

Promoting Physical Activity and Exercise in Daily Practice: Current Practices, Barriers, and Training Needs of Physiotherapists in Eastern Nigeria

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ABSTRACT

Purpose: To investigate current practices, barriers, and training needs for the promotion of physical activity (PA) in physiotherapy practices in eastern Nigeria. **Methods:** A total of 141 fully licensed physiotherapists in southeast Nigeria were invited to participate in a cross-sectional survey consisting of 23 questions in five key sections, focusing mainly on risk-factor management practices of physiotherapists. **Results:** A total of 103 questionnaires were returned. Respondents ranged in age from 20 to 54 years and reported a mean of 11 (SD 10) years of clinical experience. Respondents reported that they regularly assess and advise their clients on PA but rarely give written prescriptions. Although they are confident in assessing and advising their clients on PA and consider including PA intervention as a priority in daily practice, lack of time and lack of access to materials were reported as barriers to effective PA intervention. **Conclusion:** Findings showed the potential for physiotherapists to address physical inactivity and highlighted several barriers. Strategies are needed to improve contact time with clients and make material promoting PA available to practising physiotherapists.

Key Words: cancer; COPD; diabetes; health promotion; physical activities; physiotherapy.

RÉSUMÉ

Objet : Étudier les pratiques, les obstacles et les besoins en formation courants qui ont trait à la promotion de l'activité physique (AP) dans les cabinets de physiothérapie de l'est du Nigéria. **Méthodes :** Au total, 141 physiothérapeutes entièrement autorisés du sud-est du Nigéria ont été invités à participer à une étude transversale comportant 23 questions réparties en 5 sections clés et portant principalement sur les pratiques de gestion des facteurs de risque suivies par les physiothérapeutes. **Résultats :** Au total, 103 questionnaires ont été renvoyés. L'âge des répondants variait de 20 à 54 ans et ils ont déclaré une moyenne de 11 (ET 10) ans d'expérience clinique. Les répondants ont signalé qu'ils évaluent régulièrement leurs clients et leur conseillent de faire de l'AP, mais leur donnent rarement des ordonnances écrites. Même s'ils se sentent en confiance lorsqu'ils doivent évaluer leurs clients et leur donner des conseils en matière d'AP, et s'ils envisagent de faire de l'intervention sur l'AP une priorité dans la pratique quotidienne, les répondants ont signalé le manque de temps et d'accès au matériel comme obstacles à une intervention efficace sur l'AP. **Conclusion :** Les constatations ont révélé que les physiothérapeutes pourraient aborder l'inactivité physique et ont dégagé certains obstacles. Des stratégies s'imposent pour améliorer le temps de contact avec les clients et mettre à la disposition des physiothérapeutes en activité du matériel de promotion de l'AP.

The global pattern of disease is rapidly changing, and non-communicable diseases (NCDs) have emerged as a major health problem worldwide, and particularly in Nigeria,^{1,2} where the World Health Organization (WHO) recently reported that 24% of all deaths were due to NCDs.² According to the WHO report, the probability of dying between ages 30 and 70 years from the four main

NCDs—cancers, diabetes, cardiovascular diseases, and chronic respiratory diseases—is 20% in Nigeria, compared with 12% in the United States, 14% in the United Kingdom, and 11% in Canada. Although many countries have begun to align their policies and resources with the nine strategic action plans of the WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020,

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Nigeria has not made sufficient progress: Of the nine strategic action plans, Nigeria has successfully implemented only one (putting in place a surveillance and monitoring system to enable reporting against the nine global NCD targets).² Other strategies to combat NCDs include addressing modifiable risk factors, including physical inactivity, which is among the four major risk factors for chronic diseases of lifestyle.^{3–5} Experts have agreed that physical activity (PA) protects against,⁶ reverses,⁷ or reduces the impact of⁸ most NCDs and their comorbidities. PA is considered to be a worldwide public health priority.^{9,10} A strong need has been expressed in two physiotherapy summits on global health^{11,12} for physiotherapists to respond to this changing health care context and to participate in reshaping the health care system on the basis of their skills and their knowledge of PA and guided by health promotion interventions that aim to prevent NCDs in various settings.

PA can take the form of a structured exercise programme or the accumulation of activities of daily living or leisure exercise. Whatever form it takes, a health promotion intervention focusing on PA would help reduce inactivity as a way of decreasing the incidence of NCDs or their sequelae. Because physiotherapists are remarkably well associated with non-invasive interventions, including education and exercise, they are therefore ideally positioned to ensure that their daily clinical practices are responsive to their clients' unhealthy PA behaviours in their daily clinical practice.

Health education is central to health promotion as a physiotherapy intervention. Health education requires physiotherapists to possess the four clinical communication competencies: *knows* (has acquired theoretical knowledge and skills), *knows how* (knows how to apply these skills), *shows how* (can competently carry out the skills on specific occasions), and *does* (can competently carry out the skills on a daily basis).¹³ The role of physiotherapists in promoting PA has been documented elsewhere.¹⁴ Despite the general understanding that physiotherapists should be involved in promoting PA,^{3,15} however, not much is known about the daily practice activities, barriers, and training needs for assessment and management of physical inactivity by physiotherapists. A study conducted in Rwanda has reported that “the successful implementation of health-promotion strategies related to PA is still influenced by barriers such as government policy, cultural influences, environmental influences and time constraints experienced by the practitioner.”^{16(p.22)} This study raised issues for other African nations' physiotherapists to reflect on in terms of using PA promotion to address NCDs.

