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Effect Of Physiotherapy Intervention On Low Back Pain And Disability In Individuals And Patients With Chronic Low Back Pain: A Systematic Review

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Abstract: ***Individuals and patients with chronic low back pain may benefit from physiotherapy intervention, however, evidence supporting this across physiotherapy across chronic low back pain trials is conflicting.***

The aim of this review was to evaluate the effect of physiotherapy interventions on low back pain and low back pain-related disability in individuals with chronic low back pain. Five electronic databases- CINAHL, The Cochrane Library, MEDLINE, PubMed and PEDro- were searched for studies reporting findings on physiotherapy intervention for individuals and patients with chronic low back pain. Studies were included if they reported low back pain and low back pain-related disability as an outcome. Quality appraisal was performed using the PEDro tool for quality assessment A narrative synthesis was done due to lack of adequate number of studies to support meta-analysis. 4 RCTs (120 participants) were included in the review.Findings from the included studies did not demonstrate any superior clinical benefits of physiotherapy intervention on low back pain and low back pain related disability over other forms of non-pharmacological intervention. However, evidence regarding the effect of physiotherapy intervention on low back pain and low back pain related disability is inconclusive. The evidence from the review is inconclusive regarding the effectiveness of physiotherapy intervention reducing low back pain and low back pain related disability in individuals/patients with chronic low back pain. More rigorous trials are needed before recommendations can be made. Future studies should pay more attention to what would constitute effective components of physiotherapy intervention for low back pain and low back pain related disability.

I. INTRODUCTION

Globally, non -communicable diseases are becoming the leading cause of mortality and morbidity with chronic low back pain (CLBP) contributing significantly to the burden of disability in many societies (Vos et al. 2015; Igwesi-Chidobe et al. 2015). In developed countries, a prevalence rate of 32.9% has been reported for CLBP and in these countries (Broonen et al. 2011), CLBP has been found to be responsible for much pain and disability with significant economic implications on these countries (Rozenberg et al. 2012). In Nigeria, the prevalence rate of CLBP is very alarming and has been shown to be as high as 72% in the rural areas (Igwesi-Chidobe et al. 2016; Bridget and Dienye 2012; Hoy et al. 2010).

The impact of CLBP on quality of life and individual productivity is enormous and worrisome (Lidgren 2003). This is essentially reflected in the high rate of work absenteeism and the marked decline in activity participation among numerous individuals suffering CLBP (Lidgren 2003). For instance, in the United Kingdom, more than 100 million work days are lost per year due to CLBP (Vos et al. 2012). In the United States, more than an estimated 159 million work days are lost per year due to low back pain with an estimated cost

of about 100 million to 200 million dollars each year (CDC 2008; Ansari et al. 2015). The developing countries are not left out. In Nigeria, 52% of the entire population are rural dwellers (DFID 2012). Among this population, a high CLBP prevalence rate of 85% has been documented (Omokhodion 2004), and given the high level of poverty in this society, very significant economic implications would be expected. In the light of this evidence, CLBP has been recognized as a major public and global health issue necessitating urgent remedial attentions.

The optimal treatment option for the management of CLBP has remained unresolved in the past years. Predominantly, the use of pharmacologically based biomedical approach has gained wide acceptance as first line treatment option for CLBP especially in the developing countries (Igwesi-Chidobe et al. 2015b). On the other hand, numerous non-pharmacological interventions exist for the management of CLBP (Cecchi et al. 2010), but with insufficient evidence to support their effectiveness. However, given the adverse implications of long term use of pharmacological interventions such as non-steroidal anti-inflammatory drugs (NSAIDs) and other analgesics and given the chronic and often non specific nature of low back pain, attention has been shifted to non-pharmacological approaches to the management of CLBP.

