Title: Cardio-respiratory physiotherapy training experience: perceptions of final-year Nigerian physiotherapy undergraduates

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Abstract

Background: Students are a key component of any educational programme to whom policies and requirements for the programme are directed. One of the ways to determine success or otherwise of a programme is obtaining students' views about the programme. This fact-finding exercise is important in other to understand the need to improve the programme quality.

Objective: This study explored perceptions of final-year Nigerian physiotherapy students about their cardio-respiratory physiotherapy (CRP) training experience.

Methods: This cross-sectional survey involved 190 Nigerian final-year physiotherapy students from seven Nigerian physiotherapy programmes. A questionnaire adapted from a previous study, content-validated and pilot-tested, was used to collect information on the students' perception about CRP training experience.

Results: About 55% of the respondents had CRP placement, and these were from three universities. Only 47% of the students that had CRP placement reported CRP experience in another placement, as opposed to 52.9% among those who had not. While majority of those who had prior CRP placement agreed that CRP was important (53.9%), only 33.7% of them considered it enjoyable. CRP placement was associated with CRP experience in another placement (χ^2=118.9; p<0.001), setting of CRP placement (χ^2=9.6; p=0.05), perceived role model in CRP (χ^2=6.7; p=0.04), and extent of knowledge in reducing work of breathing (χ^2=12.2; p=0.02).

Conclusion: CRP experience needs to be made more enjoyable to enable students acquire CRP skills. CRP placement is associated with CRP experience in another placement, setting of CRP placement, perceived role model in CRP and extent of knowledge in reducing work of breathing.

Key word: Cardio-respiratory physiotherapy, Training experience, perception, student

Introduction

Physiotherapy is concerned with maximizing quality of life through health promotion, disability and disease prevention, treatment of impairment, and rehabilitation (World Confederation of Physical Therapy, 2011). The profession has a number of specialty areas: neurological physiotherapy, cardio-respiratory physiotherapy (CRP), musculoskeletal physiotherapy, women's health physiotherapy, paediatric physiotherapy and geriatric physiotherapy among others (World Confederation for Physical Therapy, 2011). These areas encompass curative and preventive physiotherapy, and are integral parts of the healthcare system (Frantz, 2005).

Cardio-respiratory physiotherapists work in many areas, such as hospitals (public and private), rehabilitation centres, community health centres, private practice and academic environments. Reeve et al (2012) noted that physiotherapists who practice primarily in the area of CRP are employed in a wide range of settings: intensive care units, medical and surgical wards, outpatient and community rehabilitation services, and in educational and research institutes. In these settings, physiotherapists deliver specific and important services to a wide range of patients. These services are aimed to address life-style-related health problems that impact the cardiovascular, pulmonary, and metabolic systems (Reeve et al, 2012). Indeed, Marques et al (2018) reported that CRP training should include CRP clinical placement, health promotion, and development of CRP skills.

In educational institutes, CRP specialists, as educators, are in the position to instil, in their students, standards of practice in line with practice guidelines and documented evidence in the literature. In addition, clinical education is a process of making physiotherapy undergraduates gain profession-specific knowledge, develop technical skills and become socially and ethically competent to practise (Stillet et al 2004; Lekka et al, 2007). The CRP training requirements comprise integrated

clinical knowledge, which involves anatomy and physiology of cardiovascular and respiratory systems, respiratory and cardiovascular, pathology, pathophysiology and pharmacology, and physiotherapy practice, which involves clinical reasoning, handling skills, interventions, and patient care (Van, Patman, Plani, & Hanekom, 2017). Furthermore, integrated clinical experience involves integrating didactic knowledge with clinical experience in a way that facilitates development of practice requirements. In addition, students must be able to demonstrate sound clinical and professional judgment, demonstrate responsible decision-making skill, and become cognizant of practice accountability issues, laws, regulations, professional codes of ethics and standards of practice (Ontario Council of University Programs in Rehabilitation Sciences, 2009). Thus, to prepare students for professional challenges, development of professional expertise should be at the forefront of educational programmes (Mudavhanu et al, 2016). This composite requirement is achieved through a set of activities that enable students to acquire the requisite skills and knowledge to ensure competency in practice.