As in the Rwandan culture, many Nigerian cultures prevent women from participating in some kinds of PA. Similarly, there is an obvious lack of coordinated PA policy in Nigeria, and sports centres are located far from resi-

dents. Therefore, the strategies for Rwanda—improving cultural beliefs regarding PA and developing socially inclusive and participatory national policies and plans on PA—would be useful if implemented in Nigeria. However, without baseline data that provide a current picture of the physiotherapy profession and PA promotion, Nigeria may continue to lag behind in translating the evidence on PA promotion into physiotherapy practice. Our study was therefore designed to provide preliminary data on current activities, competence, priorities, barriers, and perceived training needs for the assessment and management of physical inactivity in physiotherapy practices in eastern Nigeria.

METHODS

Research design, population, and sampling

Our population-based study used a cross-sectional descriptive design. Using purposive sampling techniques, we invited participation from all physiotherapists working in eastern Nigeria who had been practising in either private or government health care settings for at least 1 year, either full time or part time. The records of the five eastern Nigerian state chapters of the Nigeria Society of Physiotherapy indicated that at the time of the study, 176 fully registered physiotherapists were working in the five southeastern states. Of these, 19 had not worked for at least 12 months as fully registered physiotherapists, 5 were on their annual leave, and 7 were away from work for training or on maternity leave. A further 4 physiotherapists declined to participate, offering no specific reason. Interns, those who did not have a full licence to practice at the time of the study, and those who had not worked for at least 1 year were excluded from the sample.

Procedure

The study protocol was approved by the Ethical and Research Committee of the University of Nigeria Teaching Hospital. After receiving institutional ethical approval, we contacted state chapters of the Nigeria Society of Physiotherapy to obtain contact details for physiotherapists currently practising in the five states in southeastern Nigeria. The physiotherapists were approached personally by research assistants who were final-year medical rehabilitation (physiotherapy) students at the University of Nigeria, using the contact details provided. After a detailed explanation of the purpose of and expectations for the study, all participants signed a voluntary written consent form, with confidentiality assured.

Data collection took place between March and June 2014. We hand delivered questionnaires to physiotherapists at hospital departments, clinics, and medical centres. On delivery of a questionnaire to a respondent, the respondent's gender, state, and phone number were coded into the questionnaire by a research assistant and

also recorded for follow-up calls. A reminder was made to the respondents who did not complete their questionnaires after 1 week; respondents were then further reminded by twice-weekly phone calls until questionnaire was completed. After a maximum of 4 weeks, the research assistants travelled and collected the completed questionnaires.

Questionnaire

The questionnaire used in our study was based on a previously published survey used to assess how general practitioners manage risk factors.¹⁷ The version we adopted had been pretested and modified for use in a physiotherapy population by O'Donoghue and colleagues.¹⁸ The final questionnaire had 23 items, presented in five key domains: (1) assessment of risk factors, (2) management of risk factors, (3) lifestyle counselling, (4) barriers to assessing and managing lifestyle risk factors, and (5) education and training of physiotherapists. Four response options were provided for most questions (e.g., from "never" to "always"; from "very important" to "unimportant"; or from "very acceptable" to "not acceptable").

The domain of assessment of risk factors is presented in two subscales, assessment of risk factors in new patients and assessment of risk factors in patients at follow-up visits. Similarly, the management of risk factors domain has two subscales—management of lifestyle risk factors (6 topics with 4–5 questions each) and management of physiologic risk factors (4 topics with 4 questions each). The lifestyle counselling domain consists of six topics, each with four to seven questions. The barriers to assessing and managing lifestyle risk factors domain consists of two topics, and the education and training domain consists of three. Each topic includes one question on PA. In this article, we report only those responses that relate to PA or exercise.

The questionnaire's content validity was established by a research panel in the Republic of Ireland, via prior piloting and amendment,¹⁸ and further refinement was completed by two researchers in Nigeria, where physiotherapy professional education uses a comparable British model. The questionnaire's reliability was established among 20 physiotherapists using a test–retest method. Kappa coefficients for agreement values were calculated for each of the five domains, for each of the 23 items, and for the whole questionnaire. Inter-observer agreement ranged from 0.64 to 1; for the items relating to PA specifically, κ s = 0.68–0.91.

Data analysis

Our data analysis used IBM SPSS version 15 (IBM Corp., Armonk, NY) to produce descriptive statistics (frequencies and percentages) for quantitative data. We also used chi-square analysis to explore associations between practice pattern and gender, age, and years of clinical

experience. To do this, we dichotomized "usually" and "always" responses as "regularly" and "never" and "sometimes" responses as "rarely"; "very acceptable" and "moderately acceptable" responses were dichotomized as "acceptable," and "somewhat acceptable" and "not very acceptable" were dichotomized as "not acceptable."

