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RESEARCH ARTICLE

Physiotherapy practice patterns in the management of patients with knee osteoarthritis: A national survey on the use of clinical practice guidelines

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Abstract

Background and Purpose: Most published clinical practice guidelines (CPGs) endorsed therapeutic exercises, education, and body weight management as the gold standard for managing knee osteoarthritis (OA). However, it is difficult to ascertain whether the physiotherapy practice pattern in Ghana uniformly conforms to the generally accepted standard. Our aim was to describe the patterns of physiotherapists' practice with respect to Knee OA in a low-resource setting.

Method: A web-based nationwide cross-sectional survey was performed among registered members of the Ghana Physiotherapy Association. Consented participants were sampled into the study through a purposive sampling method. A self-designed and validated questionnaire was administered to obtain the participants' awareness of CPGs, while the selection of modalities by the physiotherapists was based on a clinical vignette. Exploratory analysis of data was performed for the association of the age, sex, education, and the number of patients managed per week with the awareness of CPGs, using the Chi-square test at a significance level of $p < 0.05$.

Results: Of the total 165 participants, only 148 responded and were included for data analysis. Sixty-one (41.2%) of the 148 respondents were aware of specific CPGs for knee OA management, even though 98 (66.2%) utilized OA-specific outcome measures for management evaluation. Majority of the participants (90.5%) commonly selected therapeutic exercises, and 83.8% utilized education for weight management. Transcutaneous electrical nerve stimulation and ice therapy were selected by 68.2% and 66.2% of the respondents, respectively. The number of patients managed per week was not significantly associated ($p > 0.05$) with the awareness of CPGs.

Discussion: Our findings show high utilization of therapeutic exercises and patients' education in the management of knee OA despite the low awareness of OA-specific CPGs.

Implication for Physiotherapy: The inclusion of passive modalities coupled with the physiotherapists' low awareness underpins the need for continuing education on condition-specific CPGs.

KEYWORDS
clinical practice guidelines, knee osteoarthritis, physiotherapy, practice patterns

1 | INTRODUCTION

Knee Osteoarthritis (OA) is among the top 10 leading causes of disability worldwide and it accounts for 2.8% of Disability Adjusted Life Years (DALY; Murray & Lopez, 1998). Accordingly, the Global Health Metrics (2018), estimated the percentage change in age-standardized rates (during the 2007–2017 period), as 3·8% and 0·6% for hip and knee OA respectively. Although the specific prevalence of knee OA is conflicting in Ghana, an estimate from a nationally representative sample of persons aged 50 years and older, is 13.8%, predominantly in females (Minicuci et al., 2014). The delivery of physiotherapy is entrenched in evidence-based practice to adequately alleviate impaired functions and disability. However, compliance with evidence-based practice by physiotherapists may be hindered by many challenges in the clinical environment, particularly in low-resource settings (Balogun et al., 2016).

Clinical practice guidelines (CPGs) are used to harmonize practice patterns, thereby bridging evidence-based practice gaps. The CPGs are defined as statements that include recommendations intended to optimize patient care, informed by a systematic review of the evidence, and an assessment of the benefits and harms of alternative care options (Lin et al., 2020; van Doormaal et al., 2020). The documents are meant to serve as a guide toward improved care by highlighting the decision-making process, heralding the standard of care, and exposing stakeholders to what constitutes best practice (Treweek et al., 2013). Thus, CPGs provide a reference upon which an intervention package can be compared, even in an environment or situation where such documentation is not available (Lin et al., 2020).

The National Institute for Health and Care Excellence (NICE), serves as the prototype guideline for the present study, and it recommended three core management strategies for knee OA, such as education and access to information, advice on local muscle-strengthening exercise, and general aerobic fitness, as well as body weight management (Vaishya et al., 2021). However, no study has established whether the choice of these modalities was done with recourse to OA-specific CPGs by practicing physiotherapists in Ghana. The study aimed to describe physiotherapy practice patterns in Ghana and determined the association of their age, sex, education, and the number of patients managed per week with the awareness of CPG.