Students are the key components of any educational programme as all policies and requirements of the programme are directed at them with a view to achieving the goals of the programme. Indeed, students play an important role in contributing towards curriculum review, as the final recipients of the curricular contents (Mudavhanu et al, 2016). Thus, success or otherwise of the programme, in terms of achieving the set objectives, can only be determined through assessment of the students or obtaining their views about the programme. This fact-finding exercise is important in other to understand the need to sustain or improve the quality of the programme. In fact, quality assurance has been the hallmark of any educational programme, and it is the feature of a programme that ensures adequate knowledge base and practical competence of its products.

In Nigeria, physiotherapy training was a five-year programme as at the time of this data collection. According to Nigerian University Commission (NUC) Benchmark Minimum Academic Standards (2007) for physiotherapy, the students spend the last three semesters receiving lectures and clinical placements on clinical conditions, inclusive of cardiorespiratory conditions, as well a community physiotherapy and ergonomics. Although, the courses on these physiotherapy areas are fixed in specific semesters in the benchmark, each university are at liberty to teach these courses in any of the last three semesters as deemed fit or convenient. For example, CRP course is fixed in the second semester of the fourth year in the benchmark, but some universities opt to teach the course in either the first or the second semester of the final year. It is in consideration of this training model that the final-year students were chosen as the population for this study. However, considering that these data collection occurred in the first semester, it was possible to have some students who would have been exposed to CRP, in terms of lectures and placements, and others who would not have, especially those who were exposed to CRP in the final semester of the programme.

The objectives of CRP placement are to provide adequate exposure to diverse cardiorespiratory cases by which students will acquire skills and understand procedures, as well as get familiarized with different equipment items and devices employed in the management of cardiorespiratory cases. On the placement, students are expected to rotate round different units such as cardiothoracic surgical unit, cardiology and pulmonology units, intensive care units and cardiorespiratory unit of physiotherapy outpatient department. They are also expected to be led taught by an experience clinician or faculty member, be inquisitive about every detail of patient management and comport themselves in a professional manner.

Only a few studies have reported on the perception of CRP among physiotherapy students. Specifically, Roskell & Cross (2003) have reported on general perception of CRP, Bennet and Hartberg (2002) reported on CRP perception in clinical placement, Reeve et al 2012 and Marques et al (2018) have reported on CRP as a career choice, Mudavanhu et al (2016) have reported on the intensive-care-unit aspect of CRP while Bendall and Watt (2015) have reported on students' perception of preparedness for emergency on-call CRP. Of all these reports, only the one from Mudavanhu et al (2016) is based on an African physiotherapy-training model. In addition, Nigerian-physiotherapy students' views regarding their CRP training experience is not readily available. This is in spite of the fact that understanding a model of training and the value students place on it provide a profound insight into the training (Lindquist, Engardt, & Richardson 2004). Furthermore, considering possible differences in the physiotherapy training models and socioeconomic factors among nations, available reports on CRP aspect of physiotherapy training from other nations may differ from that of Nigeria. This study explored the perceptions of Nigerian final-year physiotherapy students regarding their CRP training experiences.

Methods

Study design

This study employed a cross-sectional design. An adapted questionnaire from a previous similar study was employed (Reeve et al, 2012). The aspect of this questionnaire on perception encompasses questions on cardio-respiratory placement, knowledge about CRP placement, importance and enjoyability of cardio-respiratory placement and influence of role model on decision to specialise in CRP. All the procedures employed in the survey were in accordance with Helsinki Declarations.

