

**Management of low back pain in Ghana : a survey of self-reported practice**

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## **ABSTRACT**

**Background and purpose:** Practice variation exists in the physiotherapy management of low back pain across several countries. Previous studies indicate treatment strategies used may not always be in line with evidence-based practice. Most of these studies however were conducted in developed countries. This study sought to investigate the management of low back pain in Ghana in order to add to the emergent literature regarding practice in developing nations.

**Methods:** A web-based self-report questionnaire was made available to all eligible members of the Ghana Physiotherapy Association.

**Results:** The survey achieved a response rate of 67%. Over 60% of physiotherapists in Ghana had less than five years of practice experience, worked in large facility hospitals and had no postgraduate further training. Most LBP patients seen were chronic and over 60% of treatment sessions used multiple therapies, and included exercises, advice, massage, electrotherapy and manual therapy.

**Conclusion:** This first mapping of physiotherapy management of low back pain in Ghana shows an overt multimodal approach. There was potential good practice with the high use of exercise and advice, the equally high utilisation of passive treatments however showed variance to recommendations of guidelines. The findings of this study have implications for clinical practice and physiotherapy education and research.

Words: 204

**KEY WORDS:** Back care, Management, Physiotherapy, Ghana

### **Introduction**

Low back pain (LBP) is recognised internationally as a major health burden, with an estimated lifetime prevalence of 60-84% and an epidemic status worldwide (WHO, 2003). Studies from developed countries show that the direct costs of funding treatment and the indirect costs to society run into hundreds of millions of dollars and account for a significant percentage of gross domestic product (Dagenais et al., 2008).

Studies on the epidemiology and the impact of LBP on society however have been largely focused on developed western countries leading to paucity of information on developing nations which account for over 75% of the world's population (Volinn, 1997). A review on low-income countries identified an annual prevalence of 30-68% among urban dwellers and a lower rate of 0-16% among rural dwellers (Volinn, 1997). A systematic review, specifically focussing on Africa, also identified the average lifetime prevalence of LBP among adolescents as 36% and among adults as 62% (Louw et al., 2007). The Women's Health Study of Accra, the capital of Ghana, identified that 19.4% of the 1328 women randomly screened had chronic LBP (Hill et al., 2007). Another survey of 100 male rural subsistence farmers in the Brong Ahafo region of Ghana to identify the predominant causes of ill-health in this population also identified LBP to be highly prevalent (76%), and debilitating accounting for, on average, 19 days lost from work (McNeill and O'Neill, 1998).

Physiotherapy is deemed to play a key role in the management of LBP; however there are many physiotherapy interventions for LBP, not all of which are supported by evidence (Waddell et al., 1999), and practice variation is common (Poitras et al., 2007). There have been a number of studies investigating physiotherapy management of LBP in different countries, which confirmed significant practice variation in the physiotherapy management of LBP within and between countries. Early studies showed a high use of electro-physical modalities, massage and mechanical traction (45 -83% usage), exercises (15-83%) and patient education/advice (10-90%). The use of manual therapy was relatively low (8-33%) in these studies (Battie et al., 1994; Jette et al., 1994; Van der Valk et al., 2005; Jette and Delitto, 1997; Mielenz et al., 1997; Van der Barr et al., 1998; Foster et al., 1999).

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More recent studies to investigate physiotherapy management of LBP after the introduction of Clinical Practice Guidelines (CPG) indicate that practice variations persist and therapists show variable adherence to guidelines (Jackson, 2001; Gracey et al., 2002; Reid et al., 2002; Armstrong et al., 2003; Hamm et al., 2003; Poitras et al., 2005; Swinkles et al., 2005a; Byrne et al., 2006; Casserly-Feeney et al., 2008; Liddle et al., 2009). Although there has been an increase in the percentage of therapist using exercise and manual therapy, which are generally recommended by guidelines, some therapists continue to employ modalities like massage and electrotherapy, which recent guidelines recommend should not be used (Airaksinen et al., 2006; NICE, 2009).

All previous studies of physiotherapy practice, which have been referenced, have been conducted in so-called developed countries either in Europe or North America; however two studies, one in India (Fidvi and May, 2010) and one in Thailand (Pensri et al., 2005) have been conducted in countries classified as developing (Volinn, 1997). There is no information about physiotherapy practice in Ghana, a medium sized West African country. There is a very limited supply of physiotherapists: only 81 active physiotherapists for a population of over 24 million, meaning the supply is about one per 3-4 million (Ghana Physiotherapy Association, 2012; Ghana statistical service, 2012).

