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Nigerian physiotherapists' knowledge and attributes of professionalism

Joseph A. Balogun^{1*}, Chidozie Mbada², Adetutu O. Balogun³ and Udoka Okafor⁴

Abstract: *Background:* It has been reported in the extant literature that the attributes of professionalism vary widely with gender, age, the level of education, cultures, and socioeconomic backgrounds and between professions. This study evaluated Nigerian physiotherapists' knowledge and attributes of professionalism and also examined the influence of demographic variables on their professionalism. *Methods:* One hundred and forty-nine physiotherapists recruited from four randomly selected University Teaching Hospitals completed a Professionalism Inventory that assesses demographic variables, knowledge of professionalism and attributes of professionalism – clinical competence, a spirit of inquiry, accountability, autonomy, advocacy, innovation and visionary, collegiality and collaboration, and ethics/value. *Results:* The physiotherapists' average knowledge of professionalism score was 62%, and the average attributes of professionalism score were 63/80 (79%). The physiotherapists who are married, older than 40 years, and with a doctorate, with 16–20 years of work experience, and employed in the neurology practice setting



Joseph A. Balogun

ABOUT THE AUTHORS

Two of the authors of this paper (Joseph and Adetutu) were born in Nigeria but they are now naturalized citizen of the United States of America. Chidozie and Udoka are Nigerian citizens.

The authors have collaborated on several research projects relating to the advancement of knowledge on professionalism. Specifically, they have developed a Professionalism Inventory to assess physiotherapists' knowledge and attributes of professionalism and established the readability, stability and internal consistency of the psychometric instrument. In addition, they have investigated the effects of a customised professionalism educational intervention on physiotherapists' knowledge and attributes of professionalism.

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PUBLIC INTEREST STATEMENT

Since physiotherapy was imported into Nigeria in 1947, the profession has gradually evolved from an occupation into a semi-professional status. Physiotherapists in Nigeria are now keenly aware that in-depth knowledge of professionalism and exemplary professional conduct is expected of them. Study of the core values of professionalism is important because it can impact the quality of healthcare delivery. This preliminary survey was implemented to determine the knowledge and core values of professionalism among Nigerian physiotherapists. Overall, the 149 physiotherapists who participated in the study demonstrated poor knowledge of professionalism. Thus, it is imperative that professionalism contents be included in the entry-level physiotherapy curriculum and the need to offer continuing education workshops on professionalism for practicing physiotherapists. The data collected would serve as a representative for the Nigerian physiotherapists and can be used as a baseline to gauge any shift in the knowledge and core values of professionalism among the physiotherapists in this study.

demonstrated significantly ($p < 0.01$) higher knowledge of professionalism than their respective counterparts. Similarly, married physiotherapists and those with a doctorate, employed in the orthopedic/sports practice setting embodied higher attributes of professionalism than their counterparts. *Conclusions:* The poor knowledge of professionalism reported for the physiotherapists in this study has implications for curricula and licensure reforms in Nigeria.

Subjects: Allied Health; Rehabilitation Medicine; Physiotherapy and Sports Medicine

Keywords: professionalism; knowledge of professionalism; attributes of professionalism; fundamental elements of professionalism; core values of professionalism; self assessment

1. Introduction

Professionalism has over the years been a subject of interest to medical and allied health professions, including physiotherapy (American Physical Therapy Association [APTA], n.d.-1; Fantahun, Demessie, Gebrekirstos, Zemene, & Yetayeh, 2012; Harrits & Larsen, 2016; Vicarelli & Spina, 2015). As physical therapy becomes a “doctoring profession” and, direct access and independent practice become widely accepted around the world, in-depth knowledge of professionalism and exemplary professional conduct has become an expectation for physiotherapists and physiotherapist students. Unfortunately, professionalism is a multidimensional social construct with no simple and universally accepted definition. It is easy to recognize professionalism, but it is hard to measure because it is kaleidoscopic (APTA, n.d.-2; Balogun, 2015; Cruess & Cruess, n.d.; Salam et al., 2012). Professionalism was defined in this study as the consistent demonstration of behaviors that exemplify clinical competence, innovation, and visionary, a spirit of inquiry, ethics and value, accountability, collegiality and collaboration with the other members of the healthcare team to achieve optimal health and wellness in individuals and communities (APTA, n.d.-3).