Participants

One hundred and ninety final-year Nigerian physiotherapy undergraduates across all the physiotherapy training programmes in seven universities, where there were final-year students, in the country were involved in this study: University of Ibadan, University of Ife, University of Nigeria, University of Lagos, Bayero University, University of Maiduguri and Nnamdi Azikiwe University. However, these universities were randomly denoted as A, B, C, D, E, F or G to ensure anonymity. The respondents were fully informed about the purpose of the study, and informed consent was obtained from them, before administration of the questionnaire, through a cover letter attached to each copy of the questionnaire. In this letter, respondents were informed of the nature of the study, the voluntary nature of their participation in the study, absence of no risk involved in participation in the study and the utmost confidence with which the information they would provide would be treated. In addition, a request letter was enclosed requesting the permission of heads of the physiotherapy programmes in all the universities.

Materials

A pen and paper questionnaire that was adapted from a previous study (Reeve et al, 2012), with permission from the authors to do so, was used to collect information on perception of the students about CRP training experience. The questionnaire was content-validated and pilot-tested. The adapted 42-item questionnaire comprised 'General Information' section and four domains (CRP Posting, Career Interest, Interest in Specializing in CRP, and Knowledge about CRP). The General Information section had four items: Age, the university where physiotherapy is being studied, and intention to practice physiotherapy in the country where the physiotherapy degree is obtained. The 'CRP Posting' domain has seven items, the 'Career Interest' domain had nine items, 'Interest in Specializing in CRP' domain has 12 items and 'Knowledge about CRP' domain has 10 items.

Except for the item that elicits response on the University of Study, all other items of the questionnaire had closed categorical responses, but most items also have open response options like 'others' and 'how many'. Only the 'CRP Posting' domains, 'Knowledge about CRP' domain and two items (on influence of a positive role model) from 'Interest in Specializing in CRP' domains explored the perception of CRP in this study sample.

Content and face validity of the questionnaire was ascertained through a panel of three physiotherapists (2 males and one female) who had no less than 10-year practice experience and were university educators. This panel reviewed the initial draft of the questionnaire for face validity (appearance, clarity of wording, layout and style) and content validity (appropriateness of the items for assessing perception of CRP). In terms of face validity, the 'Cardio-Respiratory Placement' domain in the initial draft was changed to 'Cardio-Respiratory Physiotherapy Placement'. Also, the instruction for the 'Interest in Specializing in CRP' domain was modified. In addition, the 'Attitude toward CRP' domain was changed to 'Knowledge about CRP' domain. For content validity, the initial draft was modified such that the number of items in the 'Interest in Specializing in CRP' domain was increased from 11 to 12 by adding another item (could anyone influence you to specialize in CRP?) removed from another domain (Knowledge about CRP). The questionnaire was pilot-tested in ten final-year students of Nnamdi Azikiwe University to ascertain ease of understanding and suitability of the questionnaire. These students were not part of the main study.

Procedures

Participants in Nnamdi Azikiwe University were given copies of the questionnaire and allowed to complete them, at their convenience, and returned them within a week. With the exclusion of

Nnamdi Azikiwe University, the local presidents of the National Association of Physiotherapy Students in other universities, who were final year students themselves, were contacted, and the lists of final-year students in their universities were obtained. The presidents also gave assurance of their readiness to help in administering the questionnaire. Copies of the informed consent form and the questionnaires, with at least 10 extra copies added to the total number of students in the lists, were posted to these contacts by one of the authors. These contacts then assisted in administering copies of the questionnaire to the participants. For the students at Nnamdi Azikiwe University, copies of the questionnaire were given to the class representative who then distribute them to the class members. In other schools, presidents of the students' association, who happened to be a final-year students, administered the copies of the questionnaire to the classmates. Each of the posted mails was accompanied by a stamped and addressed empty envelope which the contacts used to post back the filled-out copies of the questionnaire to the researcher.

The obtained data were summarized using frequency and proportion. Chi Square was used to determine the association between CRP placement of schools and each of CRP experience in another placement, setting of CRP placement, perceived positive role model in CRP, who the perceive role model was, perceived importance of CRP, perceived enjoyability of CRP, extent of knowledge in different aspects of respiratory physiotherapy and cardiovascular physiotherapy. The level of significance was set at 0.05. IBM statistical Package for the Social Science (SPSS) version 22 was used to analysed the data.