Numerous non pharmacological interventions abound for the management of CLBP with conflicting outcomes. For instance, individualized supervised exercise program including stretching and strengthening is a generally recommend treatment option for functional improvement and pain relief in individuals with CLBP (Hayden et al. 2005). Spinal manipulation and vertebral mobilization are also widely accepted in the clinical practice and there is evidence of the effectiveness of spinal manipulation on CLBP (Andersson et al. 1999; Niemistö et al. 2003). Furthermore, individualized physiotherapy combined with individually tailored active exercise with passive or assisted mobilization and manual treatments is also another widely sought treatment option for CLBP (Cecchi et al. 2010). The availability of multiple non-pharmacologically based treatment options for CLBP and lack of substantial evidence to support intervention effectiveness have raised serious clinical questions regarding the utilization of these approaches in the management of CLBP. While this review has recognized the limited evidence regarding intervention effectiveness, it has also recognized the potential benefits of robust physiotherapy intervention on CLBP and CLBP-related disability.

As part of an ongoing project to develop robust physiotherapy intervention for the management of CLBP, this systematic review was therefore conducted to summarized the available evidence on the effectiveness of physiotherapy intervention on CLBP and CLBP –related disability. To this effect, this review addressed the following CLBP question: Is physiotherapy intervention effective in reducing chronic low back pain and chronic low back pain-related disability compared to other non pharmacological interventions in individuals with chronic low back pain?

II. METHODOLOGY

This is a systematic review of RCTs on the effect of physiotherapy interventions on selected outcomes in patients with low back pain. This systematic review is reported according to the Preferred Reporting Items for Systematic reviews and Meta-analyses (PRISMA) 2015 guideline (Moher et al. 2015).

A. ELIGIBILITY CRITERIA

- ✓ Study design and language: This systematic review included only RCTs of patients with low back pain. Only papers published in English language were included.
- ✓ Participants: This review included only RCTs of physiotherapy interventions on patients with low back pain irrespective of age, cause, disease stage, and disease duration.
- ✓ Intervention: This review included only RCTs of physiotherapy intervention. This review did not adopt any specific definition to physiotherapy intervention for low back pain. Thus, studies were included provided they stated clearly the provision of physiotherapy intervention to one group. While this review did not specify components of such intervention, studies were only included if the reviewers were satisfied with the components of the intervention.
- ✓ Comparator: This review included studies that compared physiotherapy interventions to any other treatment options such as usual care or no treatment.
- ✓ Outcomes: Studies were only included if they assessed and reported findings on low back pain and low back pain related disability. Studies were only included when assessments were conducted at the completion of intervention, at 6 and 12 months post-intervention.
- ✓ Study settings: Health centers, clinics, hospitals, community settings, private homes.

B. INFORMATION SOURCES AND SEARCH STRATEGY

Five databases (CINAHL, the Cochrane Library, MEDLINE, PubMed and PEDro) and trial registers and directory of open-access repository websites were searched by two reviewers using controlled vocabularies and keywords: low back pain, chronic low back pain, nonspecific low back pain, low back ache, lumbago, physiotherapy, physical therapy, manipulation, mobilization, exercises etc. Additionally, searches were performed from the reference lists of identified studies.

C. STUDY RECORD, SELECTION PROCESS AND DATA MANAGEMENT

Literature search results were exported into RefWorks to check for duplication of studies. Bibliographic records were exported from RefWorks into Microsoft Excel (Microsoft. Microsoft Excel. Redmond, Washington: Microsoft, 2010 computer Software) to facilitate management and selection of articles for inclusion. Eligibility questions and forms for the

screening of the studies included within the review were then developed, piloted and subsequently refined. Title, abstract and full texts of selected studies were independently screened for eligibility by two reviewers based on the review eligibility criteria. Differences of opinions occurring at any stage regarding inclusion or exclusion were resolved by discussion and reflection, in consultation with the third reviewer.

D. DATA COLLECTION PROCESS

RISK OF BIAS ASSESSMENT IN INDIVIDUAL STUDIES

Quality appraisal and assessment of risk of bias in individual studies

The methodological rigor of the selected studies was accessed using the Physiotherapy Evidence Database (PEDro) quality appraisal tool. The PEDro is an 11-item scale in which the first item relates to external validity and the other ten items assess the internal validity of a clinical trial. One point is given for each satisfied criterion (except for the first item) yielding a maximum score of 10. The higher the score, the better the quality of the study and the following point scale was used: 8-10 (excellent quality); 5-7 (moderate quality); 1-4 (poor quality). A point for a particular criterion was awarded only if the article explicitly reported that the criterion was met. A score of one was given for each yes answer and zero for no, unclear and not applicable (N/A) answers. The overall score was reported as a tally of all yes answers out of 10 based on the applicable answers for each study. Scores of individual items from the critical appraisal tool was added to present the total score.

