	t-test	Mean (SD)	t-test	Mean (SD)	t-test	Mean (SD)	t-test	Mean (SD)	t-test
Gender		0.63		0.36		0.47		1.47		0.84		2.00*
Male	6.7 (1.1)		3.2 (1.2)		2.5 (1.1)		17.2 (4.2)		18.5 (7.4)		15.5 (4.7)	
Female	6.9 (0.8)		3.3 (0.9)		2.6 (1.0)		15.9 (5.4)		17.3 (8.5)		13.6 (5.7)	
Rank of Clinician		0.64		0.74		2.79*		0.38		0.29		1.52
Higher Cadre	6.8 (0.8)		3.2 (1.1)		2.8 (0.9)		16.9 (4.7)		18.3 (8.1)		14.0 (5.4)	
Lower Cadre	6.7 (1.1)		3.3 (1.1)		2.3 (1.1)		16.6 (4.7)		17.3 (7.8)		15.4 (4.9)	
Religion		2.37*		0.76		0.36		1.83		1.22		1.00
Christianity	6.9 (0.9)		3.1 (1.1)		2.5 (1.1)		17.1 (4.5)		18.5 (7.8)		15.1 (5.1)	
Islam	6.4 (1.1)		3.1 (1.1)		2.5 (0.9)		15.3 (5.2)		16.6 (7.7)		13.9 (5.4)	
Will care for PWA if asked		0.77		0.21		0.74		3.04*		2.55*		2.35*
Yes	6.8 (1.0)		3.3 (1.1)		2.5 (1.0)		17.3 (4.3)		18.9 (7.6)		15.3 (4.8)	
No	6.6 (0.7)		3.3 (1.1)		2.4 (0.9)		14.0 (5.8)		14.3 (7.4)		12.5 (6.3)	
Ever received instructions on HIV/AIDS		1.34		0.59		0.09		1.45		1.04		0.25
Yes	6.8 (0.9)		3.3 (0.9)		2.5 (1.1)		17.1 (4.5)		18.5 (7.8)		14.7 (5.4)	
No	6.6 (1.1)		3.2 (1.3)		2.5 (1.1)		15.7 (5.1)		16.9 (7.8)		15.0 (4.4)	
Satisfied with instructions on HIV/AIDS		2.72*		0.53		1.22		0.26		0.49		1.21
Yes	6.6 (0.9)		3.3 (0.9)		2.8 (0.9)		16.9 (4.6)		18.6 (7.7)		15.4 (5.1)	
No	7.1 (0.8)		3.2 (1.1)		2.5 (1.1)		17.2 (4.6)		17.8 (7.9)		14.2 (5.4)	

*- Indicates significant differences $p < 0.05$ in the observed means for the indicated variable. For example those who identified themselves as Christians scored higher on knowledge of transmission than their counterparts who identified themselves as Muslims.

Only the variables with differences in at least one of the knowledge or affective components are shown.

KTR= Knowledge of Transmission, KPP= Knowledge of Pathophysiology, KUP= Knowledge of Universal Precaution

Possible range of scores for KTR= 0-8, KUP 0-4, KPP 0-6; Comfort =5-25, Ethical Disposition =5-20; Preparedness 5-20

Table 5: Differences in willingness in clinical scenarios by demographic variables and previous encounters with PWA

Variables	Joe Mean (SD)	t-test	Frank Mean (SD)	t-test	Sarah Mean (SD)	t-test	Tim Mean (SD)	t-test	Matt Mean (SD)	t-test
Gender		3.18*		1.78		2.16*		0.41		3.15*
Male	1.5 (0.7)		1.9 (1.0)		1.5 (0.5)		2.7 (1.3)		1.9 (0.7)	
Female	1.9 (0.7)		2.3 (1.0)		1.8 (0.7)		2.8 (1.0)		2.4 (1.2)	
Marital Status		2.24*		0.89		1.48		1.26		2.04*
Married	1.5 (0.6)		1.9 (1.0)		1.5 (0.5)		2.8 (1.4)		1.9 (0.9)	
Single	1.8 (0.8)		2.2 (1.1)		1.7 (0.7)		2.5 (1.0)		2.2 (0.9)	
Ever been asked to provide service to PWA		2.18*		1.33		0.78		1.21		0.82
Yes	1.6 (0.7)		2.0 (1.0)		1.6 (0.6)		2.6 (1.2)		2.0 (0.9)	
No	1.9 (0.7)		2.4 (0.9)		1.5 (0.5)		3.0 (1.2)		2.2 (1.1)	
Ever cared for PWA		2.22*		2.35*		0.19		1.74		0.95
Yes	1.6 (0.7)		1.9 (1.0)		1.6 (0.6)		2.6 (1.2)		2.0 (0.9)	
No	2.0 (0.6)		2.6 (0.9)		1.6 (0.5)		3.2 (1.2)		2.3 (1.0)	
Will care for PWA if asked		5.51*		4.05*		2.77*		2.48*		4.78*
Yes	1.5 (0.6)		1.9 (0.9)		1.5 (0.6)		2.6 (1.2)		1.9 (0.8)	
No	2.4 (0.8)		2.9 (0.9)		1.9 (0.6)		3.3 (0.8)		1.2 (0.3)	
Satisfied with instructions on HIV/AIDS		0.13		0.71		0.45		2.09*		1.39
Yes	1.6 (0.8)		1.9 (1.0)		1.6 (0.7)		2.5 (1.2)		2.2 (1.1)	
No	1.7 (0.7)		2.1 (1.1)		1.6 (0.6)		3.1 (1.2)		1.9 (0.8)	

*- Indicates significant differences at $p < 0.05$ in the observed means for the indicated variable. Response from Strongly Willing (1) to Strongly Unwilling (5)

- ❖ Joe is a patient with a diagnosis of AIDS and progressive symmetrical paraparesis. He presents with weakness, parasthesias, gait difficulties, muscle deterioration, and incontinence. Joe has been referred to physiotherapy (PT) for gait and ADL training, and a therapeutic exercise program. I would be willing to evaluate and treat Joe.
- ❖ Frank is a patient with a diagnosis of AIDS and pneumocystis carinii pneumonia. He has been referred for bedside chest PT consisting of postural drainage, percussion and vibration, and breathing and coughing exercises. I would be willing to evaluate and treat Frank for chest PT.
- ❖ Sarah is a 1 year old child with AIDS. She presents with delayed motor development, extreme spasticity, feeding difficulties, and respiratory disease. She has been referred to PT for a program to reduce tone, facilitate normal movement and oral control, and chest care. I would be willing to evaluate and treat Sarah.
- ❖ Tim is a patient with a diagnosis of AIDS who has been referred to PT for treatment of his skin lesions, decubiti and pain due to peripheral sensory neuropathies. I would be willing to treat Tim with whirlpool and TENS.
- ❖ Matt is a patient with a diagnosis of AIDS and AIDS-Related Dementia. He is currently being cared for at home and presents with hypertonia, personality changes with periods of confusion and agitation, dysarthria, incontinence, and seizure. He has been referred for home physical therapy treatment to reduce tone, improve activities of daily living skills and a general exercise program. I would be willing to evaluate and treat Matt with home physiotherapy

All Names are fictitious.