Although it is widely believed that the professionalism of healthcare professionals can impact the quality of health care delivery, only a few quantitative studies were identified in the literature that addressed professionalism within the physiotherapy profession (Anderson & Irwin, 2013; Davis, 2009; Hayward & Charrette, 2010, 2012). A study designed to evaluate the opinion of physical therapy faculty relative to teaching and fostering professionalism of entry-level physical therapist students found that 89% of the faculty expressed concern about the professional behavior of their students (Davis, 2009). The students perceived clinical reasoning, integrity, and honesty as the most important professional skills needed by physical therapists. Tardiness and lack of personal responsibility were the two most frequent negative behaviors engaged in by students. Generic abilities, small group discussion, and related reading assignments were the three most common teaching methods used to foster professionalism (Davis, 2009). Physiotherapist educators in the United States of America were recently challenged to develop methods to teach and assess professional behavior associated with professionalism (Anderson & Irwin, 2013).

Some empirical-based studies were identified in the literature that evaluated the association between patients' satisfaction, professional values, educational levels and professionalism of physiotherapists (Alejandra, Ieva, Sheila, & Sharron, 2013; Bellner, 1996; Jimeno-Serrano, Medina-Mirapeix, Escolar-Reina, & DelBaño-Aledo, 2012; Masin & Tischenko, 2007). However, professionalism knowledge and the degree to which physiotherapists imbibe the attributes of professionalism are presently not defined.

Outside of the physiotherapy literature, it has been reported by several studies that the personality of a faculty member has a strong influence on the behavior and attitude of students towards professionalism (Gillespie, 2002; Haghdoost & Shakibi, 2006; Salam et al., 2012). Unfortunately, there is often a schism between what students learn in the classroom and what they observe in the clinical setting as outstanding professionalism attributes to uphold and emulate. When faculty in

the classroom and clinical environment fail to demonstrate appropriate professionalism before their students, then clearly such students' education will be compromised.

It has been reported in dental education that the attributes of professionalism vary widely with gender, age, between professions, the level of education and social background (Nath, Schmidt, & Gunel, 2006). It has also been speculated in the medical literature that professionalism is modulated by cultural and socioeconomic factors (Cruess & Cruess, n.d.; Salam et al., 2012). Therefore, it is rationale based on the extant literature cited above that professionalism reference values (norms) should be established across different cultures, socioeconomic backgrounds and between professions.

The aim of this study was to evaluate the knowledge and attributes of professionalism of Nigerian physiotherapists and to examine the influence of demographic variables on their knowledge and attributes of professionalism. Attributes of professionalism were defined by the following eight core values of behavior – clinical competence, a spirit of inquiry, accountability, autonomy, advocacy, innovation and visionary, collegiality and collaboration, and ethics and value. The terms attributes of professionalism, fundamental elements of professionalism and core values of professionalism addresses the same social construct of professional behavior and were therefore used interchangeably in this paper.

2. Methods

2.1. Ethics approval

Approval for this study was provided by the Institutional Review Board of the College of Medicine, University of Lagos, Nigeria; Application #05-08-15. Participation in the study was voluntary, and no stipends or incentive was offered to the physiotherapists.

2.2. Research design and study participants

A descriptive observational (cross-sectional) survey design was employed to answer the research questions posed among consenting physical therapists in Nigeria (Study Designs, n.d). The study participants were recruited from the physiotherapy departments of four University Teaching Hospitals in Nigeria – Jos University Teaching Hospital, Lagos University Teaching Hospital, University College Hospital, Ibadan, and Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. The four hospitals were randomly selected from the list of 17 Federal Government owned University Teaching Hospitals in Nigeria (List of all Federal Teaching Hospitals, n.d.).

The study participants were recruited purposively among the physiotherapists employed in the four randomly selected University Teaching Hospitals (Crossman, 2017). The selection criteria are membership of the Nigeria Society of Physiotherapy and full-time employment as a clinical physiotherapist or a consultant physiotherapist. The consultant physiotherapists have a dual appointment as lecturers and clinical physiotherapists within the physiotherapy education department of the University. Informed consent of the subjects was obtained before data collection. A total of 162 physiotherapists participated in this study. However, only the data of 149 (i.e. 92%) of them were found to be complete and valid for statistical analysis.

2.3. Procedures

Following the recruitment of the participating physiotherapists, they were fully briefed of the objectives of the study and were informed that their responses would be kept strictly confidential. They were also instructed that their participation is voluntary and they have the right to withdraw from the study at any time. The physiotherapists were instructed to answer the questions as honestly and as accurately as possible. Also, they were informed that there were no rights or wrong answers for the attributes of professionalism perception-based statements. Subsequently, they were provided the consent form and the Professionalism Inventory packet to complete. A time limit was not

imposed for the completion of the questionnaire, but most of them completed the survey in less than 20 min. No stipends or incentive was offered for participating in this study.