RESULTS

Respondent demographics

Of the 141 questionnaires we distributed, 103 were completed and returned, for a response rate of 73%. The majority of the respondents were male ($n = 72$) and between ages 25 and 44 ($n = 93$) years. Most worked full time ($n = 98$), and 72.8% worked in a tertiary or secondary health care setting. Their working experience ranged from 2 to 22 years.

Assessing physical inactivity

Physiotherapists said they regularly (i.e., "always" or "usually") assess PA profile (56%; $n = 58$) and blood pressure (84%; $n = 87$) but rarely (i.e., "sometimes" or "never") include anthropometric assessment (56%; $n = 58$) when initially assessing new clients. We saw the same pattern with respect to assessment of clients on follow-up visits: The majority (65%; $n = 67$) said they assess physical inactivity, and about 61% ($n = 63$) rarely assess anthropometrics. When asked about assessing readiness to change, the majority (68%; $n = 70$) said they regularly assess readiness to change in relation to undertaking PA.

Managing physical inactivity

We asked respondents about the strategies they use in managing clients whom they have identified as physically inactive. Key areas they identified included providing advice; providing written materials; referring to other service providers; and managing physiologic risk factors, including obesity, impaired glucose intolerance, hypertension, and hyperlipidemia. More than 78% regularly advise their clients on regular PA, although fewer than one-quarter (24%) regularly give their clients written advice on PA or exercise. About 38% of respondents said they do not provide any written materials; the majority who did so stated that the materials they provide are from professional bodies. Only about one-quarter of respondents refer their clients to other service providers, even though 66% said they have access to such services. For clients diagnosed with overweight or obesity, impaired glucose tolerance, hypertension, or hyperlipidemia, more than 80% of respondents said they concentrate on providing advice on regular exercise rather than on setting weight-loss goals. Almost all respondents (97%) regularly provide advice on regular exercise for clients diagnosed with overweight or obesity, but fewer than half (48%) reported setting weight-loss goals. See Table 1 for details.

Table 1 Questions Relating to Physiotherapists' Management of Patients in Whom Physical Inactivity Has Been Identified

| Question | No. (%) of respondents | | | |
|--|------------------------|-----------|------------------------|-----------|
| | Never | Sometimes | Usually | Always |
| How often do you advise your patients on regular physical activity? | 0 (0) | 22 (21.4) | 24 (23.3) | 57 (55.3) |
| How often are patients provided with written advice relating to physical activity/exercise? | 36 (35.0) | 42 (40.8) | 10 (9.7) | 15 (14.6) |
| How often do you refer your patients to other service providers or support groups for exercise programmes? | 26 (25.3) | 24 (23.3) | 19 (18.4) | 34 (33.0) |
| How often are you able to find accessible alternate services, providers or support groups for physical activity/exercise/? | 14 (13.6) | 21 (20.4) | 18 (17.5) | 50 (48.5) |
| In relation to patients who are overweight/obese, do you: | | | | |
| Advise regular exercise? | 1 (1.0) | 2 (1.9) | 18 (17.5) | 82 (79.6) |
| Set a goal for weight loss? | 34 (33.1) | 19 (18.4) | 23 (22.3) | 27 (26.2) |
| In relation to patients who have been diagnosed with impaired glucose tolerance, do you: | | | | |
| Advise regular exercise? | 9 (8.7) | 10 (9.7) | 21 (20.4) | 63 (61.2) |
| Set a goal for weight loss? | 18 (17.5) | 54 (52.4) | 14 (13.6) | 17 (16.5) |
| In relation to patients who have been diagnosed with hypertension, do you: | | | | |
| Advise regular exercise? | 3 (2.9) | 15 (14.6) | 25 (24.3) | 60 (58.3) |
| Set a goal for weight loss? | 8 (7.8) | 23 (22.3) | 45 (43.7) | 27 (26.2) |
| In relation to patients who have been diagnosed with hyperlipidemia, do you: | | | | |
| Advise regular exercise? | 6 (5.8) | 9 (8.7) | 21 (20.4) | 67 (65.1) |
| Set a goal for weight loss? | 12 (11.7) | 47 (45.6) | 18 (17.5) | 26 (25.2) |
| If your practice has patient education materials concerning physical activity, what is the source of the material that you most frequently give to patients? | | | No. (%) of respondents | |
| No material given | | | 39 (37.9) | |
| Government publication | | | 5 (4.9) | |
| Charities | | | 9 (8.7) | |
| Professional bodies | | | 44 (42.7) | |
| Others | | | 6 (5.8) | |

Perceived competence in, priorities for, and acceptability of assessing and managing physical inactivity

The majority of respondents (87%; $n = 90$) considered it very important to counsel clients about exercise once risk factors have been identified. Most (82%; $n = 84$) considered addressing physical inactivity with clients part of their normal clinical work and a high priority. The majority also rated themselves as very confident (75%; $n = 77$) or moderately confident (16%; $n = 16$) in assessing physical inactivity. Similarly, physiotherapists believed that their counselling is effective: 66% ($n = 68$) considered it very effective, and 34% ($n = 35$) considered it somewhat effective. Almost all respondents (91%; $n = 94$) believed that most clients find it acceptable for their physiotherapist to raise issues such as PA or exercise because these are traditionally seen as core areas of physiotherapy. See Table 2 for more detail.

