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Distribution of the three McKenzie syndromes among patients with low back pain in selected outpatient Physiotherapy facilities in Nigeria

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Summary

This multi-centre study investigated the distribution pattern of the three McKenzie syndromes among patients with low back pain (LBP) from the out patient physiotherapy departments of some selected medical facilities in Oyo, Ogun and Lagos States of Nigeria in order to establish the distribution index for patients suffering from LBP. Patients were selected using a consecutive sampling technique. Patients were examined and classified using the McKenzie assessment protocol. A total of 66 patients (57.6% males and 42.4% females) suffering from LBP of lumbar spine origin out of the 78 referred to the selected medical facilities qualified for the study. Data were analysed using descriptive statistics and interferential statistic of independent t-test. Alpha level was set at 0.05. Result showed that patients with derangement syndrome constituted 83.0% of the patients' population while dysfunction syndrome and postural syndrome were 9.0% and 8.0% respectively. It was concluded that derangement syndrome is predominant, in the studied population.

Keywords: *Distribution pattern, McKenzie syndromes, low back pain.*

Résumé

Cette étude multicentrique investiguait la fréquence de distribution de trois syndromes de Mckenzie parmi les patients ayant les courbatures en clinique de physiothérapie dans certaines centres médicales des provinces d'Oyo, d'Ogun et de Lagos au Nigeria, dans le but d'établir l'indexe de distribution des patients souffrant des courbatures lombaires.Les patients étaient sélectionnés consécutivement, examinés et classifiés en utilisant le protocole d'évaluation de Mckenzie. Au total 66 patients (57.6% males et 432.4% femelles) souffrant des courbatures d'origine lombaire des 78 patients referés, participaient à cette étude. Les données étaient analysées par une statistique descriptive et inferentielle, le test-t avec un degré de confidence de 0.05. Le résultat montrait que les patents avec un syndrome de perturbations constituaient 83.0% de cette population étudiée alors que le syndrome de malfonctionement et le syndrome postural étaient de 9% et 8¨% respectivement. Nous avons conclu que le syndrome de dérangement est prédominant dans la population étudiée.

Introduction

McKenzie syndrome is a clinical terminology that was developed to describe three distinct patterns of symptoms presentation and response in patients with low back pain of lumbar spine origin when subjected to a dynamic mechanical evaluation or repeated movements testing for purpose of evaluation and management [1,2]. According to McKenzie [1,2] the three syndromes presented are postural, dysfunction and derangement syndromes which are totally different from one another therefore, each syndrome must be treated as an entity on its own, requiring special procedures which are often unsuitable for the other syndromes.

Postural syndrome is characterized by intermittent pain brought only by prolonged static loading of normal tissues. In this category of patients with LBP repeated movements testing have no effect [1,2]. Dysfunction syndrome is characterized by intermittent low back pain which appears only when the affected spinal structures are mechanically loaded. Pain is produced at the end-range of movement only [1,2].

Derangement syndrome is defined as painful condition brought about by anatomical disruption or displacement of tissues within the intervertebral disc [1,2]. This syndrome is characterized by a varied clinical presentation and typical responses to loading strategies.

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Pain from derangement syndrome is frequently constant in nature and exhibits itself during the repeated movement.

Patients' symptoms are either produced or altered within the movement range. Patients also experience a variable pain pattern and the condition is either alleviated or worsened by the loading strategy [1,2].

Since the publication of the McKenzie monograph on mechanical diagnosis and therapy of the lumbar spine in 1981 and the increasing popularity of the system globally, there is dearth of literature on the distribution pattern of the McKenzie syndromes among patients with LBP. This study was therefore designed to assess the distribution pattern of the three McKenzie syndromes among patients with LBP of lumbar spine origin presenting in some selected medical facilities with out-patients physiotherapy units.

Materials and methods

Subjects

A total of seventy-eight patients who were registered in six selected private and Government owned medical facilities with Physiotherapy departments \ units participated in the study.

Procedure

Ethical approval was obtained from each of the medical facilities where the study was conducted namely: National Orthopaedic Hospital, Igbobi; Olabisi Onabanjo University Teaching Hospital, Sagamu; Baptist Medical Centre, Ogbomoso; Living Spring Medical Clinics, Ogbomoso; Oluwaseun Physiotherapy Clinic, Ibadan and University College Hospital, Ibadan. The informed consent of the various heads of department of physiotherapy and that of the subjects were sought and obtained.

Consecutive sampling method [3] was used to select subjects into this study. The subjects were subsequently screened using a structure interview as outlined in the McKenzie assessment protocol for any symptoms that are contraindicated to utilization of mechanical therapy such as: loss of bowel/bladder control, saddle paraesthesia, tuberculosis of the spine, history of unexplained weight loss or persistent fever as a result of any underlying systemic problems. Also excluded from this study were subjects with LBP whose symptoms behavior does not fit into the pattern described by McKenzie [1,2].