The aim of this study was to describe the current self-reported treatment practice in the management of LBP in Ghana, using a self-report questionnaire to describe the therapists, the patients, treatments offered, and the reasoning behind these treatments.

## **Methods**

### **Participants**

All physiotherapists who are registered members of the Ghana Physiotherapy Association (GPA) and are currently working in government hospitals and private clinics were approached to participate in the study. Most physiotherapists usually treat all types of patients, thus all members were likely to have managed patients with LBP.

### **Data collection**

A web-based questionnaire which was hosted on survey monkey.com was used. Questionnaire formats have proved successful in previous studies exploring the management of LBP in both developed (Foster et al., 1999; Liddle et al., 2009) and developing countries (Pensri et al., 2005; Fidvi and May, 2010). A web-based survey had the advantages of easy retrieval of responses, reduced risk of lost questionnaires where the postal system is not reliable, and minimal cost.

Physiotherapy centres in Ghana are mostly located in district hospitals, the majority of which have internet access.

The content of the questionnaire used (appendix) was adapted from an earlier questionnaire (Fidvi and May, 2010) in a similar study in India; which was derived from an earlier study (Foster et al., 1999). Modifications were made to contain the recommendations made to define specific exercise regimes in order to limit overlap of responses (Fidvi and May, 2010). The purpose of both this and previous studies was to map real reported-practice in different settings to understand what physiotherapists actually do in practice. This is a research priority as practice may not reflect evidence-based practice.

The demographic information of participants and LBP patient were modified to include the country of initial training and source of funding, which is relevant to the Ghanaian environment. Additionally an open ended question regarding factors that influenced participant's choice of interventions was added. The questionnaire was then piloted on four Ghanaian physiotherapists and minor changes were made to improve clarity. The final questionnaire had five sections: about the respondents, the patients, the treatment sessions, interventions used, and the intervention most likely to be used.

### **Procedure and ethics**

The protocol for this study was approved by the Research Ethics Committee of the Faculty of Health and Wellbeing, Sheffield Hallam University, Sheffield, UK.

Permission and contact details were also given by the education and research committee of the GPA to invite its membership for participation. An invitation email

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containing the link to the survey web page and a detailed information sheet, which assured participants of the confidentiality and anonymity of their responses, was sent to participants stating the aim of the study and inviting them to participate. A maximum of two reminder emails and a phone call was made to participants to increase response rate. Consent was assumed by completion of the questionnaire. Electronic data was kept on a password secured computer and hard copy data was kept in a research file, which was stored in a locked cupboard.

### Data analysis

Percentages were used to summarise the categorical demographic variables of physiotherapists and the characteristics of patients. Percentages and frequencies were used to summarise details of treatment sessions and the use of treatment interventions. The small sample size and the skewed distribution of respondents meant that cross-tabulations to explore comparative relationships between variables were not possible. Responses to the open ended question about reasons for selecting interventions were analysed using content analysis, and verified by a second researcher (O'Cathain and Thomas, 2004). All analyses were done using the Microsoft excel package (2010 for windows 7).

### Results

Eighty physiotherapists met the inclusion criteria. Invitation emails were sent out to 66 valid email addresses, 44 therapists responded giving a response rate of 67% which represented 56% of those who met the inclusion criteria (Figure 1). Figure 2 shows the compiled summaries of therapists' information. The majority were relatively novice therapists, and trained in Ghana; 64% worked in a teaching hospital, 27% in regional or district hospitals, and 9% in private clinics.

The majority of therapists (86%) estimated that the most common age group of LBP patients was above 40-years, and the next most common 20-40-years (84%), and the least common below 20. The majority of therapists (81%) estimated that the duration of LBP was most commonly chronic (>12 weeks), and the next most common sub-acute (6-12 weeks) (65%), and acute (<6 weeks) as least common. Regarding funding of physiotherapy services personal funding, followed by national

health insurance scheme (NHIS) were most common and other funds the least common.

Figure 3 shows the compiled summaries of treatment sessions and goals. Exercise therapy, education/advice, massage, electrotherapy and manual therapy were most commonly used in each treatment session. Most respondents used over eight treatment sessions of 30 minutes to one hour. The more popular advice concerned postural awareness and technique modification, and the least popular advice was rest.