Barriers to providing effective physical activity interventions and training

Table 3 presents details on the barriers respondents perceived as preventing them from providing PA interventions. The main barriers they identified were lack

of time (43%; $n = 44$) and lack of appropriate materials for client education (29%; $n = 30$). Almost two-thirds of respondents (62%; $n = 64$) had education or training on strategies for helping clients change their PA behaviours, but almost three quarters (73%; $n = 75$) said they needed more training, particularly in the form of workshops.

Female physiotherapists were more likely to assess clients' PA profile routinely at initial contact ($\chi^2_1 = 3.984$; $p = 0.046$), but did not differ from their male colleagues in other respects. Age was not associated with respondents' practice patterns ($p > 0.005$). However, physiotherapists who had received training on strategies for helping clients change their PA behaviour were more likely to regularly assess their clients' PA profile at initial contact ($\chi^2_1 = 6.412$; $p = 0.011$), regularly assess their clients' readiness to change a physically inactive lifestyle ($\chi^2_1 = 8.628$; $p = 0.003$), and regularly provide their clients with written material on PA ($\chi^2_1 = 7.165$; $p = 0.007$). In addition, longer clinical experience (≥ 6 y) was associated with more regular assessment of clients' PA profile during follow-up visits ($\chi^2_1 = 5.977$; $p = 0.014$), but not with other practice patterns ($p > 0.05$).

Table 2 Physical Activity and Exercise Counselling

| Question | No. (%) of respondents |
|---|---------------------------|
| For a patient in whom you have identified risk factors, how important do you think it is for you to counsel about physical activity/exercise? | |
| Very important | 90 (87.4) |
| Moderately important | 7 (6.8) |
| Somewhat important | 2 (1.9) |
| Not very important | 4 (3.9) |
| Do patients you see find it acceptable for you to raise the physical activity issues as part of their consultation? Please rate this statement in relation to patients' acceptance of physical activity/exercise lifestyle counselling. | |
| Very acceptable | 57 (55.3) |
| Moderately acceptable | 37 (35.9) |
| Somewhat acceptable | 8 (7.8) |
| Not acceptable | 1 (1.0) |
| How much of a work priority is it for you to address physical inactivity with patients as part of your normal clinical work?* | |
| High priority | 84 (81.6) |
| Moderately a priority | 15 (14.6) |
| Somewhat a priority | 4 (3.9) |
| Not a priority | 0 (0.0) |
| Please rate your confidence in undertaking assessment of physical inactivity with patients. | |
| Very confident | 77 (74.8) |
| Moderately confident | 16 (15.5) |
| Somewhat confident | 9 (8.7) |
| Not very confident | 1 (1.0) |
| Please rate how effective you think the advice is that you provide, in terms of helping your patients change physical inactivity? | |
| Very effective | 68 (66.0) |
| Somewhat effective | 35 (34.0) |
| Not effective | 0 (0.0) |
| No advice provided | 0 (0.0) |

*Percentages may total > 100% due to rounding.

DISCUSSION

Nigeria, a country in western African that borders the Gulf of Guinea between Benin and Cameroon, has an area slightly more than twice that of California;¹⁹ it has 36 states, grouped into six geopolitical zones, and a population of about 160 million as of 2010.²⁰ Responsibility for providing health care is divided among Nigeria's three tiers of government:²¹ The federal government is responsible for coordinating tertiary health care (such as services in the teaching hospitals, federal medical centres, and specialist hospitals), state governments manage secondary health care (which includes the general hospitals), and local governments focus on primary care,²² which is regulated by the federal government through the national primary health care developing agency. Physiotherapy services in Nigeria are available primarily in tertiary-care settings and, to a lesser extent, in secondary-care settings. Apart from a very few private clinics, physiotherapy services are almost nonexistent in primary care.

Our study aimed to provide preliminary data on current activities, competence, priorities, barriers, and perceived training needs for assessment and management of physical inactivity in physiotherapy practices in eastern Nigeria. Because physiotherapy has been identified as a core profession to promote PA, our findings could be valuable to the profession. The study was limited to a small sample of physiotherapists in Nigeria, and therefore the findings may not be generalized to the practices of physiotherapists in other countries. However, because the sample is representative of physiotherapists in eastern Nigeria, who are demographically similar to those in other regions of the country, our findings may give insight into current physiotherapy practice in an important area of the current global health agenda.

Our survey found that physiotherapists regularly assess clients' PA level and blood pressure at both initial and follow-up visits, as well as clients' readiness to change a physically inactive lifestyle, but they rarely assess

Table 3 Barriers and Training Needs

| Question | No. (%) of respondents |
|--|------------------------|
| What do you perceive to be the main barrier preventing you from providing effective physical activity interventions? | |
| Lack of time | 44 (42.7) |
| Lack of access to health-promotion staff/counsellors | 5 (4.9) |
| Personal lack of interest in providing preventative services | 4 (3.9) |
| Lack of interest from patient | 11 (10.7) |
| Uncertainty about what services to provide | 4 (3.9) |
| Lack of proper patient education materials | 30 (29.1) |
| Lack of expertise in relation to lifestyle risk factors assessment and management | 5 (4.9) |
| In the past 12 months, have you had education or training in the management of the risk factors or strategies for helping patients change their physical activity behaviour? (<i>n</i> = 97)* | |
| Yes | 64 (66.0) |
| No | 33 (34.0) |
| In what format would you like more training?† | |
| Workshop | 75 (72.8) |
| Clinical supervision/mentoring | 11 (10.7) |
| Self-study material | 12 (11.7) |
| Case studies | 1 (0.9) |
| Small group discussion | 2 (1.9) |
| Lectures | 2 (1.9) |

*Six respondents did not answer this question.