The development and psychometric properties of the Professionalism Inventory were published elsewhere (Balogun, Mbada, Balogun, & Okafor, [in press](#)). The research instrument assesses knowledge of professionalism and the attributes of professionalism. The psychometric instrument consists of three scales – demographic, knowledge of professionalism and attributes of Professionalism. The demographic questions asked were: date of birth, years of clinical work experience, gender, marital status, highest professional education, and place of employment, clinical practice area, and work setting. The professionalism knowledge question used a “Yes,” “No” or “Don’t Know” response options. A 5-point Likert scale with the anchors “Strongly Disagree” to “Strongly Agree” was used to assess the eight attributes of professionalism: clinical competence, a spirit of inquiry, accountability, autonomy, advocacy, innovation and visionary, collegiality and collaboration, and ethics and value. For knowledge of professionalism, the minimum score is 0, and the maximum possible score is 100%. The aggregate minimum attribute of professionalism score was 16, and the maximum possible score was 80. A high attribute of professionalism score suggests that the individual imbibes the core values of professionalism. The Professionalism Inventory used in this study has been found to be highly stable and internally consistent (Balogun, Mbada, Balogun, & Okafor, [2017](#)).

2.5. Statistical analysis

The statistical package for social sciences software version 16 was used to analyze the data. Descriptive and inferential statistical procedures were computed to summarize the data. The normality of the data-set was tested by calculating the Fisher’s Measure of Skewness (Skc) and Kurtosis (Ktc) (Kellar & Kelvin, [2013](#); Rose, Spinks, & Canhoto, [2015](#)). Normative data for knowledge and attributes of professionalism were computed at different percentile levels to characterize what is usual for Nigerian physiotherapists at the time of the study. The norm values reported can be used to describe the knowledge and attributes of professionalism of the Nigerian physiotherapists rather than explain phenomena (O’Connor, [1990](#)).

The unpaired (independent) *t*-test and one-way analysis of variance was used to explore the impact of demographic variables (age, gender, marital status, place of employment, clinical specialty, and practice setting), and educational background (academic credential and years of clinical experience) on the knowledge and attribute of professionalism scores. For example, gender had two groups (male and female) and was analyzed by the *t*-test. On the other hand, work experience had five groups (≤ 5 , 6–10, 11–15, 16–20 and >20 years) and was analyzed with a one-way analysis of variance. The Scheffe posthoc test, because of its conservativeness and robustness against non-normality in the data-set, was employed to probe any significant one-way analysis of variance *F*-ratio (Ito, [1980](#); Kellar & Kelvin, [2013](#); Laerd Statistics, [2013](#)).

Pearson’s product moment correlation coefficient (*r*) was computed to determine the relationship between the two variables on ratio or interval scales (i.e. between aggregate knowledge of professionalism, aggregate attributes of professionalism, age, and years of work experience). A *p*-value $\leq .05$ was accepted as being statistically significant.

3. Results

3.1. Participants’ demographic profile

The study participants’ demographic characteristics are presented in Table 1. The mean age of the physiotherapists who participated in this study is 35 ± 9.3 years. The majority of the sample was males (66%), between 30–40 years old (36%), married (53%), bachelor’s degree holders (58%) with less than five years of professional experience (40%).

Table 1. Demographic profile of the study participants (N = 149)

| Variables | Mean (SD) | Frequency | Percentage |
|--------------------------------|-----------|-----------|------------|
| <i>Gender</i> | | | |
| Male | | 99 | 66 |
| Female | | 50 | 34 |
| <i>Marital status</i> | | | |
| Single | | 69 | 46 |
| Married | | 79 | 53 |
| Separated (Divorced) | | 1 | 1 |
| <i>Age (years)</i> | 35 ± 9.3 | | |
| ≤30 | | 52 | 35 |
| 31-40 | | 54 | 36 |
| >40 | | 43 | 29 |
| <i>Degree type</i> | | | |
| Bachelor's | | 87 | 58 |
| Master's | | 37 | 25 |
| Doctorate | | 25 | 17 |
| <i>Work setting</i> | | | |
| State/Federal government | | 85 | 57 |
| Private establishment | | 10 | 7 |
| Teaching/Specialist hospital | | 52 | 35 |
| Others | | 2 | 1 |
| <i>Area of practice</i> | | | |
| Academia | | 25 | 17 |
| Clinical | | 124 | 83 |
| <i>Work experience (years)</i> | 11 ± 8.9 | | |
| ≤5 | | 59 | 40 |
| 6-10 | | 31 | 21 |
| 11-15 | | 18 | 12 |
| 16-20 | | 20 | 13 |
| >20 | | 21 | 14 |
| <i>Practice setting</i> | | | |
| Orthopedics/Sports | | 54 | 36 |
| Pediatrics | | 10 | 7 |
| Neurology | | 43 | 29 |
| General | | 42 | 28 |