Two reviewers appraised the selected studies independent of each other. Areas of differences were resolved by discussion and reflection, or in consultation with the third reviewer. Appraisal of the qualities of the included studies was carried out following the completion of study selection.

DATA ITEMS

Data was collected from variables including authors' references, participants' characteristics, inclusion and exclusion criteria, study sample size, components of the intervention, the intervention setting, who delivered the intervention, the duration of the intervention and follow-up (where available), attrition rate, aspects of outcome assessed, the outcome measurement, methods/techniques, results, conclusions and funding sources.

E. DATA ANALYSIS

Due to inadequate sample size, studies were analyzed using narrative synthesis following the recommendation of the Centre for Reviews and Dissemination to explore the relationship and findings between and within the included studies (Akers et al. 2009).

III. RESULTS

STUDY INCLUSION

Initial search yielded 2947 potential papers. Following duplicate removal, 2441 potential papers were screened for title, with 2425 papers excluded after title and abstract screening. 16 papers were read and screened for eligibility, with 4 papers meeting the review's eligibility criteria and were included in the review (Fig. 1). Reasons for exclusion of studies following full test screening included absence of physiotherapy intervention for intervention group (n= 1), provision of [physiotherapy intervention to all the study groups (n = 3), patients not having low back pain (n =1), studies not available in English language (n =1), study protocol (n =2), outcomes of interest not reported (n =3), and studies whose full text were not available (n =1)

QUALITY APPRAISAL AND RISK OF BIAS ASSESSMENT

The PEDro scale tool for quality was adopted for this review with papers bein judged as excellent trials, moderate trials or poor trials if they score 8-10, 5-7, or 1-4 respectively. All the four studies were (Akhtar et al. 2017; Hurley et al. 2015; Cecchi et al. 2010; Kaapa et al. 2006) judged as moderate quality. The major potential sources of bias in the included studies were performance bias participant and personnel blinding (all the studies), assessor blinding (Akhtar et al. 2017; Cecchi et al. 2010; Kaapa et al. 2006), allocation concealment and adequate follow-up (Hurley et al. 2015), and intention-to-treat analysis (Cecchi et al. 2010; Akhtar et al. 2017). All the included studies carried out random sequence generation and between group comparisons. Also all the studies have similar baseline characteristics across studies groups and reported point estimates and variability.

CHARACTERISTICS OF INCLUDED STUDIES

PARTICIPANT CHARACTERISTICS

All the included studies were randomized controlled trails and contributed a total of 620 participants. The number of participants in the 4 included studies ranged from 120 (Kaapa et al. 2006; Akhtar et al. 2017) to 240 (Hurley et al. 2015) individuals/patients living with low back pain. Participants involved in the included studies were ≥18years of age. The clinical characteristics between the intervention and control groups do not differ significantly at baseline. Low back pain for included studies where basically chronic and recurrent and were mostly nonspecific for all the included studies (Tables 2 and 3).

OUTCOME MEASURES

Different studies tend to utilize varied outcome tools in evaluating disability (Table 2). For instance, low back pain related disability was measured with Oswestry Disability Index (Hurley et al. 2015; Kaapa et al. 2006), and Roland Morris Disability Questionnaire (Cecchi et al. 2010).

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However, Low back pain was basically measured with visual analogue scale (scale of 0-10) across the included studies (Tables 2 and 3).

PHYSIOTHERAPY INTERVENTIONS

Wide variation in what constituted physiotherapy interventions across included trials exists with physiotherapy interventions not based on any reference guideline. Nevertheless, all studies included in addition to supervised and/or home based exercise programme, manipulation, mobilization, TENS, and ultrasound therapy (Tables 2 and 3).