†Percentages do not total 100% due to rounding.

anthropometrics. From the perspective of NCDs, it is positive that physiotherapists are assessing PA and blood pressure, given epidemiological research linking overall risk for coronary heart disease, type 2 diabetes, and stroke to physical inactivity^{3,23,24} and persistent high blood pressure.²⁵

More troubling, though, the physiotherapists we surveyed do not regularly assess their clients' anthropometrics, despite overwhelming evidence linking abnormal anthropometrics to negative health outcomes such as cardiovascular disease and diabetes.^{26,27} Although anthropometric measurement is traditionally considered somewhat outside physiotherapists' scope of practice, routine anthropometric assessment by a physiotherapist may help to identify people at risk of NCDs who may be overlooked in routine health care settings. Earlier identification could assist in early referral and institution of suitable management, thus decreasing the actual occurrence of the NCD or at least reducing the likelihood of its occurring.

For the physiotherapists in our study, the key strategy used in managing clients identified as physically inactive or as having physiologic risk factors such as obesity, impaired glucose intolerance, hypertension, and hyperlipidemia is giving advice on PA, but the advice given tends not to be written down for clients. Elley and colleagues,²⁸ in a randomized trial, demonstrated that a written pre-

scription for PA is more effective than oral instruction alone in encouraging people to live a physically active life. Similarly, several researchers^{29–31} have concluded that methodical PA accompanied by written prescription increased the weekly PA of previously sedentary people compared with oral advice alone. In addition, a study of general practitioners has indicated that goal-oriented written exercise prescription is more motivating than oral advice.³² The studies cited earlier involved physicians, however, and we do not know whether their findings are applicable to physiotherapist-led PA counseling. There is a dearth of evidence in physiotherapy on compliance with written versus oral advice, but findings among general practitioners support the provision of written prescription.

Unlike physiotherapists in Australia¹⁰ and Rwanda,¹⁶ our respondents did not regularly use written materials in promoting PA to their clients. This practice pattern is similar to findings among other health professions, including doctors,³³ who may not have appropriate training and clinical skill in PA and exercise prescription. Our respondents, however, reported confidence and effectiveness in giving PA interventions; the main reasons they identified for not providing written information were lack of time and unavailability of material rather than lack of skill or competence. This barrier has been documented previously.³⁴ However, the increasing burden of

physical inactivity and its effect on population health suggest that the practice of incorporating written exercise instruction should be instilled during physiotherapists' training. Such a recommendation raises some questions: Are there real barriers to accessing materials for practice among physiotherapists? From where do they feel they should get these resources? Would physiotherapists be able to make written materials themselves if they had more time? Or do they think they should have access to resources from other organizations? Answers to these questions will be useful in tailoring existing training and practices and designing new ones, and they may have an impact on service delivery and future policy among this population.

In our sample, receiving training on strategies for PA counselling was associated with a higher likelihood of using written material. Even in a context of limited time and resources, it appears that given the appropriate training, physiotherapists will be better prepared to assess clients' PA at their first visit, more likely to assess clients' readiness to change a physically inactive lifestyle, and better able to provide their clients with written material on PA.

Physiotherapy entry-level training in Nigeria is modelled on the traditional British curriculum, and it is not clear whether current entry-level training leads graduates to be experts in exercise and PA. This is because there is as yet no benchmark study on curriculum content of contemporary entry-level physiotherapy education in Nigeria generally or in terms of content, training, and skill competence evaluation relating to PA and exercise specifically. However, continuous professional education has been a way for Nigerian physiotherapists to improve their skills. This was the case with many of our respondents, who reported having received training in PA promotion through continuous professional education. Certainly, physiotherapists who have received training may present a different practice pattern than those who did not receive training. This could also be viewed as a limitation in terms of extrapolating our findings to physiotherapists in other African countries that may not have continuous professional development programmes.

We could not explain why the female physiotherapists in our sample assessed their clients' PA profile at initial contact more regularly than their male colleagues. This may be further investigated in future research. It appears that more years of clinical practice allow physiotherapists more opportunity for training and time to develop their PA promotion skills, because respondents with more experience were more likely to monitor their clients' PA behaviour. Surprisingly, however, this did not also translate into improved provision of interventions. Nevertheless, with some further training on intervention strategies, these more experienced physiotherapists could be used to pioneer this aspect of primary care and community physiotherapy in Nigeria. Similar models are already

in use in some developed countries; for instance, before 2008, only senior physiotherapists were employed in primary and community care in the Republic of Ireland.¹⁸

How important do physiotherapists consider physical activity counselling to be?

