EFFECT OF COMBINED THERAPY IN THE MANAGEMENT OF LOW BACK PAIN FOR WELLNESS AMONG PATIENTS ATTENDING HOSPITALS IN KANO METROPOLIS

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Abstract
This study investigated the effect of combined therapy (NSAIDS & Aerobic exercise) in the management of LBP among patients attending National Orthopedic Hospital Dala and Murtala Muhammed General Hospital Kano. A total of 20 patients with primary low back pain participated in this study. The subjects were selected through multi stage methods and were randomly assigned into either two groups- (NSADS and combine therapy groups) (ten in each group). It was hypothesised that combined therapy would not have significant effect in the management of low back pain (LBP). Pretest-Posttest randomised groups design was used in this study. Visual analogue scale was used for rating of pains as perceived by patients. Roland-Morris Disability Questionnaire (RMDQ) was adopted to assessed the extent of discomfort/disability caused them by low back pain pre and post intervention. Baseline score was evaluated prior to the commencement of this intervention. The NSAID group received non-steroidal anti-inflammatory drug according to the required dosage prescribed by the examining surgeon or physician and were motivated to adhere to their medication as prescribed. The combined therapy group participants received both aerobic exercise and NSAID for the same duration (of 6 weeks). They participated in low-impact aerobic exercise training session lasting lhr each session, comprising of exercises to music, with a maximum of 10 patients at a time. At the beginning of the study, subject signed informed consent. The difference between pre and post treatment values of variable were analysed using paired sample t-test The findings revealed that combined therapy had greater treatment effect on the management of low back pain by effecting greater reduction in pain improved ability of the participants. It is therefore recommended that health care providers, should prescribe combine therapy (NSAIDS and exercise therapy), in the management of low-back pain for wellness and improved performance.

Key words: *NSAID, Aerobic exercise and LBP*

Introduction

Low back pain (LBP) is a common musculoskeletal disorder that may be either acute or chronic. It may be caused by variety of diseases and disorders that affect the lumbar spine. Low back pain is often accompanied by sciatica, which is pain that involves the sciatic nerve and is felt in the lower back, the buttocks, and the backs of the thighs. Pain in the lower back area that can relate to problems with the lumbar spine, the discs between the vertebrae, the ligaments around the spine and discs, the spinal cord and nerves, muscles of the low back, internal organs of the pelvis and abdomen, or the skin covering the lumbar area (Woolf & Pleger, 2003). Andersson. (1986), defined low back pain (LBP) as pain localised between the 12th rib and \ inferior gluteal folds with or without leg pain and it can be classified as "specific " (suspected pathological cause) or non-specific.

The highest prevalence of LBP is in the person's aged 45-65 years (Woolf & Pleger, 2003).Between 49% and 90% of people in developed and developing countries experience at least one episode of low back pain during their lifetime (Margarido, Kowalski, Natour & Ferraz, 2005) LBP is most common among the working population, particularly men, with peak incidence occurring in people aged between 25 and 64 years (Van Tulder, Koes, Bombardier 2002) and usually resolves within 2 weeks.

Epidemiological studies continue to provide insight in to the prevalence of low back pain and have identified many individual, psychosocial and occupational risk factors for its onset (Manek & Macgregor, 2005). The most frequently reported risk factors are heavy physical work, frequent bending, twisting, lifting, pulling, and pushing, repetitive work, static posture and vibrations (Andersson, 1997 & Crypress, 1983). Psychosocial risk factors for low back pain include stress, distress, anxiety, depression cognitive dysfunction, pain behaviour, job dissatisfaction and mental stress at work (Linton, 2000).

Low back pain (LBP) is widespread in many countries, and is associated with substantial financial costs and loss of quality of life (Panjabi 1992). Historically, LBP has taken up large part of primary care practice (Deyo & Phillips 1996). It has been the second leading cause of office visit to primary care physicians, and the most common reason for office visit to occupational medicine physicians, orthopedic surgeons, and neurosurgeons (Bigos, Bowyer, GBranen, Brown & Haldeman, 1994).