EFFECT OF PHYSIOTHERAPY INTERVENTION ON LOW BACK PAIN AND LOW BACK PAIN RELATED DISABILITY IN THE INCLUDED STUDIES

Except where otherwise specified, the effects of intervention are reported as the comparison of the intervention versus the control.

Four of the included studies provided data on low back pain. Hurley et al. (2015) reported a significant decrease in low back pain for physiotherapy group, exercise class group and spinal manipulation group ($p \leq 0.001$) immediately post intervention. At 6 months follow-up, Hurley et al. (2015) also reported a significant decrease in pain for physiotherapy group, exercise class group and spinal manipulation group ($p \leq 0.001$). However, no between group treatment effects was established between the three groups. Cecchi et al. (2010) also reported a significant decrease in LBP at 6 months and 12 months follow-up when individual physiotherapy was compared with spinal manipulation, however, they did not report any such difference immediately post intervention. Akhtar et al. (2017) also reported a significant decrease in pain between baseline and post intervention for physiotherapy group ($p \leq 0.001$). However, they did not provide data on between groups analysis. Kaapa et al. (2006) did not report any significant difference on low back pain between multidisciplinary rehabilitation and individualized physiotherapy ($p>0.05$) (Table 4).

Only two studies provided data on LBP related disability. Hurley et al. (2015) reported a significant decrease in LBP related disability immediately post intervention and at 6 months follow-up for physiotherapy group, exercise class group and spinal manipulation ($p \leq 0.001$). Cecchi et al. (2010) also reported significant decrease in LBP related disability immediately post intervention, at 6 months and at 12 months follow-up for individualized physiotherapy compared with spinal manipulation ($p \leq 0.001$). On the other hand, Kaapa et al. (2006) did not report any significant difference on low back pain between multidisciplinary rehabilitation and individualized physiotherapy ($p>0.05$) (Table 4).

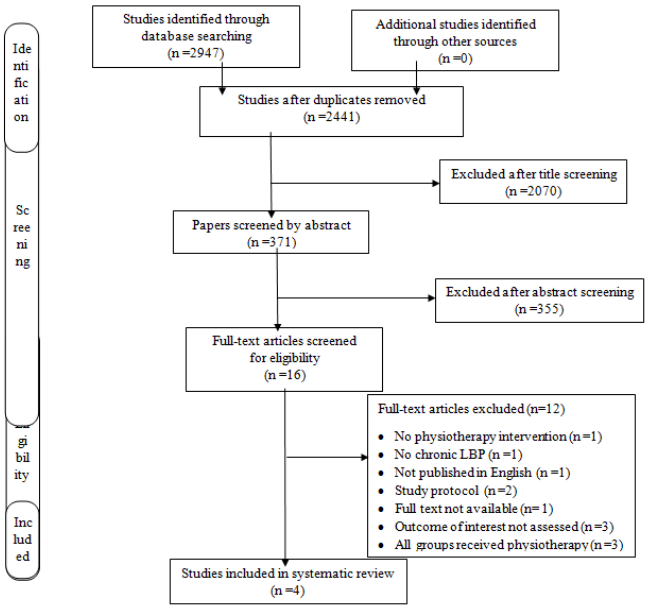

Figure 1: Physiotherapy interventions review PRISMA flow diagram

	Random allocation	Concealed allocation	Baseline comparability	Blind subjects	Blind therapists	Blind assessors	Adequate follow-up	Intention-to-treat analysis	Between-group comparisons	Point estimates and variability	Score	Quality index
Akhtar et al. 2017	Y	Y	Y	N	N	N	Y	N	Y	N	5/10	Moderate
Hurley et al. 2015	Y	N	Y	N	N	Y	N	Y	Y	Y	6/10	Moderate
Cecchi et al. 2010	Y	Y	Y	N	N	N	Y	N	Y	Y	6/10	Moderate
Kaapa et al. 2006	Y	Y	Y	N	N	N	Y	Y	Y	Y	7/10	Moderate