Although most physiotherapists in our sample did not give written exercise prescriptions, they considered it very important, as part of their normal clinical work, to counsel clients about exercise. This finding is encouraging, given the overwhelming evidence linking physical inactivity to an elevated risk of coronary heart disease and type 2 diabetes.^{4,23,24} Research has established PA and exercise as an effective treatment or adjunct to treatment in the prevention and management of chronic lifestyle-related diseases,^{6–8,35} and promoting PA is considered to be a public health priority worldwide.^{9,10} As part of Nigeria's efforts to go beyond NCD surveillance¹ to achieve a robust national system for combating NCDs, our findings suggest that physiotherapists can play a leading role in PA education. Countries such as Canada, the United Kingdom, and the United States already have operational policies, strategies, or action plans in place to reduce physical inactivity and promote PA, with evidence-based national guidelines, protocols, or standards for managing major NCDs through a primary care approach.¹ These countries' national physiotherapy associations have developed position statements emphasizing more active involvement of physiotherapists in NCD prevention and management.^{36–38} The population of Nigeria will benefit if the Nigeria Society of Physiotherapy can develop similar position statements on physiotherapists' involvement in lifestyle practice.

Do clients consider it acceptable for physiotherapists to address their physical inactivity?

Most physiotherapists in our sample believed that their clients find it acceptable for them to raise issues such as PA. Physiotherapists use exercise to assess or diagnose clients' problems, as well as prescribing it as an intervention; therefore, they are perceived as experts in promoting PA,^{3,11,12} and their clients and other health professionals respect their advice on health matters. This puts physiotherapists in the best position to advocate and influence their clients' participation in PA.³⁹

The World Confederation for Physical Therapy has called for a concerted effort by all physiotherapists to play a more active role in combating NCDs,⁴⁰ and our findings suggest an opportunity for physiotherapists in Nigeria to take the lead in driving PA and exercise promotion in their daily clinical practice. NCD prevention is among the most important contemporary health issues, and in 2015 the World Confederation for Physical Therapy will be taking a policy statement on NCDs to its 106-member General Meeting for approval.¹⁵ Critical issues such as providing adequate time for client–physiotherapist contact in the clinic to allow brief but effective

assessment periods and inclusion of written prescription for PA need to be incorporated in the policy statement. Similarly, it is high time for Nigeria to develop a PA guideline specific to the Nigerian population. Such guidelines are available for Canada,⁴¹ the United States,⁴² and the United Kingdom,⁴³ all of which have lower NCD mortality than Nigeria.¹ In addition, efforts should be made to provide material for PA education in various hospitals and clinics. These avenues should be pursued by all health stakeholders, including physiotherapy heads of department and educators, national and international physiotherapy associations, hospital and health care managers, and the government.

CONCLUSION

Our study investigated current activities, competence, priorities, barriers, and perceived training needs for assessing and managing physical inactivity in physiotherapy practices in eastern Nigeria. Our findings should be interpreted in light of the limitations of a self-report questionnaire and cross-sectional design. However, this study reveals that PA levels are assessed and interventions provided regularly in Nigerian physiotherapy practices; PA prescription is a priority, but written information is not provided. Respondents highlighted a time barrier that could be overcome if suitable written material was produced and made available to physiotherapists to distribute in their practices. The material produced should emphasize the prevalence of NCDs and the benefits of PA in preventing these diseases. Other areas to be explored include targeting managerial decisions on physiotherapist–client contact time and developing practice standards.¹⁴

KEY MESSAGES

What is already known on this topic

Physical inactivity is a global health concern and a leading cause of death and disability. Physiotherapists are in a position to combat inactivity and effectively promote physical activity (PA) to their clients. PA promotion among physiotherapists has important implications for the health of the general population.

What this study adds

Physiotherapists in southeast Nigeria regularly assess PA levels and provide interventions. PA prescription is a priority, but clients are not provided with written information. Although the barrier of time was highlighted, this could be overcome if professional bodies such as the World Confederation of Physical Therapists (WCPT) and WCPT Africa produce suitable evidence-based written material and it is made available to physiotherapists to distribute in their practices. The material produced should highlight the prevalence of non-communicable diseases and the benefits of PA for preventing these diseases.