Low back pain (LBP) constitutes an important public health problem in all industrialised nations (Nachemson 1992). In Canada, Finland and the United States, more people are disabled from working as a result of musculosketal disorders especially LBP- than from any other group of diseases (Battie & Videman 1997, Bernard, 1997; Rihiimaki, 1995). Similarly in developing

countries of Africa, the mean LBP point prevalence was 12% among adolescents and 30% among adults, while the one year low back pain prevalence among Africans range from 14% to 72% (Louw, Morris, & Grimmer-Somers, 2007). Low back pain is now a public health problem in both developing and developed countries and is beginning to exhibit epidemic proportions (Lively, 2002). Patients with back pain may become desperate of finding a cure for their LBP and they often develop affective and psychosomatic ailments, which subsequently become the chief focus of attention (Wolsoko, Eisenberg, Davis, Kessler & Phillips 2003).

The management of LBP has proven to be very challenging because of its high economic burden but usually involves multifaceted approaches (Surgical and non-surgical treatment) with the goals of relieving the patient's pain and restoring normal function (Malanga & Dunn, 2010). The non-surgical treatments for low back pain are many and varied: e.g. counselling and education, rest, medication, braces, passive modalities, spinal manipulation, injection, exercise and stretching, and proper lifting techniques. Medication commonly used for the treatment of acute LBP includes acetaminophen and other non-steroidal anti-inflammatory drugs (Dunn, 2010).

The most commonly nonsurgical treatment for LBP are nonsteroidal anti-inflammatory drugs (NSAIDs). They are medications that provide anti-inflammatory and analgesic effects and which include common products such as ibupro-fen and naproxen (Margarido , Kowalski , Natour & Ferraz, 2005).

The most frustrating aspect in treatment of LBP is that there is no "magic bullet." According to the American National Institute of Health (ANIH, 2004) an average of 60% to 70% of LBP victims would recover in 6weeks and 80% to 90% by 12weeks. However, many who recover from LBP experience recurrences, and with each episode become increasingly physically and functionally compromised. Frequently, LBP never fully resolves and patients experience exacerbations of chronic low back pain (Woolf & Pleger, 2003).

Studies are always showing the beneficial effects on general health of individuals. In studying the efficacy of aerobic exercise for treatment of chronic low back pain by a meta-analysis, Meng &Yue (2015) concluded that aerobic exercise could effectively diminish pain intensity and improve the physical and psychological functioning of CLBP patients. Thus, aerobic exercise may be a good choice in the treatment for CLBP.

There is no conclusive evidence as to which one is more effective between the NSAIDs and aerobic exercise in the management of LBP. The extent and persistence of low back pain point to inadequacy of the existing methods of management. This identified deficiency prompted the present study to investigate effects of combined therapy (NSAIDS, and aerobic exercise) in the management of LBP among LBP patients attending hospitals in Kano metropolis for wellness.

In an attempt to bring wellness and improve awareness of making variety of choices toward a healthy fulfilling life among the victim of LBP, it has been hypothesised that there is no significant effect of combined therapy in the management of LBP among patients attending hospital in Kano metropolis.

Methodology

All LBP patients referred to outpatient's clinics of the Physiotherapy department of National Orthopedics Hospital, Dala (NOH, Dala) and Murtala Muhammad Specialist Hospital (MMSH) in Kano metropolis, with clinical diagnoses of primary LBP, formed the population of the study.

A total of 20 patients with primary LBP participated in this study and were selected through multi stage sampling techniques. Ten participants were randomly selected in each of the two hospitals. The hospitals were made strata and in each stratum, purposive random sampling was used in selecting the participants for this study. The subjects were met in their respective hospitals and in each hospital ten patients with primary low back pain and who were willing and consented were randomly selected through fish bout method.

Visual Analogue Scale was used for collecting data in this study. Visual analogue scale is for rating of pains as perceived by patients. It is beginning from a point of 0mm indicating no pain (i.e. absence of pain) to 100mm indicating maximal level of pain, with no calibrations Bench step (Havard step and Trojan), cycle ergometer was used for aerobic exercise, Bathroom weighing scale and stadiometre was used for anthropometric measurements. Stopwatch was used for timing.

Roland-Morris Disability Questionnaire (RMDQ) was adopted to assessed the extent of discomfort/disability caused them by low back pain pre and post intervention. The questionnaire contains twenty four (24) items describing individuals condition of low back pain. A patient tick items related to his condition of low back pain. The score of the RDQ was the total number of items checked — i.e. from a minimum of 0 to a maximum of 24.