2 | METHODS

2.1 | Ethics approval

This study was approved by the Ethics and protocol reviewed committee of the School of Biomedical and Allied Health Sciences, University of Ghana (Reference Number: SBAHS/AA/EDC/10399425/2019–2020).

2.2 | Study design

A web-based cross-sectional survey design was adopted. The study was conducted between 4th of May and 28th of June, 2020.

2.3 | Participants

Participants were enrolled in the study through the purposive sampling method. They were considered eligible for the study if they were in good standing with Ghana Physiotherapy Association (GPA), held a current license with Allied Health Professions Council-Ghana, managed not less than 10 Knee OA patients in the past 6 months, and had a minimum of 1-year post-internship practice. Physiotherapists in academics, and those on short special voluntary missions to Ghana at the time of the study (accounting for 20 persons), were excluded.

The sample size was estimated from the eligible and registered physiotherapists with GPA (n = 280 out of the total 300) using Taro Yamane's formula: $n = N/(1 + N(e^{\wedge}2)$. Thus, with an error of precision (e) as 0.05, and at 95% Confidence Interval, a minimum of 165 participants were required to participate in the study. However, 151 physiotherapists were available for the study of which 148 provided complete data (Figure 1). The disparity between the study sample (165) and those available to participate (151) was largely due to the sparing number of knee OA cases managed in the past years occasioned by their postings to different clinical areas.

2.4 | Materials for data collection

The tool for this was adapted from two questionnaires used in two related studies (da Costa et al., 2017; Ayanniyi et al., 2017). The modified version consists of three sections: Section A comprises age, sex, education level, practice setting, experience, and the number of patients treated in a week. Section B includes awareness of clinical practice guidelines and utilization of outcome measures in the management of Knee OA, whilst Section C denotes clinical vignette (Ayanniyi et al., 2017). The face and content validity of sections B and C were subjected to a Delphi study involving two academic and two clinical physiotherapists. They were selected physiotherapists based on their experience in the management of knee OA (5 to 6 patients per week) and consistent practice of at least 2 years in Ghana. The content validity index (CVI) was calculated using Scale-level-CVI (S-CVI), specifically the Universal Agreement (UA) (S-CVI/UA) method (Zamanzadeh et al., 2015). The agreement level among the physiotherapists was pegged at 80%. We calculated the S-CVI/UA by adding all items with an item-CVI