REFERENCES

- World Health Organization. World Health Organization non-communicable diseases (NCDs) country profiles [Internet]. Geneva: The Organization; c2014 [cited 2013 Sep 20]. Available from: <http://www.who.int/en>.
- World Health Organization. 2008–2013 action plan for the global strategy for the prevention and control of noncommunicable diseases [Internet]. Geneva: The Organization; c2008 [cited 2014 Sep 20]. Available from: http://whqlibdoc.who.int/publications/2009/9789241597418_eng.pdf.
- Dean E. Physical therapy in the 21st century (part I): toward practice informed by epidemiology and the crisis of lifestyle conditions. *Physiother Theory Pract*. 2009;25(5-6):330–53. <http://dx.doi.org/10.1080/09593980802668027>. Medline:19842862
- Dean E. Physical therapy in the 21st century (Part II): Evidence-based practice within the context of evidence-informed practice. *Physiother Theory Pract*. 2009;25(5-6):354–68. <http://dx.doi.org/10.1080/09593980902813416>. Medline:19842863
- Morgan K, McGee H, Watson D, et al. SLÁN 2007: survey of lifestyle, attitudes and nutrition in Ireland: main report [Internet]. Dublin: Department of Health and Children; c2008 [cited 2014 Sep 28]. Available from: <http://epubs.rcsi.ie/cgi/viewcontent.cgi?article=1002&context=psycholrep>.
- Pate RR, Pratt M, Blair SN, et al. Physical activity and public health: a recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA*. 1995;273(5):402–7. <http://dx.doi.org/10.1001/jama.1995.03520290054029>. Medline:7823386
- Lee IM. Dose-response relation between physical activity and fitness: even a little is good; more is better. *JAMA*. 2007;297(19):2137–9. <http://dx.doi.org/10.1001/jama.297.19.2137>. Medline:17507351
- Haskell WL, Lee IM, Pate RR, et al. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc*. 2007;39(8):1423–34. <http://dx.doi.org/10.1249/mss.0b013e3180616b27>. Medline:17762377
- Bauman AE. Updating the evidence that physical activity is good for health: an epidemiological review 2000–2003. *J Sci Med Sport*. 2004;7(1 Suppl):6–19. [http://dx.doi.org/10.1016/S1440-2440\(04\)80273-1](http://dx.doi.org/10.1016/S1440-2440(04)80273-1). Medline:15214597
- Shirley D, van der Ploeg HP, Bauman AE. Physical activity promotion in the physical therapy setting: perspectives from practitioners and students. *Phys Ther*. 2010;90(9):1311–22. <http://dx.doi.org/10.2522/ptj.20090383>. Medline:20651009
- Dean E, Al-Obaidi S, De Andrade AD, et al. The First Physical Therapy Summit on Global Health: implications and recommendations for the 21st century. *Physiother Theory Pract*. 2011;27(8):531–47. <http://dx.doi.org/10.3109/09593985.2010.544052>. Medline:21612551
- Dean E, de Andrade AD, O'Donoghue G, et al. The Second Physical Therapy Summit on Global Health: developing an action plan to promote health in daily practice and reduce the burden of non-communicable diseases. *Physiother Theory Pract*. 2013;30(4):261–75. <http://dx.doi.org/10.3109/09593985.2013.856977>. Medline:24252072
- Miller GE. The assessment of clinical skills/competence/performance. *Acad Med*. 1990;65(9 Suppl):S63–7. <http://dx.doi.org/10.1097/00001888-199009000-00045>. Medline:2400509
- Verhagen E, Engbers L. The physical therapist's role in physical activity promotion. *Br J Sports Med*. 2009;43(2):99–101. <http://dx.doi.org/10.1136/bjism.2008.053801>. Medline:18838405
- Bury T, Moffat M. Physiotherapists have a vital part to play in combatting the burden of noncommunicable diseases. *Physiotherapy*. 2014;100(2):94–6. <http://dx.doi.org/10.1016/j.physio.2014.03.004>. Medline:24792243
- Frantz JM, Ngambare R. Physical activity and health promotion strategies among physiotherapists in Rwanda. *Afr Health Sci*. 2013;13(1):17–23. Medline:23658563