Pretest-Posttest randomized groups design was used in this study. According to Jery and Jack (2001), in pretest-posttest design the groups are randomly formed and each group is given pretest as well as posttest.

The participants selected for this study filled in an informed consent form after which the measurements of the subjects' height and weight were conducted. Participants were treated according to the intervention group they belong at the various stations (hospitals) they are selected. No participants were transferred to any other hospital aside from their initial hospital of visit.

Participants was assessed on the extent of discomfort/disability caused them by low back pain pre and post intervention by adopting the Roland-Morris

Disability Questionnaire (RMDQ). The instrument is questionnaire centered on disabilities associated with the discomforts associated with the presence of LBP. It was administered to individual patients for them to indicate how discomforting and disabling is their pain prior to enrolment into the intervention programme and subsequently post intervention..

Prior to the commencement of the study, ethical clearance was sought from all the hospitals where patients are recruited. Similarly, participants were asked to sign a written informed consent form using simple and clear terms with assent column clearly included. Participants who decline participation shall be completely exempted from the study.

Aerobic Exercise Group (Aeog)

Participants' baseline scores were evaluated prior to the commencement of this intervention procedure. Participants were asked to participate in low-impact aerobic exercise training session lasting one hour, comprising of exercises to music, with a maximum of 10 patients at a time. A warm-up of 10mns involving wholebody stretching and followed by low-impact aerobic exercise using cycle ergometer for 45mns. The last 5mns of the protocol would, involve a cool down and stretching/relaxation exercises. The participants exercised from 40-50% of their max.HR three times in an alternate day. This protocol lasted for 6 weeks.

Combined therapy group (COTG)

Participants' baseline pain score was evaluated prior to the commencement of this intervention procedure. In this category participants shall receive both aerobic exercise and NSAID, following similar protocol in the AEOG and NOG and for the same duration (of 6 weeks).

Data Analysis

The data collected in this study were analysed using both descriptive and inferential statistics. The characteristics of the participants were expressed using frequencies, percentage, mean and standard deviation. The difference between pre-test and post-test values within each group were analysed using paired sample related t-test. All analyses were performed using the statistical package for social sciences (SPSS) at the probability level of 0.05.

Results

Table 1: Physical and performance characteristics of the participants

Variables	(n=20) Mean	± SD	Range(Mini Max)
Age	30.47 ± 11.66		11.33- 44. 67
Height(m)	1.13 ± .06		1.02- 1.23
Weight(Kg)	37.86 ± 4.47		30.67 - 45.33
BMI(Kg/m2)	16.4 ± 3.37		
Aerobic Exercise	34.00 ± 7-98		26.67 - 53.33
Combination Ther.	18.00 ± 6.33		6.67- 26.67

Table I presents the results of mean and standard deviations of the subjects physical and performance characteristics. The outcomes indicate that the subjects were within the same range in physical characteristics. In the case of performance characteristics, the results show wider variations among the subjects. This indicates that significant differences exist in the subjects' performance characteristics.

Table 2: t-test summary table on the significant difference between pre and posttests scores on the effect of aerobic exercise in the management of LBP

Aerobic Exercise	N	Mean	SD	SE	df	t	prob.
Aerobic : Pre-test	10	93.00	9.49	4,0	9	4.00	0.003
Aerobic: Post-test	10	77.00	20.58				

t = (4-00, df9), $p<0.05$

The result of the paired sample t-test on the pre-test and post-test scores of aerobic exercise shows a significant difference (t= (4.00, df 9), $P<0.05$) in the management of LBP. The pretest mean was 93.00 (sd = 9.49) and the mean of post test score was 77.00 (sd = 20.58). Therefore the null hypothesis was rejected on the account that significance difference exit.

Table 3: t-test summary table on the significant difference between pre and post test scores on the effect of combination therapy in the management of LBP

Combined therap.	N	Mean	SD	SE	df	t	prob.
Combined T. pre-test	10	89.00	11.97	5.1	9	12.11	0.001
Combined T post-test	10	27.00	9.49				

t = (4-00, df9), $p<0.05$

The result of the paired sampled t-test comparing the mean of the pretest scores (89.00 (sd 11.97) and the mean of the post-test scores 27(sd 9.49) of combine therapy shows statistical significance (t=(12.11, df 9), p<0.05). Therefore, the null hypothesis was rejected because significant difference exist (t=(12.00, df 9), P<0.05).