The preponderance of the physiotherapists in the study (83%) was full-time clinicians in the hospital setting, and only 17% was employed as lecturer/consultant in the physiotherapy education program. The physiotherapists work in varying clinical practice settings such as orthopedics/sports, neurology, pediatrics, and general practice (Table 1).

3.2. Testing for the normality of the data-set

The statistical testing of the normality of the knowledge and attributes of professionalism data-set is presented in Table 2.

The result of the computed Skewness (Skc) and Kurtosis (Ktc) coefficients tests revealed that the knowledge of professionalism data was mesokurtically (normally) distributed; it was neither skewed

Table 2. Reference (normative) percentile values for the knowledge and attributes of professionalism (N = 149)

| Variables | 5th percentile score | 25th percentile score | 50th percentile Mean (SD) | 75th percentile score | 95th percentile score |
|---|----------------------|-----------------------|---------------------------|-----------------------|-----------------------|
| Aggregate knowledge of professionalism score* | 30 | 50.0 | 62 (17.9) | 80 | 90 |
| <i>Attributes of professionalism subscales</i> | | | | | |
| Competence | 1.2 | 4.0 | 4.02 (0.97) | 4.5 | 5.0 |
| Spirit of inquiry | 1.5 | 4.0 | 4.16 (1.01) | 4.0 | 5.0 |
| Accountability | 1.0 | 4.0 | 4.04 (1.02) | 4.0 | 5.0 |
| Autonomy | 1.5 | 3.5 | 3.69 (0.95) | 4.0 | 5.0 |
| Advocacy | 1.0 | 4.0 | 3.87 (1.00) | 4.4 | 5.0 |
| Innovation and visionary | 1.0 | 4.0 | 3.93 (1.02) | 4.5 | 5.0 |
| Collaboration and collegiality | 1.2 | 4.0 | 3.95 (1.01) | 4.5 | 5.0 |
| Ethics and values | 1.5 | 4.0 | 3.94 (0.93) | 4.5 | 5.0 |
| Aggregate attributes of professionalism score** | 23 | 62 | 63 (14.2) | 71 | 80 |

*Minimum score is 0, maximum possible score is 100.

**Minimum score is 16, maximum possible score is 80.

($Sk = 0.05$; $p > 0.05$) nor kurtotic ($Ktc = 1.65$; $p > 0.05$). On the other hand, the attributes of professionalism data were significantly and negatively skewed ($Sk = 19.64$; $p < 0.0001$) and also significantly platykurtic ($Ktc = 9.92$; $p < 0.0001$). Based on this finding, the attributes of professionalism data was evaluated by the one-way analysis of variance which is considered a robust test that tolerates the violations of the normality assumption rather well. As regards the normality of group data, the one-way analysis of variance tolerates data that is non-normal (skewed or kurtotic distributions) with only a small effect on the Type I error rate (Ito, 1980; Kellar & Kelvin, 2013; Laerd Statistics, 2013).

3.3. Norm values for knowledge and attributes of professionalism

The 5th, 25th, 50th, 75th, and 95th percentile values of the knowledge and attributes of professionalism for the physiotherapists are presented in Table 3.

The mean aggregate knowledge of professionalism score was 62%, and the mean aggregate attributes of professionalism score were 63 out of 80 maximum possible score.

Based on the distribution of the percentile score, a classification performance scale for the knowledge and attributes of professionalism data was developed and presented in Table 4.

Respondents with a knowledge of professionalism score below 50% and attributes of professionalism score below 35/80 are considered to have a “very poor” performance. Those respondents with knowledge of professionalism score greater than 90% and attributes of professionalism score greater than 75/80 is considered to have an “excellent” performance.