Figure 4 depicts compiled summaries of the frequency of use of the various types of electrotherapy modalities, manual therapy approaches and types of exercises. The electrotherapy modalities that were most often used were shortwave diathermy (SWD) and TENS, while laser therapy was most rarely used. The most often used exercises were core stabilisation and range of motion/flexibility exercises, while general fitness exercises were rarely used.

All persons who completed the survey responded to the questions concerning their use of electrotherapy, education/advice and exercises, however 41% did not respond to the question on the use of manual therapy. The most often used manual therapy was manipulation, followed by the McKenzie approach, which is not entirely a manual therapy approach. Only one person used the Mulligan approach rarely. When asked about their first treatment preferences, exercise therapy was the first preference for 53%, electrotherapy for 37%, and manual therapy for 21%. Table 1 shows the frequency of factors influencing choice of interventions; patients' presentations were the most common cited.

## **Discussion**

This nationwide survey explored the physiotherapy management of LBP in Ghana. The present findings indicate that Ghanaian physiotherapists use a range of interventions in combination; most commonly exercise therapy, advice, massage, electrotherapy and manual therapy. The majority of respondents were young

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graduates with 1-5 years working experience, mostly working in the public sector, and mostly without post-qualification training.

Regarding the number of treatment sessions, as with other developing countries a high number of treatment sessions, greater than seven sessions, was used (Pensri et al. 2005; Fidvi and May, 2010); whereas in developed countries the mean number of treatment sessions used was generally less than seven (Jackson, 2001; Gracey et al., 2002; French et al., 2006; Casserley-Feeney et al., 2008). This could be due to the predominance of passive interventions in developing countries and the lack of attention to guidelines and evidence-based practice. Or as most of these studies were in the UK, limitation of treatment sessions within the NHS may influence this observation. Previous studies found that less experienced therapists gave more treatment sessions and longer duration of sessions (Gracey et al., 2002; Swinkels et al., 2005b).

Combining treatment strategies is very common in physiotherapy management (Casserley-Feeney et al., 2008); however combining five in each treatment session raises concern and maybe another cause for over-long treatment sessions. A multimodal approach also hampers valid assessment of the effectiveness of the various interventions and clinical reasoning. If a patient improves after receiving multiple therapies it is not possible for the therapist to know which component of the management package has led to that improvement. This means that they are likely to continue with multiple therapies, without clinically reasoning what are the most effective treatments. On the other hand multimodal therapy could be done to improve patient satisfaction, as some patients perceive lots of interventions as being 'well treated' (Layzell, 2001).

The long treatment durations, the large number of treatment sessions and the use of several interventions may indicate a wasteful use of resources and poor cost-effectiveness. This is particularly of concern because results from this study show that most patients personally funded their treatment, funding from the NHIS was second in ranking. Ghana implemented the NHIS in 2004; initially it covered infectious diseases, maternal and child health, which makes up 80% of the country's disease burden (Wahab, 2008). Only recently was outpatient physiotherapy services

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included. Such health care systems are associated with stringent audits and a high demand for cost efficiency (Eccles and Mason, 2001). Thus the current situation may discourage policy makers from continuing to include physiotherapy in the NHIS, leading to reduced accessibility to physiotherapy. Therapists listed pain relief as the main aim of treatment, and functional or quality of life as only the second aim of treatment; however therapists also indicated that the most common group of patients seen were those with chronic problems. This would appear to be a disparity between the goals of treatment and the nature of the patients' problems. With chronic problems the emphasis has now become more restoration of function with a decreased emphasis on addressing pain.

In this study, the most used and most preferred intervention was exercise therapy. This popularity of exercise therapy with physiotherapists agrees with most previous studies. All current CPGs recommend exercise therapy for chronic LBP, the type and intensity however vary. Systematic reviews also support the use of exercise for improving flexibility, strength, function and reduction pain in patients with chronic LBP (Liddle et al., 2004; Rainville et al., 2004).

The high use of advice in this study is consistent with several previous studies, which indicates good practice as therapists recognised their role in patient education. Very few Ghanaian physiotherapists (13%) however reported giving advice to stay active and engage in general fitness routines which is the principal advice recommended by guidelines. Approximately 93% of treatment sessions contained massage, which is not recommended by most guidelines. Systematic reviews have been contradictory about the evidence for massage; some concluded that there was insufficient evidence (Ernst, 1999; Furlan et al., 2000), but a more recent review indicated that it might be beneficial for patients with chronic LBP, especially when combined with exercises and education (Furlan et al., 2008). Clearly, Ghanaian physiotherapists do not use massage in isolation so its usage is probably justified.