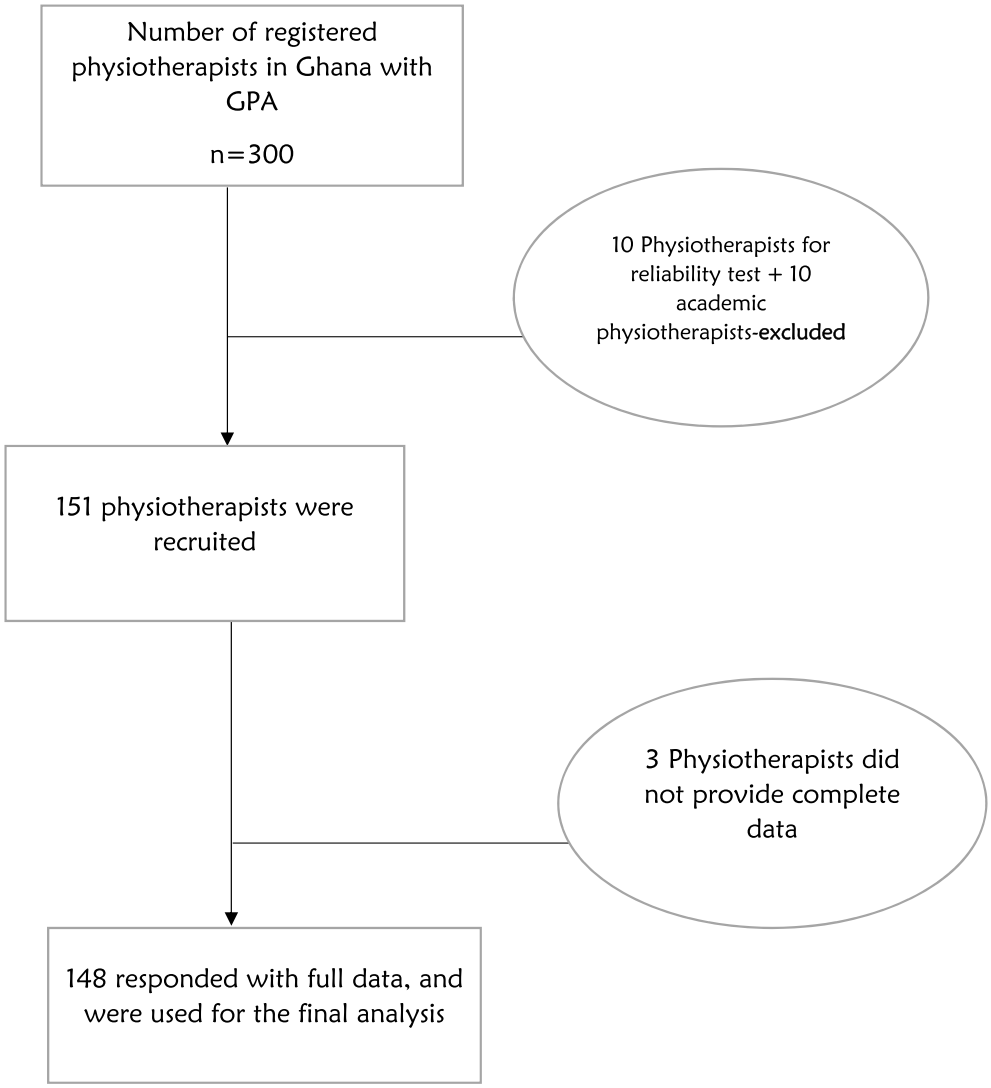

FIGURE 1 A flow chart showing how the physiotherapists were sampled

of 1, divided by the total number of items in the tool (Zamanzadeh et al., 2015). Recommendations made were incorporated into the questionnaire and a final S-CVI/UA of 0.82 was obtained. In addition, a test-retest reliability test was performed at an interval of 2 weeks on sections B and C, and those involved were excluded from the main study. A correlation coefficient of $r = 0.72$ was obtained. The questionnaire takes approximately 5–10 min to complete.

2.5 | Procedure

Permission was sought from the executive members of GPA, to invite registered physiotherapists for participation. A web-based link (using Google forms) consisting of a self-administered questionnaire and participants' information page detailing their confidentiality and freedom of participation were sent to the eligible physiotherapists through their mobile phones using WhatsApp and/or their e-mail contacts. We adopted the methodology of a previous study by Oppong-Yeboah and May (2014).

2.6 | Data analysis

The dataset was entered into Microsoft excel 2013 and later exported into Stata version 16 (License number: 301606004806) for analysis. Frequency and percentages were used to summarize the data. The age and number of OA patients managed per week were presented as categorical variables as (20–30 years, 31–40 years, > 40 years), and (1–9 weeks, 10–19 weeks, ≥20 weeks), respectively. Also, the education level of the participants was dichotomized into Bachelor of Science (BSc) and Master degree holders. Exploratory

Chi-square analysis was performed to find the associations of age, sex, education, and the number of patients seen per week with the awareness of CPGs, at a significance level of $p < 0.05$.

3 | RESULTS

3.1 | Demographic information of the physiotherapists

The study involved 148 Physiotherapists which comprised an equal number of males and females. Majority, (94.5%) of the physiotherapists were in the age range 20–40 years (mean; 30.5 ± 6.5 years). Most physiotherapists 129 (89.6%) were practicing with their professional entry-level (BSc) certificates, compared to 15 (10.4%) who had postgraduate (Master) degrees. Also, 89 (60.1%) of the study sample were recruited from the public hospitals while 40 (27.8%) were in private practice. In addition, 13 (8.9%) practiced in military/paramilitary hospitals. Approximately (91%) of the participants had between 1 and 10 years of practice experience (Table 1).