Results

Table 1 shows the list of coded universities (A-G) where participants were recruited, the number of final-year students (287) and number of copies of the questionnaire returned (190). The

calculated return rate was about 66.2%. Proportions of respondents from each school and respective CRP placement status were as presented in table 1 with university E having the largest proportion (30.5%). In addition, out of the seven universities, only three programmes from three universities had had CRP placement, constituting 54.7% of the study sample (Table 1).

Table 2 shows that the majority of the participants were males (58.4%), reported having intention to pursue a postgraduate degree in physiotherapy (67.4%), and reported having intentions to work as a physiotherapist upon graduation (51.1%). In addition, majority of them reported intending to specialise in an area of physiotherapy (65.3%), and reported actualising this after 2-5 years post-qualification (37.4%) as shown in table 3. The mean age of males and females were 24.51±3.82 years and 23.00±2.09 years respectively (Table 2).

Only 47% of the students that had had CRP placement reported CRP experience in another placement, as opposed to 52.9% among those who had not (Table 3). In addition, table 3 shows that the most frequently reported setting for CRP placement was the intensive care unit (32.1%). Majority of respondents could not say whether they were influenced by a positive role model to specialise in CRP 69 (36.43%) let alone knowing who the role model was 122 (64.2%) as shown in table 3. While majority of those who had prior CRP placement agreed that CRP was important (53.9%), only 38.9% of them considered it enjoyable (Table 4).

Figure 1a shows that majority of the respondents who had had CRP placement reported having adequate knowledge/competence in cardiac rehabilitation (64.3%), cardiopulmonary resuscitation (52.0%), cardiac conditions (69.3%) and cardiovascular physiology (75.0%). However, among those who had not had a CRP placement, majority of them reported adequate

knowledge/competence in cardiac rehabilitation (57.0%), cardiopulmonary resuscitation (55.8%), cardiac conditions (60.5%) and in cardio-vascular physiology (85.9%) (Figure 1b).

Figure 2a shows that majority of the respondents who had had CRP placement reported having adequate knowledge/competence in respiratory physiology (78.5%), respiratory conditions (77.6%), increasing lung volume (60.2%), in reducing work of breathing (72.5%), in clearing lung secretions (77.3%), and optimizing oxygen transport (56.7%). However, among those who had not had a CRP placement, majority of them reported adequate knowledge/competence in respiratory physiology (87.0%), respiratory conditions (72.9%), increasing lung volume (46.5%), in reducing work of breathing (49.4%), in clearing lung secretions (69.7%), and optimizing oxygen transport (48.8%) (Figure 2b). CRP placement was associated with CRP experience in another placement (χ^2=118.9; p<0.001), setting of CRP placement (χ^2=9.6; p=0.05), perceived role model in CRP (χ^2=6.7; p=0.04), and extent of knowledge in reducing work of breathing (χ^2=12.2; p=0.016) (Table 3).

Discussions

This study explored perception of Nigerian final-year physiotherapy students about their CRP training experience. Data from this study has shown that slightly over half of final-year Nigerian physiotherapy students reported that they had CRP placements, and they were from three Universities. Generally, about half of the students reported having had CRP experience in another placement than the CRP placement. The most frequently reported setting for CRP placement was intensive care unit. While majority of respondents considered CRP has an important experience, only a minority of them considered it as enjoyable. Majority of the students could not say if they had role models let alone knowing who they were. Generally, at least, about half of the students

reported having adequate knowledge/competence in respiratory physiology, respiratory conditions, in reducing work of breathing, in clearing lung secretions, in cardiac rehabilitation, cardiac conditions, cardiovascular physiology, cardiopulmonary resuscitation, and in optimizing oxygen transport. However, less than half of those who had not had CRP placement reported having adequate competence only in reducing lung volume. CRP placement was associated with CRP experience in another placement, setting of CRP placement, perceived role model in CRP, and extent of knowledge in reducing work of breathing.