Table 3. Result of the skewness and kurtosis test for the knowledge and attributes of professionalism data (N = 149)

| | Knowledge of professionalism score* | Attributes of professionalism score^ |
|----------------------------|-------------------------------------|--------------------------------------|
| Range | 80 | 64 |
| Minimum | 20 | 16 |
| Maximum | 100 | 80 |
| Skewness | 0.009 | -2.117 |
| Standard error of Skewness | 0.199 | 0.199 |
| Skewness coefficient (SKC) | 0.05** | 10.64† |
| Kurtosis | -0.653 | 3.917 |
| Standard error of kurtosis | 0.395 | 0.395 |
| Kurtosis coefficient (KtC) | 1.65** | 9.92† |

*Minimum score is 0, maximum possible score is 100.

** $p > 0.05$.

† $p < 0.0001$.

^Minimum score is 16, maximum possible score is 80.

3.4. Impact of demographic factors on knowledge of professionalism

The findings of the unpaired (independent) t-test and one-way analysis of variance used to evaluate the impact of demographic factors on the knowledge of professionalism are presented in Table 5.

Gender, work setting, and specialty area had no significant ($p > 0.05$) effect on the physiotherapists' knowledge of professionalism. On the other hand, marital status, age, degree type, years of work experience and practice setting significantly ($p < 0.01$) influenced the physiotherapists' knowledge of professionalism. The result of the Scheffe posthoc test revealed that the physiotherapists who are married, and those older than 40 years of age, and with a doctorate, 16–20 years of work experience, and employed in the neurology practice setting demonstrated significantly ($p < 0.01$) higher knowledge of professionalism than their respective counterparts.

3.5. Impact of demographic factors on the attributes of professionalism

Table 6 contains the result of the unpaired (independent) test and the one-way analysis of variance used to evaluate the effect of demographic factors on the attributes of professionalism.

Table 4. Professionalism Inventory performance classification scheme

| S/N | Semantic descriptor | Aggregate knowledge of professionalism score* (%) | Aggregate attributes of professionalism score** |
|-----|---------------------|---|---|
| 1 | Very poor | 0–49 | 0–34 |
| 2 | Poor | 50–59 | 35–44 |
| 3 | Fair | 60–69 | 45–54 |
| 4 | Good | 70–79 | 55–64 |
| 5 | Very good | 80–89 | 65–74 |
| 6 | Excellent | 90–100 | 75–80 |

*For individuals, the score will be in whole (tenth) numbers; no partial scores. Maximum possible score is 100.

**Minimum score is 16, maximum possible score is 80.

Table 5. Result of the unpaired t-test and the one-way analysis of variance showing the effect of demographic factors on knowledge of professionalism (N = 149)

| Variables | Aggregate knowledge of professionalism score Mean (SD) | Test statistic (T/ANOVA) | p-level |
|---------------------------------------|--|--------------------------|---------|
| Sex | | 1.192 | 0.235 |
| Male (n = 99) | 61 (18.8) ^a | | |
| Female (n = 50) | 65 (15.8) ^a | | |
| Marital status | | 8.638 [†] | 0.001 |
| Single (n = 69) | 56 (17.9) ^a | | |
| Married (n = 79) | 68 (16.2) ^b | | |
| Separated (Divorced) (n = 1) | 60 ^c | | |
| Age (years) | | 9.508 [†] | 0.001 |
| ≤ 30 (n = 52) | 57 (17.6) ^a | | |
| 31-40 (n = 54) | 60 (15.8) ^a | | |
| >40 (n = 43) | 71 (17.5) ^b | | |
| Degree type | | 13.132 [†] | 0.001 |
| Bachelor's (n = 87) | 58 (18.1) ^a | | |
| Master's (n = 37) | 62 (14.1) ^a | | |
| Doctorate (n = 25) | 77 (14.0) ^b | | |
| Work setting (n = 85) | | 0.113 | 0.952 |
| State/Federal government (n = 85) | 62 (18.4) ^a | | |
| Private establishment (n = 10) | 65 (14.3) ^a | | |
| Teaching/Specialist hospital (n = 52) | 62 (18.1) ^a | | |
| Others (n = 2) | 60 (14.1) ^a | | |
| Area of practice | | 1.183 | 0.239 |
| Academia (n = 25) | 66 (18.0) ^a | | |
| Clinical (n = 124) | 61 (17.8) ^a | | |
| Work experience (years) | | 7.673 [†] | 0.001 |
| ≤5 (n = 59) | 55 (15.2) ^a | | |
| 6-10 (n = 31) | 59 (18.2) ^a | | |
| 11-15 (n = 18) | 70 (16.8) ^b | | |
| 16-20 (n = 20) | 72 (16.7) ^b | | |
| >20 (n = 21) | 71(16.5) ^b | | |
| Practice setting | | 4.703 [†] | 0.004 |
| Orthopedics/Sports (n = 54) | 64 (16.8) ^a | | |
| Pediatrics (n = 10) | 45 (17.2) ^b | | |
| Neurology (n = 43) | 66 (16.7) ^a | | |
| General (n = 42) | 59 (18.4) ^b | | |