3.2 | Clinical practice attributes of the physiotherapists

Sixty-one (41.2%) of the participants were aware of specific CPGs for Knee OA management. The most utilized treatments were therapeutic exercises (90.5%), health education (83.8%), transcutaneous electrical nerve stimulation (TENS) (68.2%), and ice therapy (66.2%; Figure 2). The determinants of their clinical decision-making were evidence obtained from individual reviewed articles (85.5%), known skills (71.6%), availability of treatment options (51.4%), and imposed workload (12.2%). The majority (67%) also indicated that they would provide more than 10 treatment sessions before discharging their patients, as opposed to 14% who would hardly discharge (Figure 3).

In addition, 98 (66.2%) of the physiotherapists were aware of the use of outcome measures for assessing knee OA, of which 74 (53.6%) utilized outcome measures in their practice. Specifically, 64 (42.9%) of the physiotherapists commonly used visual analogue scale (VAS) for pain assessment, and 47 (32%) utilized knee osteoarthritis outcome scores (KOOS; Figure 4). Also, only 18 (12.8%) of the study sample had attended continuing professional development (CPD) workshops specifically on knee OA in the past 12 months (Table 2). The frequency distribution regarding modality selections by the physiotherapists shows different levels of evidence in CPGs, ranging from those that are recommended, those somewhat recommended, to those without any recommendations (Table 3). Most of the physiotherapists, 65 (43.9%) managed 10 to 19 patients per week.

There was no significant association between awareness of CPGs and age ($X^2 = 2.817$, $p > 0.05$), sex ($X^2 = 0.444$, $p > 0.05$), and education ($X^2 = 0.898$, $p > 0.05$). Similarly, the number of patients seen per week was not significantly associated with the physiotherapists' awareness of CPGs ($X^2 = 4.292$, $p = 0.085$; Table 4).

4 | DISCUSSION

Our findings indicate low awareness of CPGs among the physiotherapists, although majority of them admitted the use of therapeutic exercises and patients' education in the management of patients with knee OA. These choices were based on the information obtained from the systematic reviews. In addition, the choice of therapeutic exercises and patients' education was intertwined with passive modalities such as TENS and ice therapy, which are plagued with conflicting evidence and scanty recommendations, in most available CPGs. Most CPG developers are still equivocal on the use of physical agents along with the core evidence-based treatment for knee OA (Vaishya et al., 2021).

The age, sex, and levels of education attainments of the physiotherapists were not significantly associated with their levels of awareness of CPG. It is worth noting that participants in this study were predominantly practicing at the entry professional level of physiotherapy (Bachelor of Science) degree with a mean age of 30.5 ± 6.5 years and mean work experience of 5.0 ± 3.3 years. These findings corroborate the previous studies in Ghana (Boakye et al., 2018), and in Nigeria (Ayanniyi et al., 2017), where similar age ranges were reported.

4.1 | The choice of modalities for the knee osteoarthritis management

The practice pattern aligns with the recommendations provided in NICE and other CPGs that had recommended exercises and education as the first-choice physiotherapy treatment in the management of knee OA (Vaishya et al., 2021). Therapeutic exercises have been found to alleviate pain, reduce disability, and improve physical functioning (Hauk, 2014; Peter et al., 2011). Likewise, the use of education is recommended as an established management approach for knee OA (Peter et al., 2011). In our study, the participants also frequently incorporated TENS and ice therapy in the course of therapies, (mostly after the administration of exercise), which are not substantially supported by most published CPGs such as the American Academy of Orthopaedic Surgeons, National Institute of Health and Care Excellence, European Society for Clinical and Economic Aspects of Osteoporosis, Osteoarthritis and Musculoskeletal Disease, Osteoarthritis Research Society International, The Royal Australian College of General Practitioners, and the Cochrane review. Many reasons could be adduced to this finding including the low participation in the knee OA-specific CPD workshops.