Similar studies to the current one have not been carried out in Nigeria, but have been reported in countries like Canada (Ohman et al, 2002), Sweden (Ohman, Stenlund, & Dahlgren, 2001) Ohman et al, 2001), New Zealand/Australia (Reeve et al, 2012) and the United Kingdom (Bennet and Hartberg, 2007; Roskell and Cross, 2003). This study showed that majority of Nigerian final-year physiotherapy students could not say if they were influenced by a role model in CRP, and as such could not say who the role model was. These findings are in contrast to the findings by reported by Ohman, Solomon, & Finch, 2002) that no student indicated having a faculty member as a role model. The findings could be explained in light of another finding in this study that, despite that the students considered CRP important, they do not consider it enjoyable. This perception of the CRP may make the students to be reluctant to specialize in the specialty. This attitude may, in turn, not make them have interest in what the supervisors or lecturers do, and thereby be reluctant to want to be like them. Indeed, expert role model has been reported to shape students' attitude towards CRP (Roskell and Cross, 2003).

To improve enjoyability of and interest in CRP placement, prior and adequate theoretical CRP and relevant clinical case scenarios need to be incorporated into the classroom teaching of students as

a means of preparing them for the cases they will meet during their clinical placements. With this prior knowledge, it will be easier for students to relate their experience to knowledge acquired in the classroom. This suggestion is supported by the findings in this study that the students had little or no knowledge in certain theoretical aspects of CRP such as cardiac conditions, increasing lung volume, reducing work of breathing, clearing the lung of secretion and optimizing oxygen transport. In addition, this approach may also improve the perception of faculty members as role models to the students.

Clinical experience from posting has been reported to influence attitude of physiotherapy students towards future practice (Littlewood et al, 2005; Rauk, 2003), and also has impact on students' choice of a specialty (Bennet and Hartberg, 2007). Students with the greatest level of experience in CRP are likely to consider employment in this area of physiotherapy upon qualifying (Bennet and Hartberg, 2007). In fact, clinical experience of undergraduates may ensure their skill in practice (Winter et al, 2002). The implications of lack of competency or requisite skills for practice in CRP are reluctance and lack of interest to specialise in this specialty. This may have an unsavoury consequence for the profession in that the roles meant for CRP specialists may be taken over by other healthcare professionals (Roskell, 2001). However, it is argued that learning in terms of clinical exposure alone does not guarantee adequate skills in practice, and that professional development relies on reflection on what has been experienced rather than amount of clinical exposure (Richardson, 1999). How true this argument is, has yet to be proven. In addition, perceived value of CRP and the competency in it have been reported not to correlate (Roskell and Cross, 2003).

Considering the importance of educational preparation and clinical experience in determining interest of the student to specialize in an area of physiotherapy and his competency in the area, we explored the perceived knowledge or competence of the students in this study in different areas of CRP training. The data from this study showed that vast majority of students generally had adequate knowledge of cardiovascular and respiratory systems, cardiac and respiratory conditions, and adequate competency in clearing lung of secretion, while only about half of them reported having adequate competency in optimizing oxygen transport and cardiopulmonary resuscitation. Specifically, however, a vast majority of those who had had CRP placement also had adequate competency in cardiac rehabilitation, reducing work breathing and increasing lung volume, while about only half of those who had not had CRP placement had adequate competency in these areas of CRP. Indeed, the finding that students who had had CRP placement who, in vast majority, reported adequate competency in the three keys CRP strategies (clearing lung of secretion, reducing work of breathing and increasing lung volume) had only about half of them reporting adequate competency in optimizing oxygen transport is counter-intuitive. In CRP, oxygen transport is optimized through one or more of the three CRP strategies, and having competency in them should automatically translate to having competency in oxygen transport optimization. This inconsistency in their report may indicate lack of knowledge of the links between the three CRP strategies and oxygen transport optimization among some of the students who had had CRP placement. In contrast to these findings, however, only 11% of UK physiotherapy students expressed positive rating of their competency in managing cardio-respiratory conditions (Roskell and Cross, 2003). Furthermore, while 69% of third year physiotherapy students who had had CRP placement reported positively their perceived level of theoretical knowledge needed for CRP practice, only 6% of those who had not had the placement reported same (Bennet & Hartberg,

2007). The difference in the distribution of students, in this study, regarding their competence ratings may be attributed to CRP placement experience.