Table 1: Quality assessment of the included studies

Study	Participants	Intervention	Outcome	Conclusion
Akhtar et al. 2017, (Pakistan), RCT, Moderate	120 subjects with non-specific low back pain. Age: 20-60 years.	Group A: 6 weeks of core stabilization exercises targeting deep abdominal muscles + TENS + Ultrasound therapy Group B: R6 weeks of routine physical therapy exercises + TENSE + Ultrasound therapy	Pain: Visual analogue scale (assessed at baseline, wks 2, 4 and 6)	Core stabilization exercise is more effective than routine physical therapy exercise in terms of greater reduction in pain in patients with non-specific low back pain even though both had significant effects on pain.
Hurley et al. 2015, (Iceland), RCT, Moderate	240 (79 males and 167 females) participants with non specific chronic/recurrent low back pain. Mean Age+ SD = 45.4±11.4 (18-65 years).	Group A (Walking programme): 10 minutes walk on at least 4 days/week at week 1 to 30 minutes of moderate intensity physical activity. 5 days/week according to ACSM recommendations. Group B (Exercise group): Participants attended once per week of 8 consecutive weeks exercise classes. Each class consisted of a programme of progressive or graded exercises, and a back care education message in the form of a "Tip for the Day." The exercise components included warm-up	LBP related functional disability: Oswestry Disability Index Average LBP over the past week: Numerical pain rating scale Number of participants reporting no worse than mild pain: ≤NPS 3/10 Health related quality of life: The EuroQol EQ-5D-3L All outcomes were assessed at baseline, 3 months, 6 months and 12 months.	The findings showed that there were significant small improvements in functional disability, pain, and quality of life over time. However, no difference in these effects for the walking programme compared with the guideline-endorsed Back to Fitness programme or usual physiotherapy.

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Table 2: Characteristics of included studies

Study	Participants	Intervention	Outcome	Conclusion
Cecchi et al. 2010, (Italy), RCT, Moderate	210 (140 men and 70 men) patients with chronic, non-specific low back pain Age: 59±14 years.	Physiotherapy group: Patients were treated for 15 sessions lasting 60 minutes each, 5 times/week, for 3 consecutive weeks (15 hours of treatment altogether). Individual physiotherapy included passive and assisted mobilization, active exercise, 2 massage/ treatment of the soft tissues, and proprioceptive neuromuscular facilitation with emphasis on patient education and active treatment. Spinal manipulation group: Patients received 4–6 weekly sessions of 20 minutes each for a total of 4–6 weeks of spinal manipulation and mobilization (80–120 minutes of treatment altogether). Spinal manipulation was performed according to the manual medicine approach. Treatment was aimed at restoring the physiological movement in the dysfunctional vertebral segment(s) and consisted in vertebral direct and indirect mobilization and manipulation, with associated soft tissue manipulation by two physicians specializing in physical medicine and rehabilitation. Back school group: Back school groups included eight patients each; two therapists together ran all 15 sessions for each group. The back school included 15 one-hour sessions, 5 days a week. The first 5 weeks were devoted to information and group discussions on back physiology and pathology, with reassurance on the benign character of common low back pain, and with education in ergonomics at home and in different occupational settings by slides and demonstrations. The next 10 sessions included relaxation techniques, postural and respiratory group exercises, and individually tailored back and stretching, up to 10 individual exercises (3 levels of difficulty progressed as appropriate of aerobic, trunk, upper limb, and lower limb strengthening), cool down, and relaxation. Group C (Physiotherapy): Participants received a combination of individualized education/advice, exercise therapy, and manipulative therapy at the discretion of the treating physiotherapist based on usual practice in the Republic of Ireland. There was no restriction on the number of visits.	Disability: Roland Morris Disability Questionnaire (scoring 0-24) Pain: Pain Rating Scale (scoring 0-6) Outcomes were assessed at baseline, 3, 6, and 12 months.	Spinal manipulation provided better short and long-term functional improvement, and more pain relief in the follow-up than either back school or individual physiotherapy.
Kaapa et al. 2006	120 women (22 to 57 years) with non specific low back pain.	Multidisciplinary rehabilitation: The 8-week intervention consisted of 70 hours rehabilitation program, including intensive period of 5 days (6 hours per day), home-training of 2 weeks, and semi-intensive period of 5 weeks (two times 4 hours per week). The intervention comprised three main parts: cognitive-behavioral stress management and applied relaxation sessions, back school education including occupational intervention, and physical exercise program. This was delivered by a physiotherapist, two occupational physiotherapists, a psychologist, and a physician specialized in the rehabilitation medicine. Individualized physiotherapy: Intervention consisted of ten 1-hour treatment sessions of 6 to 8 weeks. Each session included 30- to 40-minute passive pain treatment (combinations of massage, spine traction, manual mobilization of the spine, and TNS/therapeutic ultrasound) and 15- to 20-minute light active exercise (muscle stretching, spine mobilization, and deep trunk muscle exercises). Patients were advised to progressively increase their regular daily activities. General physical training, such as swimming and ordinary or Nordic walking, was recommended. Patients also got a light home-exercise program, including 8 to 12 instructions about lower limb stretching, spine mobilization, and deep trunk muscle activation.	Low back pain intensity: Rated on a scale of 0–10) Back specific disability: Oswestry disability index	Multidisciplinary rehabilitation program for female chronic low back pain patients does not offer incremental benefits when compared with rehabilitation carried out by a physiotherapist having a cognitive-behavioral way of administering the treatments.