Modalities were a key component of LBP management in Ghana, especially TENS, SWD, hot packs and interferential, which high use is consistent with results from

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India and Thailand. Studies in developed nations show a very variable use of thermo-electrical modalities (8-83% usage). CPGs specifically discourage the use of thermo-electrical modalities especially in the management of chronic LBP, and there is little documented evidence for their use (Philadelphia Panel, 2001). The rationale and reasons for its persistent popularity is therefore uncertain. It may stem from its focus in undergraduate training (Foster 1999), lack of access to existing scientific literature (Pensri et al., 2005), the relative simplicity and ease of application, and the perceived benefit, on the part of therapist and patient, associated with apparently high-tech treatment apparatus (Layzell, 2001; Gracey et al., 2002).

Manual therapy was reported to be part of 63% of treatment sessions, with manipulation being the most commonly used. Besides being in contrast to all previous studies, this finding is also perplexing because none of the respondent reported having a post graduate training in manipulation and neither does it form part of the undergraduate training. Spinal manipulation has arguably an evidence-base in the management of LBP and most guidelines recommend it (Dagenais et al. 2010). It therefore would be good practice if Ghanaian physiotherapists were using manipulation, but such a conclusion cannot be confidently made against the background of doubts outlined. A possible explanation may be that therapists are confusing mobilisation with manipulation but this could not be ascertained as therapists were not followed up to clarify their responses. Nonetheless, in the unlikely event that the therapists are doing some form of manipulation without the right training, there is a grave danger of patients being harmed as manipulation is a high risk intervention (Ernst 2010).

Traction was reported to be used in about 40% of treatment sessions. Again this is a treatment modality that has very little support in the literature, with guidelines finding the evidence conflicting or lacking, and with the mostly consistent recommendation that traction should not be used (Airaksinen et al. 2006; NICE 2009; van Middelkoop et al. 2011). Similarly high proportions reported its use in Thailand (Pensri et al. 2005), but most other surveys, from India the UK and Ireland, have reported very limited use (under 10%) if at all. It is impossible to speculate on the reasons for these differences.

The survey achieved a good response rate to appropriately reflect the national situation for Ghana. Despite this the study had limitations that must be considered in the interpretation of its findings. The study design, a self-report survey relied on therapists to provide accurate data, this could be hampered by recall accuracy. The use of predominantly closed questions may lead to differing interpretations of questions (Metcalfe et al., 2001). Persons who take time to respond to questionnaires may be different from those who do not; this influences the generalizability of findings (Domholdt and Malone 1985). Although this survey had a good response rate of 67%, the non-response rate was particularly high among the physiotherapists trained in the Netherlands indicating a significant threat of non-response bias.

The questionnaire has been widely used in previous studies and face validity has been tested, however content validity and reliability have not been assessed, which is a weakness. Another major weakness of the study is that it does not distinguish between acute and chronic low back pain cases, which generally are distinguished in guidelines. For instance, exercise is generally recommended for chronic, but not for acute back pain. One way of overcoming this problem would be to use case study scenarios depicting patients at different stages in their natural histories, with different presentations.

Nonetheless, the obvious clinical implication of the study is the urgent need of evidence-based CPGs to resolve the uncertainties displayed by therapists by their multi-modal management and excessive use of passive modalities. Provision of CPGs would have immediate benefits by circumventing current obstacles of lack of evidence appraisal skills and constraints in locating primary evidence sources (Guyatt et al., 2000). The GPA could modify and adopt current guidelines from other countries while they initiate future research that will result in a culturally relevant one. However the variation in practice displayed in this and previous surveys would not necessarily be resolved with the adaptation of guidelines, as practice variations are common still in countries with a long history of the use of guidelines, such as the UK.

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Due to the limitations of the present study, a future study which reported prevailing practice in a retrospective audit with follow up questions may be needed. The open-ended question aimed at investigating factors that influenced therapist's management choices did not yield much depth hence a qualitative study may be necessary to explore this. Missing from this study as with most similar studies is a determination of treatment outcomes within the prevailing practice; future investigation in this might tell the impact of current practice on clinical outcomes, cost and patient satisfaction.