Roskell and Cross (2003) opined that perception of low competency among students may be a natural psychosocial phenomenon observable in would-be professionals, revealing a natural apprehension at entering the 'world of work' as qualified practitioners. In fact, UK physiotherapy students actually reported this apprehension with a larger proportion of them reporting it for CRP than for any other specialties (Roskell and Cross, 2003). Thus, students' perception of their competency may not match their actual performance in clinical practice (Roskell and Cross, 2003). In addition, CRP specialists have reported pre-registration training as inadequate to prepare students for managing patients with cardio-respiratory problems (Roskell and Cross, 2001). This view may suggest a training-practice gap where knowledge gained in training may not be completely related with that used in practice (Richardson, 1992). Thus, there is a need for a drive towards fitting knowledge acquired in training to what is required in practice. This should be the objective of undergraduate health professional training programmes, especially when competency in practice is viewed negatively by students (Roskell and Cross, 2001).

The finding that majority of the students agreed that CRP experience is important is similar to the finding among UK physiotherapy students (Roskell and Cross, 2003), but in contrast to the finding (49%) among New Zealand/Australia physiotherapy students (Reeve et al, 2012). However, the finding that only minority of the students considered the experience as enjoyable is in contrast to the finding among UK and New Zealand/Australia physiotherapy students (Roskell and Cross, 2003; Reeve et al, 2012). In addition, the findings that just over half of the participants had had CRP placement, but about half of them had had CRP experience in another posting, is in contrast

to the findings by Reeve et al (2012). These findings may be attributed to the possibility in Nigeria of having CRP placement for students in any of the last three semesters of the programme. In addition, as academic calendars of universities in Nigeria differ, while some schools are in their first semester others may be in their second semester. These variations in time of CRP placement and semesters of the academic year across Nigerian universities may explain the reason some university had had their CRP placements while other had not.

Implications for CRP practice

Some of the findings in this study have implications for future CRP practice and interest of Nigerian physiotherapy students to specialise in CRP. The finding that about half of the students reported having had CRP clinical placement may suggest that the confidence to practice and the interest to specialise in this specialty among those who had not had CRP placement may be low if they could not have the clinical exposure until they graduated. This lack of clinical exposure may have implications for availability of CRP specialists in the future. In addition, the finding that majority of the students could not state who their role models for CRP were, and the finding that majority of them who had had CRP placement found it not enjoyable suggests that lecturers and clinical supervisors have a lot to do in boosting the interest of the students in CRP, and thereby encouraging them to specialise in CRP. When adequate clinical exposure and more positive influence of lecturers are put in place, it is believed that the competence in different aspects of CRP will improve even more.

Limitations of findings

In interpreting findings from this study, certain limitations have to be considered. Firstly, the findings are generalised for all the final-year physiotherapy students in Nigeria, and may not reflect

the students' perceptions in individual schools. With these generalised findings, it is possible that students from some schools may have better perceptions than those in other schools. This is more so when final-year students' populations differed across schools. Secondly, the questionnaire used in this study was only content-validated. However, the questionnaire was pilot-tested and was found to be suitable for the study and convenient for the respondents.

In conclusion, CRP experience needs to be made more enjoyable, by the supervising clinicians and lecturers, to enable students acquire necessary CRP skills. CRP placement is associated with CRP experience in another placement, setting of CRP placement, perceived role model in CRP and extent of knowledge in reducing work of breathing.

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