Table 3: Characteristics of included studies cont'ed

Study	Low Back Pain Related Disability	Low Back Pain
Akhtar et al. 2017		Low Back Pain (Visual analogue scale) Routine Physical Therapy Ex Baseline (5.40 ± 1.24) vs Post int (3.69 ± 0.79); p< 0.01 Core Stabilization EX Baseline (5.77 ± 1.08) vs Post int (3.69 ± 0.79); p<0.01
Hurley et al. 2015	Oswestry Disability Index (0-100) Exercise class (Mean (CI)) vs Walking program (Mean (CI)) vs Usual PT (Mean (CI)); p value @3m: 28.13 (24.55-31.72) vs 28.47 (24.73-32.21) vs 26.70 (23.08-30.32); p ≤0.001 @6m: 25.36 (21.74-28.99) vs 25.87 (22.09-29.65) vs 28.52 (24.86-32.18); p ≤0.001 @12m: 26.93 (23.09-30.76) 26.67 (22.68-30.66) 27.15 (23.28-31.01); p = 1.0	Numerical Pain Rating Scale—average pain (0-10) Exercise class (Mean (CI)) vs Walking program (Mean (CI)) vs Usual PT (Mean (CI)); p value @3m: 5.05 (4.48-5.62) vs 4.46 (3.87-5.06) vs 4.31 (3.74-4.89); p ≤0.001 @6m: 4.86 (4.23-5.49) vs 4.08 (3.42-4.74) vs 4.51 (3.87-5.15); p ≤0.001 @12m: 5.12 (4.48-5.76) vs 4.16 (3.49-4.83) vs 4.13 (3.48-4.78); p = 1.0
Cecchi et al. 2010	Roland Morris Disability score (Mean ± SD) Immediately post intervention Individualized PT (5.3 ± 5.2) vs Spinal manipulation (1.6 ± 2.6); p<0.001 Individualized PT (5.3 ± 5.3) vs Back School (5.9 ± 4.8); p = 0.270 @ 6m: Individualized PT (5.8 ± 5.0) vs Spinal manipulation (2.7 ± 3.4); p<0.001 Individualized PT (5.8 ± 5.0) vs Back School (5.4 ± 4.7); p = 0.717 @12: Individualized PT (5.7 ± 5.0) vs Spinal manipulation (2.5 ± 3.6); p<0.001 Individualized PT (5.7 ± 5.0) vs Back School (5.3 ± 4.6); p = 0.742	Pain rating scale (Mean ± SD vs Mean ± SD; P value) Immediately post intervention Individualized PT (0.9 ± 0.8) vs Spinal manipulation (1.2 ± 1.2); p = 0.259 Individualized PT (0.9 ± 0.8) vs Back School (1.0 ± 0.8); p = 0.225 @ 6m: Individualized PT (1.4 ± 1.1) vs Spinal manipulation (0.8 ± 0.7); p<0.001 Individualized PT (1.4 ± 1.1) vs Back School (1.4 ± 1.0); p = 0.856 @12: Individualized PT (1.6 ± 0.9) vs Spinal manipulation (0.7 ± 0.8); p<0.001 Individualized PT (1.6 ± 0.9) vs Back School (1.3 ± 0.9); p = 0.128