[†]The result of the Scheffe *post hoc* comparison was presented using superscripts (^{a, b, c}).

Notes: For a particular variable, mean values with different superscript are significantly ($p < 0.05$) different. Mean values with same superscripts are not significantly ($p > 0.05$) different. The pair of cell means that is significant has different superscripts.

Attributes of professionalism were significantly influenced by marital status, degree type, and practice setting. The result of the Scheffe posthoc test revealed that the physiotherapists who are married and those with a doctorate and employed in the orthopedic/sports practice setting

Table 6. Result of the unpaired independent *t*-test and the one-way analysis of variance showing the effect of demographic factors on the attributes of professionalism (N = 149)

| Variables | Aggregate attributes of professionalism Mean (SD) score | Test statistic (T/ANOVA) | p-level |
|---------------------------------------|--|--------------------------|---------|
| <i>Sex</i> | | | |
| Male (n = 99) | 64 (13.8) ^a | -0.654 | 0.146 |
| Female (n = 50) | 62 (15.0) ^a | | |
| <i>Marital status</i> | | | |
| Single (n = 69) | 60 (18.1) ^a | 6.061 [†] | 0.003 |
| Married (n = 79) | 67 (8.31) ^b | | |
| Separated (Divorced) (n = 1) | 45 ^c | | |
| <i>Age (years)</i> | | | |
| ≤ 30 (n = 52) | 60 (19.5) ^a | 2.479 | 0.087 |
| 31-40 (n = 54) | 65 (12.7) ^a | | |
| >40 (n = 43) | 65 (5.15) ^a | | |
| <i>Degree type</i> | | | |
| Bachelor's (n = 87) | 60 (16.1) ^a | 5.328 [†] | 0.006 |
| Master's (n = 37) | 67 (10.5) ^b | | |
| Doctorate (n = 25) | 68 (8.44) ^b | | |
| <i>Work setting</i> | | | |
| State/Federal government (n = 85) | 64 (11.6) ^a | 1.767 | 0.156 |
| Private establishment (n = 10) | 55 (24.0) ^a | | |
| Teaching/specialist hospital (n = 52) | 64 (15.4) ^a | | |
| Others (n = 2) | 65 (7.78) ^a | | |
| <i>Area of practice</i> | | | |
| Academia (n = 25) | 66 (16.8) ^a | 1.071 | 0.286 |
| Clinical (n = 124) | 63 (13.6) ^a | | |
| <i>Work experience (years)</i> | | | |
| ≤5 (n = 59) | 60 (18.1) ^a | 2.079 | 0.087 |
| 6-10 (n = 31) | 64 (13.0) ^a | | |
| 11-15 (n = 18) | 69 (13.5) ^a | | |
| 16-20 (n = 20) | 66 (4.56) ^a | | |
| >20 (n = 21) | 65 (6.40) ^a | | |
| <i>Practice setting</i> | | | |
| Orthopedics/sports (n = 54) | 64 (11.7) ^a | 5.328 [†] | 0.006 |
| Pediatrics (n = 10) | 59 (17.6) ^b | | |
| Neurology (n = 43) | 64 (14.0) ^a | | |
| General (n = 42) | 63 (16.6) ^a | | |

[†]The result of the Scheffe *post hoc* comparison was presented using superscripts (a, b, c).

Notes: For a particular variable, mean values with different superscript are significantly ($p < 0.05$) different. Mean values with same superscripts are not significantly ($p > 0.05$) different. The pair of cell means that is significant has different superscripts.

significantly ($p < 0.01$) scored higher than their respective peers on the attributes of professionalism scale.