### **Conclusion**

The findings of this nationwide study have provided an insight into physiotherapy management of LBP in Ghana. It showed a high use of exercise and advice; an indication of good practice but, there was also high utilisation of massage and electrotherapy which lacked support from guidelines. The generalizability of these findings to other developing countries however may be limited as the underlying issues likely to be responsible for these results such as physiotherapy education, healthcare systems and resources may differ across nations.

Words 3,202

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**Table 1: Factors influencing choice of treatment intervention**

| Influencing factor                     | Count | Percentage |
|--|-------|------------|
| Assessment findings                    |       |            |
| Severity, intensity and nature of pain | 20    | 52.6       |
| Duration/Chronicity                    | 11    | 28.9       |
| Cause of injury                        | 11    | 28.9       |
| Comorbidities/contraindications        | 10    | 26.3       |
| Patient Functional level               | 4     | 10.5       |
| Radiological findings                  | 2     | 5.2        |
| Patient demographics                   | 13    | 34.2       |
| Available resources                    | 6     | 15.8       |
| Treatment goals                        | 6     | 15.8       |
| Patient preferences                    | 4     | 10.5       |
| Therapist expertise                    | 2     | 5.2        |
| Facilities treatment protocol          | 1     | 2.6        |
| Workload                               | 1     | 2.6        |

\*Percentages do not add up to 100; as more than one factor may be stated

**APPENDIX I**

**QUESTIONNAIRE**

**Therapist information**

1. In which clinical setting do you work?

Private facility

Teaching hospital

Regional Hospital

District hospital

2. How many years have you practiced?

1-5 years

5-10 years

>10 years

3. In which country did you receive your undergraduate training? Please state

4. Please state any further training or qualifications gained after initial training.

**Patient information**

(Please rank 1 as the most common, 2 as sometimes and 3 as least common).

5. The age group of the LBP patients you treat.

Less than 20 years

20-40

Above 40

6. LBP chronicity: at what stage do patients mostly come to you?

Acute (less than 6 wks)

Subacute (6-12weeks)

Chronic (more than 12 weeks)

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7. How do patients fund their treatment?

NHIS

Personal funds

Other funding

### **Treatment sessions and goals**

8. What is the average number of treatment sessions required by most patients?

0-4

4-8

8-12

>12

9. What is the average duration of each treatment session?

Less than 30 minutes

30 mins – 1 hr

More than 1 hr

10. **Each** treatment session usually comprises of (select as many as apply)

Electrotherapy

Exercise therapy

Manual therapy

Education/Advice

Mechanical traction

Massage

Strapping/taping

Hydrotherapy

Other modalities (please state)

11. List your treatment goals in order of priority

### **Treatment interventions used**

12. Which of these interventions do you use in managing your low back pain patients?

Please select as many as apply.

- Exercise therapy
- Mechanical traction
- Massage
- Strapping/taping
- Hydrotherapy

13. If you use electrotherapy, which of these modalities do you use in managing your low back pain patients? Please select as many as apply

- |            |                               |
|------------|-------------------------------|
| SWD        | Laser                         |
| Ultrasound | Ice                           |
| Hot packs  | TENS                          |
| Microwave  | Interferential                |
| Infrared   | Other currents (please state) |

14. If you use manual therapy which of these approaches do you use in managing your low back pain patients? Please select as many as apply

- |                       |                          |
|-----------------------|--------------------------|
| Maitland mobilisation | Cyriax                   |
| Manipulation          | Muscle energy techniques |
| Mckenzie approach     | Other (please state)     |
| Mulligan              |                          |

15. If you use electrotherapy, please state which modalities you use

- Often
- Sometimes
- Rarely

14. If you use manual therapy, please state which approaches you use

- Often
- Sometimes
- Rarely

15. If you use exercise therapy, please state the types of exercises used (eg. flexibility exercises, stabilisation exercises etc.)

- Often
- Sometimes
- Rarely

16. State the type(s) of advice you give to LBP patients

### **First treatment preference**

17. How likely are you to use **electrotherapy** as your **first** treatment preference?

- Very likely
- Likely
- Not very likely
- Not at all likely

18. How likely are you to use **exercise therapy** as your **first** treatment preference?

- Very likely
- Likely
- Not very likely
- Not at all likely

19. How likely are you to use **manual therapy** as your **first** treatment preference?

- Very likely
- Likely
- Not very likely
- Not at all likely

20. Comment on factors that influence your choice of treatment interventions in the management of LBP.