Most of the physiotherapists premised their choice of treatments on systematic reviews and meta-analyses while others indicated their

TABLE 1 Background characteristics of the participants ($n = 148$)

Demography	Variable	Frequency	Percentage (%)
Sex	Male	74	50.0
	Female	74	50.0
Age [years]	20–30	79	54.9
	31–40	61	42.4
	≥41	8	5.4
Age (mean ± SD, 95% CI)		30.5 ± 6.5, 26.4–37.8	
Education	BSc.	129	89.6
	Masters	15	10.4
Hospital	Private	40	27.8
	Public	89	60.1
	Quasi/Military/Police	13	8.9
	Free lance	6	4.1
Experience (years)	1–5	83	56.1
	6–10	51	34.5
	>10	14	9.4

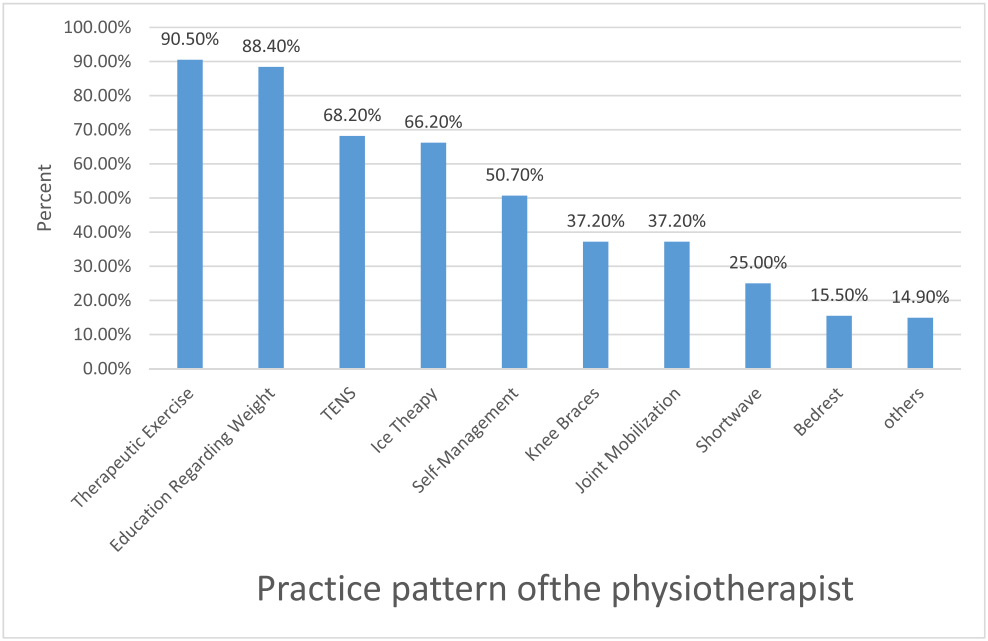

FIGURE 2 Bar Chart showing the most utilized types of treatment among Ghanaian physiotherapists in Knee OA management. TENS, Transcutaneous Electrical Nerve Stimulation

acquired skills as the main enabler. Although the acquired skill in practice forms the bedrock of clinical competency (Holden et al., 2008), it is glaring that many physiotherapists place priority on personal discretion in the choice of their modalities. For instance, despite the high percentage of the physiotherapists that used exercise therapy (90.5%) and education (88.4%), a reasonable number still used ice therapy (66.2%) and TENS (68.2%). Zadro et al. (2019) similarly reported the use of TENS and Ice therapy by 52% and 62% of the participants in their study. The authors, however, entreated physiotherapists to focus more on the core treatments supported by evidence-based practice.

4.2 | Awareness of CPG and other practice-related profiles of the physiotherapists

In this study, only 41.9% of the physiotherapists were aware of existing CPGs for Knee OA management. The dearth of locally