Table 7. Pearson’s product moment correlation coefficient (*r*) showing the relationship among the knowledge and attributes of professionalism, study participants’ age and years of work experience

| Variables | TKn ¹ | TPr ² | Comp ³ | SInq ⁴ | Acco ⁵ | Auto ⁶ | Advoc ⁷ | I & V ⁸ | C&C ⁹ | E&V ¹⁰ |
|-----------------|--------------------|--------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Age | 0.160 | 0.354 [†] | 0.015 | 0.110 | 0.208 ^ν | 0.211 ^ν | 0.125 | 0.171 ^ν | 0.174 ^ν | 0.160 [†] |
| Work experience | 0.198 ^ν | 0.401 [†] | 0.135 | 0.091 | 0.119 | 0.230 [†] | 0.211 ^ν | 0.144 | 0.169 ^ν | 0.209 ^ν |

¹Tkn = Aggregate knowledge score.

²TPr = Aggregate professionalism.

³Comp = Competence.

⁴SInq = Spirit of inquiry.

⁵Acco = Accountability.

⁶Auto = Autonomy.

⁷Advoc. = Advocacy.

⁸I & V = Innovation and Visionary.

⁹C&C = Collaboration and Collegiality.

¹⁰E&V = Ethics and Values.

^νCorrelation is significant at the 0.05 level (2-tailed).

[†]Correlation is significant at the 0.01 level (2-tailed).

3.6. Correlation among knowledge and attributes of professionalism, age and work experience

The computed Pearson’s product moment correlation coefficient (*r*) for the relationships among knowledge and attributes of professionalism, age, and work experience is presented in Table 7.

The findings revealed significant ($p < 0.05$) positive correlation between age and aggregate attributes of professionalism score. Age was also positively related ($p < 0.05$) to specific attributes of professionalism such as accountability, autonomy, advocacy, innovation and visionary, collaboration and collegiality and ethics/values. Similarly, years of work experience was positively related ($p < 0.05$) to the aggregate knowledge of professionalism, and aggregate attributes of professionalism scores. Year of work experience was also positively correlated ($p < 0.05$) with specific core values of professionalism such as autonomy, advocacy, collaboration and collegiality and ethics/values. These findings suggest that both the knowledge of professionalism and the attributes of professionalism increases with age and work experience.

4. Discussion

This study sets out to determine Nigerian physiotherapists’ knowledge and attributes of professionalism and also explored the influence of demographic variables on their professionalism. The study is the first empirical study of Nigerian physiotherapists’ knowledge and attributes of professionalism. The main finding was that the physiotherapists in this cross-sectional study had an average professionalism knowledge score of 62% and average attributes of professionalism score of 63/80 (79%). The poor performance on the professionalism knowledge scale is not particularly surprising given that professionalism is not currently taught in the physiotherapy education programs in Nigeria. This finding has implications for curricula and national licensure policy reforms. First, there is the need to include professionalism contents in the entry-level baccalaureate degree program in physiotherapy. Second, there is the need to offer continuing education workshops on professionalism for practicing physiotherapists to make them better practitioners. Third, completion of continuing education on professionalism should be made a licensure requirement by the Medical Rehabilitation Therapists Board of Nigeria. We have conducted a follow-up study and found that a three-hour customized educational intervention can improve the professionalism knowledge of practicing physiotherapists (Balogun et al., 2017).

A secondary purpose of this study was to explore the impact of demographic factors on knowledge and attributes of professionalism. The findings revealed that marital status, age, degree type, years of work experience and practice setting significantly ($p < 0.01$) impacted the physiotherapists’

knowledge of professionalism. The married physiotherapists and those who are older than 40 years of age, and with a doctorate, 16–20 years of work experience, and employed in the neurology practice setting demonstrated significantly ($p < 0.01$) higher knowledge of professionalism than their respective counterparts. The findings in this study also revealed that married physiotherapists and those with a doctorate and those employed in the orthopedic/sports practice setting, overall, embodied higher attributes of professionalism than their counterparts. These findings are consistent with those reported by Nath et al. (2006) who investigated whether the perception of what constitutes professionalism varies with age, discipline, gender, or educational level among students and faculty at a major academic health sciences center in the United States of America. The questionnaire asked participants to classify behaviors described in their survey as professional, unprofessional, or unrelated to professionalism. Nath et al. (2006) findings revealed that perception of professionalism varied most with the level of education and age and, to a lesser extent, with gender and health care discipline. Undergraduate students, women, the youngest age group (≤ 26 years), nursing students, and faculty members other than dental or medical professionals were more likely to label behavior depicted in the survey statements as unprofessional.