17. Laws RA, Kirby SE, Davies GP, et al. "Should I and can I?" A mixed methods study of clinician beliefs and attitudes in the management of lifestyle risk factors in primary health care. *BMC Health Serv Res.* 2008;8(1):44. <http://dx.doi.org/10.1186/1472-6963-8-44>. Medline:18298865
18. O'Donoghue G, Cunningham C, Murphy F, et al. Assessment and management of risk factors for the prevention of lifestyle-related disease: a cross-sectional survey of current activities, barriers and perceived training needs of primary care physiotherapists in the Republic of Ireland. *Physiotherapy.* 2014;100(2):116–22. <http://dx.doi.org/10.1016/j.physio.2013.10.004>. Medline:24679374
19. Central Intelligence Agency. World fact book [Internet]. Washington (DC): The Agency; c2015 [cited 2015 Feb 10]. Available from: <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html>.
20. Population Division, Department of Economic and Social Affairs, United Nations. World population prospects: The 2012 revision [Internet]. New York: The Division; c2012 [cited 2015 Feb 10]. Available from: <http://esa.un.org/unpd/wpp/index.htm>.
21. Akhtar R. Health care patterns and planning in developing countries. Westport (CT): Greenwood Press; 1991.
22. Asuzu MC. The necessity for a health systems reform in Nigeria. *J Community Med Pri Health Care.* 2004;16(1):1–3.
23. Alwan A, Armstrong T, Bettcher D, et al. Global status report on noncommunicable diseases [Internet]. Geneva: World Health Organization; 2010 [cited 2015 Feb 10]. Available from: http://www.who.int/nmh/publications/ncd_report_full_en.pdf.
24. Ford ES, Bergmann MM, Kröger J, et al. Healthy living is the best revenge: findings from the European Prospective Investigation Into Cancer and Nutrition-Potsdam study. *Arch Intern Med.* 2009;169(15):1355–62. <http://dx.doi.org/10.1001/archinternmed.2009.237>. Medline:19667296
25. Hung CY, Wang KY, Wu TJ, et al. Resistant hypertension, patient characteristics, and risk of stroke. *PLoS One.* 2014;9(8):e104362. <http://dx.doi.org/10.1371/journal.pone.0104362>. Medline:25089520
26. Seidell JC. Epidemiology of obesity. *Semin Vasc Med.* 2005;5(1):3–14. <http://dx.doi.org/10.1055/s-2005-871737>. Medline:15968575
27. Flegal KM, Graubard BI, Williamson DF, et al. Cause-specific excess deaths associated with underweight, overweight, and obesity. *JAMA.* 2007;298(17):2028–37. <http://dx.doi.org/10.1001/jama.298.17.2028>. Medline:17986696
28. Elley CR, Kerse N, Arroll B, et al. Effectiveness of counselling patients on physical activity in general practice: cluster randomised controlled trial. *BMJ.* 2003;326(7393):793. <http://dx.doi.org/10.1136/bmj.326.7393.793>. Medline:12689976
29. Calfas KJ, Long BJ, Sallis JF, et al. A controlled trial of physician counseling to promote the adoption of physical activity. *Prev Med.* 1996;25(3):225–33. <http://dx.doi.org/10.1006/pmed.1996.0050>. Medline:8780999
30. Grandes G, Sanchez A, Sanchez-Pinilla RO, et al.; PEPAF Group. Effectiveness of physical activity advice and prescription by physicians in routine primary care: a cluster randomized trial. *Arch Intern Med.* 2009;169(7):694–701. <http://dx.doi.org/10.1001/archinternmed.2009.23>. Medline:19364999
31. Smith BJ, Bauman AE, Bull FC, et al. Promoting physical activity in general practice: a controlled trial of written advice and information materials. *Br J Sports Med.* 2000;34(4):262–7. <http://dx.doi.org/10.1136/bjsm.34.4.262>. Medline:10953898
32. Swinburn BA, Walter LG, Arroll B, et al. The green prescription study: a randomized controlled trial of written exercise advice provided by general practitioners. *Am J Public Health.* 1998;88(2):288–91. <http://dx.doi.org/10.2105/AJPH.88.2.288>. Medline:9491025
33. Sciamanna CN, Goldstein MG, Marcus BH, et al. Accuracy of recall of exercise counseling among primary care patients. *Prev Med.* 2004;39(6):1063–7. <http://dx.doi.org/10.1016/j.ypmed.2004.02.005>. Medline:15539037
34. Aweto HA, Oligbo CN, Fapojuwo OA, et al. Knowledge, attitude and practice of physiotherapists towards promotion of physically active lifestyles in patient management. *BMC Health Serv Res.* 2013;13(1):21. <http://dx.doi.org/10.1186/1472-6963-13-21>. Medline:23316902
35. Sørensen JB, Skovgaard T, Puggaard L. Exercise on prescription in general practice: a systematic review. *Scand J Prim Health Care.* 2006;24(2):69–74. <http://dx.doi.org/10.1080/02813430600700027>. Medline:16690553
36. Canadian Physiotherapy Association. Position statement: physical activity for youth and children [Internet]. Ottawa: The Association; c2012 [cited 2014 Oct 27]. Available from: http://www.physiotherapy.ca/getmedia/5693d03d-cf27-4835-b87b-49e564ab7274/Physical-Activity-for-Children-and-Youth_en_2.pdf.aspx.
37. Chartered Society of Physiotherapy. CSP statement in support of the UN Summit on Non-Communicable Diseases (NCDs) [Internet]. London: The Society; c2011 [cited 2014 Oct 27]. Available from: <http://www.csp.org.uk/documents/csp-statement-support-un-summit-non-communicable-diseases-ncds>.
38. American Physical Therapy Association. Physical therapists as expert providers of exercise and physical activity prescription HODP06-12-20-07 [position] [Internet]. Alexandria (VA): The Association; c2012 [cited 2014 Oct 27]. Available from: http://www.apta.org/uploaded-Files/APTAorg/About_Us/Policies/Practice/ExpertProvidersExercisePhysicalActivity.pdf.
39. Gosselink R. Physiotherapists should be leaders in waging the war against inactivity induced chronic diseases. *NZ J Physiothera.* 2008;36(2):78.
40. World Confederation for Physical Therapy. WCPT Network for Health Promotion in Life and Work (NHPLW) [Internet]. Bury St. Edmunds (UK): The Confederation; 2014 [cited 2014 Oct 26]. Available from: <http://www.wcpt.org/node/100327>.
41. Canadian Society for Exercise Physiology. Canadian physical activity guidelines and Canadian sedentary behaviour guidelines [Internet]. Ottawa: The Society; c2012 [cited 2014 Oct 26]. Available from: <http://www.csep.ca/en/guidelines/get-the-guidelines>.
42. Health.gov. The Physical Activity Guidelines for Americans (PAG) [Internet]. Washington (DC): Office of Disease and Health Promotion; 2008 [cited 2014 Oct 26]. Available from:
43. Gov.uk. Guidance: UK physical activity guidelines [Internet]. London: Department of Health; c2011 [cited 2014 Oct 26]. Available from: <http://www.gov.uk/government/publications/uk-physical-activity-guidelines>.