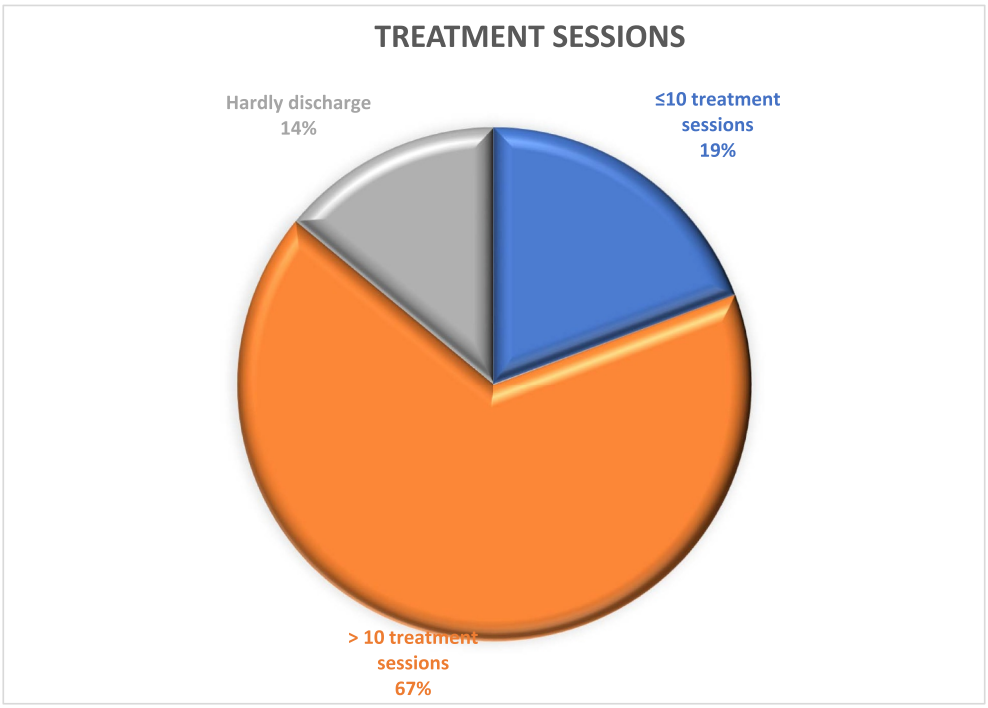

FIGURE 3 A Pie chart showing the number of treatment sessions for the Knee OA management prior to patients' discharge

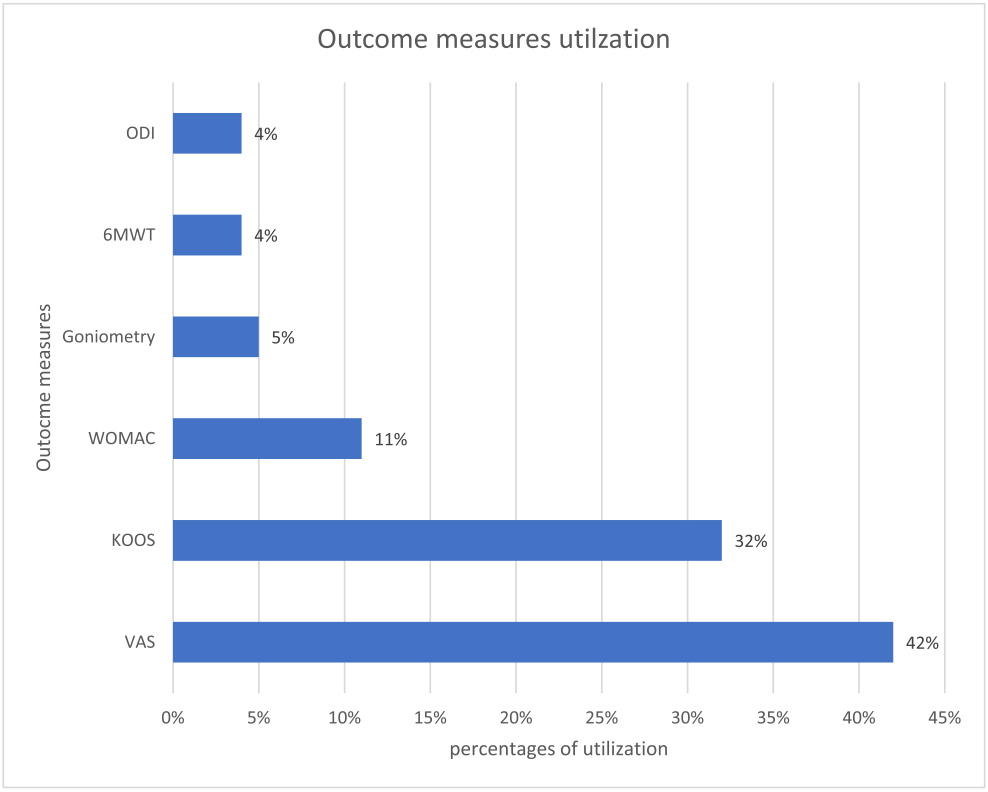

FIGURE 4 A bar chart showing outcome measure types (*X*-axis) and their rate of utilization (*Y*-axis) among Ghanaian physiotherapist in Knee OA management. VAS, Visual Analogue Scale, KOOS, Knee injury Osteoarthritis Outcome, WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index, 6MWT, 6-Minutes' Walk Test, ODI, Oswestry Disability Index