Discussion

The outcome of this study indicated that each individual therapy demonstrated better post-treatment effect above baseline in all the measured variables. However, combined therapy depicted better characteristic effect above aerobic therapy.

Aerobic Exercise

The result of this study revealed that aerobic exercise is found to be statistically significant (t= (4.00, df 9), P<0.05) in effective management of low back pain, the mean difference between pre-test and post-test values shows that there is decrease in LBP. This finding is supported by other researches such as, a study on the effect of aerobic exercise in the treatment of LBP by Sculco, Paup, Fernhall & Sculco (2001) who reported that low to moderate aerobic exercises appears to improve mood state, and work status and reduce the need of physical therapy referral and pain medication prescription for LBP patients in the care of neurosurgeon. In one systematic review on evidence – informed management of chronic LBP with physical activity, smoking cessation and weight loss, the review authors concluded that, there was moderate evidence that physical activity with general aerobic and strengthening or aqua fitness was more effective than non active controls for long term reduction in disability (Wai, Rodirguez, Dagenais & Hall, 2002).

This finding could be explained as aerobic exercise has been shown to have better psychological impact on patient with LBP by improving their mood and decrease depression with increase in pain tolerance (Malaga, 2009, Scako et al, 20010). It is also supported by a research carried out by (Blau man in 1992), in which the normal circulation of blood flows around the back help to bring transport in oxygen and remove waste product of metabolism which is vital in pain relief. The effectiveness of aerobic exercise in the management of LBP could also be linked to the intact neuromuscular system, efficient function of both the spinal cord is all brought about by proper aerobic fitness via aerobic exercises, which is associated with proper physical fitness, this sayings can be supported by findings of Salco etal (2001), Wal (2002), & Val Tulder (2000), who found that physical fitness appear to lower the incidence or severity of LBP. In contrast to the present finding, a similar systematic review titled “exercise

therapy for LBP: A systematic review within the frame work of the Cochrane collaboration back review group, where by all types of exercises including aerobic exercises were included, Van Tulder, Malmivaara, Esmail and Koes (2000) reported that, their current findings on acute LBP are in line with clinical practice guidelines for the management of LBP published in the United States, the United Kingdom, Netherlands, and New Zealand. These guidelines state that according to scientific evidence, specific back exercises do not provide improvement in clinical outcome.

Combination Therapy

The paired sample t-test also indicated statistical significant of combined therapy (Exercise and NSAIDs) in the management of LBP. The result revealed that combine therapy has been found to be effective in the management of LBP. This finding is in line with Malaya and Dun (2010) who have found that combination therapy produce more effect than individual therapy. In contrast, Alizadeh & Ahmadizad (2009) compared the effectiveness of Transcutaneous Electrical Nerve stimulation (TENS) therapy and combined therapy of exercise and NSAIDs among the Iranians, concluded that TENS therapy was more effective than combination of exercise and NSAIDs therapy in patients with LBP. In an attempt to find out the most effective intervention techniques among the two management techniques, the mean difference between post-test values of the two groups showed that combination therapy was the most effective intervention therapy because the difference indicated that combined therapy group had greater pain reduction.

The significant effect of combination therapy may not be unconnected with the fact that use of individual therapy like NSAIDs brings about pain referring mechanism especially of acute state, also the of aerobic decrease alone have shown to have an improvement in the management of low back pain. However, in combination therapy where the effects of all other types of therapies are impacted on single individual, the multiplier efficient of such therapies might be the reason why such combination therapy produces more effective result than the individual therapy. Each of the three therapeutic regimens was associated with similar and clinically important improvement in the management of LBP. For the management of LBP, aerobic exercise in combination with NSAIDs therapy seemed to be beneficial and worthwhile. Therefore, it could be seen clearly from the result of the research that both NSAIDs and aerobic exercise have their individual effect in managing LBP, however, the most effective therapy was found to be the combination of both therapies which will likely yield better outcome in terms of patient functional ability and relieve of pain.

It is therefore recommended that physiotherapist and other health providers should recommend combine aerobic exercise and NSAIDS in view of its large treatment effect in the management of low back pain. The study could also be replicated in patients with chronic low-back pain.

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