Similarly, the findings of this study corroborated the findings by Al-Sudani and associates (2013) who investigated the professional attitudes and behaviors acquired by dental students during their undergraduate education. The students completed a 27-item questionnaire covering four cumulative theoretical dimensions of professionalism. The majority (59%) of the students in Al-Sudani and associates (2013) study demonstrated high levels of professional attitudes and behaviors, whereas 40% did not comply with the fundamental elements of professionalism. The study revealed highly significant differences in individual responses about gender, academic level, and grade point average. Although some of the students did not possess all professional qualities, all of them possessed at least some core values of professionalism monitored in the study.

The overall findings in this study are consistent with the conclusions in Fantahun et al. (2012) cross-sectional study that investigated the attributes of professionalism of Ethiopian nurses. They found 13% of the nurses in their study had “high” attributes of professionalism, 42% had “moderate,” 32% had “low,” and 13% had “very low” core values of professionalism. As in this study, Fantahun et al. (2012) found age and work experience of the nurses were significantly correlated with their aggregate attributes of professionalism.

The findings in this study for practicing physiotherapists should be compared with caution with the previous studies implemented among medical students and faculty (Nath et al., 2006), dental students (Al-Sudani et al., 2013), and nurses (Fantahun et al., 2012).

4.1. Practical implications of the findings

The knowledge and attributes of professionalism norms derived in this study have practical applications. It can serve as a representative data for the Nigerian physiotherapists. Also, the data constitutes a baseline to gauge any shift in the knowledge and attributes of professionalism among the physiotherapists in this study (O'Connor, 1990; Psychometry, n.d.). The findings in this study revealed that knowledge and attributes of professionalism were influenced by marital status, degree type, and clinical practice setting. The physiotherapists who are singles, baccalaureate degree holders with less than five years clinical experience and those practicing in pediatric settings had the lowest knowledge and attributes of professionalism scores when compared to their counterparts. From a practical perspective, regardless of the physiotherapists' demographic characteristics, they should be held to the same level of professionalism. Therefore, the normative data in Table 2 and the performance classification scheme reported in Table 4 can be used to target the specific groups of physiotherapists with poor professionalism scores and provide them with continuing education training on professionalism to make them better practitioners.

4.2. Limitations and future research

The major limitation of this study is the relatively small sample size. As of 7 February 2017, there are 360 physiotherapists registered with the Nigeria Society of Physiotherapy (World Confederation for Physical Therapy [WCPT], 2017). The sample in this study ($N = 149$), were recruited from four randomly selected University Teaching Hospitals throughout the country and they constitute 41% of the survey's target population.

Using a typical standard deviation of 1.96 corresponding to 95% confidence interval (CI), and a margin of error (precision) of 5% for a target population of 360 practicing physiotherapists in Nigeria (WCPT, 2017), the minimum sample size of 187 will be needed (CheckMarket, n.d.). Given that only 149 physiotherapists who represent 41% of the target population participated in the study, the external validity of this study is limited in scope. Therefore, the knowledge and attributes of professionalism referenced (normative) data reported in this study should be used with a dose of caution. Follow-up investigations with a larger sample size randomly selected from the register of the Nigeria Society of Physiotherapy are needed to strengthen the external validity of this exploratory study.

The result of this study revealed that knowledge and attributes of professionalism increase with age and work experience. These findings suggest that knowledge and attributes of professionalism may reliably be predicted from age and work experience. Follow-up studies are needed to confirm this hypothesis.

5. Conclusions

The cohort of Nigerian physiotherapists in this study overall demonstrated poor professionalism. This finding has implications for curricula and national licensure policy reforms in physiotherapy. Based on the results of this study, it is recommended that professionalism contents be included in the entry-level curriculum of the physiotherapy education programs nationally and to offer continuing education workshops on professionalism for practicing physiotherapists to make them better practitioners.

Authors contributions

Joseph A. Balogun: Project conception and design, presented the customized professionalism lecture; wrote/edited parts of the manuscript and coordinated the entire project.

Chidozie Mbada: Statistical data analysis and read the different drafts of the manuscript.

Adetutu Balogun: Literature search and developed synopsis of the outputs, compilation of references, editing of different drafts of the manuscript.

Udoka Okafor: Wrote and processed the IRB application through the university committee, read and provided input into the different drafts of the manuscript.

All authors read and approved the final manuscript.

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Competing interests

The authors declare no competing interest.

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Cover image

Photographs of the main entrance gate to the institution that the two authors in Nigeria work.

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