TABLE 2 Physiotherapy practice-related attributes of the participants (n = 148)

	Frequency	Percent (%)
Awareness of clinical practice guidelines for knee OA management	61	41.2
Awareness of outcome measure in knee OA management	98	66.2
Utilization of outcome measure for assessment and re-evaluation during knee OA management	79	53.4
CPD workshops attended for knee OA management for the past 12 months	18	12.8
Factors influencing practice		
Known skills	106	71.6
Workload	18	12.2
Evidence from literature	127	85.5
Availability of resources	76	51.4

TABLE 3 Frequency distribution of physiotherapy modality choices that are recommended, not recommended, and without recommendation

Knee osteoarthritis	Frequency	Percentage (%)
Recommended		
Education	124	83.8%
Exercise	134	90.5%
Self-management	82	55.1%
Knee brace	62	42.0%
Not recommended		
TENS	101	68.2%
Shockwave	36	24.6%
Peripheral joint mobilization	54	36.6%
Hydrotherapy	21	14.5%
Massage	2	1.4%
Ice therapy	98	66.2%
Acupuncture	2	1.4%
Kinesio-taping	2	1.4%
No recommendation		
Myofascial release	19	13.0%
Triger point release therapy	4	2.9%

TABLE 4 Association between CPGs and demographic profiles of the participants

	Awareness of knee OA CPGs			
	No	Yes	Chi-square	p-value
Age [years]				
20–30	44	39	2.817	0.245
31–40	38	19		
>40	4	4		
Sex				
Female	45	29	0.444	0.505
Male	41	33		
Education				
BSc.	79	54	0.898	0.343
Masters	7	8		
Number of patients				
1–9	35	23	4.929	**0.085**
10–19	30	35		
>20	10	15		

developed CPGs as well as very low participations (13%) in OA-specific workshops and seminars might have accounted for their low awareness of the existing CPGs for knee OA. Although a positive attitude towards CPD had been previously reported, the lack of leadership direction for mentorship and sponsorship was identified as a barrier against their participation (Bello & Lawson, 2013). The low level of awareness of the knee OA-specific CPGs can also be blamed on the unsupportive clinical environment for practice autonomy, discharge plans, and resource availabilities.

4.3 | Limitation

We acknowledge the self-reported information in the survey other than clinical note audit, which potentiates recall bias as well as over and/or under-reporting of information.

5 | CONCLUSION

Our study showed that despite the correct selection of therapeutic exercises and education among the participants for managing knee OA, they had low awareness of the specific CPGs. Rather, they often

resorted to an individual systematic review paper on knee OA (other than CPGs) as their practice guide.

5.1 | Implications for physiotherapy

The low level of CPGs awareness among the physiotherapists provides an avenue for divergent practice patterns which contravene the very essence of developing CPGs, which is meant to harmonize the practice patterns. The findings have also suggested research exploits into the mode of interventions for managing patients with OA in Ghana.

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AUTHOR CONTRIBUTIONS

Martin Ackah, conceived the study and performed data analysis. **Martin Ackah**, **Hosea Boakye** and **Cynthia Osei Yeboah**, involved in data collection process and drafted the first manuscript. **Ajediran Idowu Bello**, interpreted the results, critically reviewed and revised the manuscript for methodological and intellectual content. All authors approved the final manuscript.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

PATIENT CONSENT STATEMENT

Permission was sought from the executive members of GPA, to invite registered physiotherapists for participation. Participants' information page detailing their confidentiality and freedom of participation were sent to the eligible physiotherapists through their mobile phones using WhatsApp and/or their e-mail contacts.

ETHICAL APPROVAL

This study was approved by the Ethics and Protocol reviewed committee of the School of Biomedical and Allied Health Sciences, University of Ghana.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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