Kaapa et al. 2006	Oswestry Disability Index (scale 0–100 (Mean ± SD) Immediately post intervention Multidisciplinary Rehabilitation (20.9 ± 10.4) vs Individualized PT (21.6 ± 11.4) @6m Multidisciplinary Rehabilitation (20.4 ± 11.6) vs Individualized PT (18.0 ± 11.5) Multidisciplinary Rehabilitation (18.9 ± 12.8) vs Individualized PT (18.5 ± 12.4) P value (Between group): 0.71	Low Back Pain (scale 0–100 (Mean ± SD) Immediately post intervention Multidisciplinary Rehabilitation (3.3 ± 2.5) vs Individualized PT (2.4 ± 2.4) @6m Multidisciplinary Rehabilitation (3.3 ± 2.5) vs Individualized PT (18.0 ± 11.5) Multidisciplinary Rehabilitation (3.3 ± 2.5) vs Individualized PT (3.4 ± 2.5) P value (Between group): 0.71

Table 4: Data extraction from included studies

IV. DISCUSSION

This review included only four randomized controlled trials investigating the effect of physiotherapy intervention on low back pain and disability in individuals with chronic low back pain. The major potential sources of bias in the included studies were performance bias participant and personnel blinding (all the studies), assessor blinding (Akhtar et al. 2017; Cecchi et al. 2010; Kaapa et al. 2006), allocation concealment and adequate follow-up (Hurley et al. 2015), and intention-to-treat analysis (Cecchi et al. 2010; Akhtar et al. 2017). Overall, the four included studies did not demonstrate superior intervention effectiveness for physiotherapy intervention compared to other forms of non-pharmacological intervention. Therefore, the evidence regarding the effectiveness of physiotherapy intervention over other non-pharmacological interventions on pain and disability in individuals/patients with chronic low back pain is insufficient and inconclusive.

Several limitations are recognized as fundamental among the included studies and responsible for precluding judgments on the intervention effectiveness. But worthy of mention is the wide variation in terms of what constituted physiotherapy intervention across the included studies and the inability to clearly establish distinction between physiotherapy intervention and other forms of non-pharmacological interventions. For instance, in the study of cechi et al (2010), authors compared between spinal manipulation, physiotherapy and back school. Also in the study of Hurley et al. (2015), authors compared supervised walking programs, exercise class and physiotherapy intervention. Essential all these are considered components of physiotherapy intervention and have been recommended in previous studies as very vital for the formulation of robust physiotherapy intervention for chronic low back pain.

More rigorous trials are required to establish whether or not there is evidence to support the superiority of physiotherapy interventions on chronic low back pain over other forms of non-pharmacological interventions. Future trials should focus on first identifying effective components of physiotherapy interventions for chronic low back pain. Future trails should also reduce wide variations in terms of what constitutes physiotherapy intervention for chronic low back pain and should attempt the utilization of clearly defined physiotherapy treatment guidelines while formulating and delivering interventions. Future studies should also give attention to the potential sources of bias identified in this review while improving the quality of their studies.

V. CONCLUSION

Evidence supporting the superiority of physiotherapy intervention on low back pain and low back pain-related disability in individuals with chronic low back pain compared with other forms of non-pharmacology intervention is insufficient and inconclusive. However, it does appear that physiotherapy does not have any superiority over other forms of non-pharmacological interventions in decreasing pain and disability for people with chronic low back pain. More rigorous trials are required to be able to make judgments and final recommendations on this. Future studies should therefore pay more attention to significant sources of heterogeneity such as lack of clear distinction between physiotherapy intervention and other forms of interventions and the non-utilization of an already established treatment guideline for the management of chronic low back pain.

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