Examination and screening of patients

A standardized testing procedure recommended by the McKenzie institute was used without any modification and patients' data and history were obtained and recorded as outlined in the McKenzie Institute "Lumbar Spine" Assessment forms. The subjects were seen individually and were assessed by a Physical therapist trained and certified in McKenzie method. Physical demonstration of various movements testing procedures were carried out by the examiner for each patient in order to enhance patients' understanding of the examination procedure.

Postural examination

Patients' standing and sitting postures were constantly monitored during examination to detect any faulty postural habits such as rounded shoulder in standing due to thoracic Kyphosis or slouch sitting that promoted rounded back in sitting. The degrees of subject lordotic curvature in standing as well as presence of thoracic or lumbar scoliosis were closely monitored in order to identify any patients with this presentation [1,2].

Examination of movement

In this system, single and repeated movement testing were utilized to examine the patients' range of movements and symptoms (pain, paresthestia) behaviour; patients were examined in standing and lying positions. To examine the range of lumbar spine movement (flexion, extension and side gliding), the patients were instructed to stand up with their feet about thirty centimeter apart. In this position single and repeated movements (5-15 repetitions) just sufficient to expose the patient underlying mechanical syndrome were performed in each of the directions [1,2].

Flexion

The patient was asked to bend forward from standing and run his/her hands down the front of both legs, moving as far as possible into flexed standing, followed immediately by returning to neutral standing [1,2].

Extension

The standing patient was asked to place his/her hands in the small hollow of the back and bend backwards as far as possible, followed immediately by returning to neutral standing [1,2].

Side-gliding

To examine side-gliding the standing subject was asked to move his/her shoulders and pelvis simultaneously in opposite directions while keeping the shoulders parallel to the ground [1,2]. Patients who had difficulty performing this movement were assisted by the examiner who guided their movement with a hand placed on one of the patient's shoulder and the other hand on his/her opposite iliac crest to execute side gliding movement.

Sustained posture

Patients whose result of movement testing are suggestive of postural syndrome were subsequently placed on sustained slouch sitting on an office type chair for a minimum period of 30 minutes [1,2] in order to expose the postural nature of the causative factor of the patient's low back pain (LBP) problem.

The repeated movements testing and static positioning were used essentially to identify how patients' symptoms behaved. Prior to carrying out each test movement, the examiner first asked the patients to describe the nature, location and the intensity of their symptoms (pain, paresthesia). After the test movement, the examiner again asked the patients to describe the location, nature and intensity of their symptoms [1,2]. A rest of minimum of about 10 seconds was allowed and patients were asked to further describe any changes in symptoms (pain) that occurred during this rest period. These were then recorded in their assessment forms.

Classification of patients

Based on the overall clinical picture of patients history and symptoms behavior during and after the test movements, patients were categorized into one of the three McKenzie syndromes namely. postural, dysfunction, and derangement.

Postural syndrome [1,2] was defined as symptoms present in the low back (Lumbar spine) on which repeated movements testing have no effect that is, pain complained of by the patients is not reproduced during test movements and pain that was present when patients were stationary is not present during testing. In postural syndrome patients symptoms (pain, paresthesia) could only be provoked by adopting the causative posture usually slouch sitting for an extended period of time [1,2].

Dysfunction syndrome [1,2] was defined as symptoms present in the low back area with no radiation unless where the low back pain is complicated by adherent nerve root. In this syndrome, patients' symptoms are only produced at end-range of movement. There is fixed symptoms pattern during movement testing (that is same end-range pain. Condition of patients with respect to symptoms pattern and behavior remain unchanged after repeated movement testing [1,2].

Derangement syndrome was defined as symptoms present in the low back with or without radiation to gluteal or downward to the lower extremity. In this syndrome, symptoms are usually provoked in patients during repeated movement testing. Symptoms are produced or altered within movement range [1,2].

Painful arc may exist; there may be progressive decrease or increase of patients' symptoms during testing. Patients' condition \ symptoms may remain better or worse after testing procedure [1,2].

Data analysis

Data generated from each of the medical facilities were pooled together for analysis. The following data analyses were carried out: Descriptive statistics of percentage, range, mean and standard deviation was computed for age, sex and type of syndrome identified. One-way analysis of variance (ANOVA) was carried out to study the pattern of distribution of mean age among the groups. The level of significance was set at 0.05 alpha.

Results

A total of 66 patients out of 78 who were referred satisfied the inclusion criteria for the study and were therefore classified into the three McKenzie Syndromes as required in the study. The results showed that there were more patients with derangement syndrome (83.0%) than those with

Table 1: Pattern of distribution of mean age of the subjects for the three syndromes

Syndrome	Number of subjects	% of patient	Mean Age + SD	Minimum age	Maximum age
Derangement	55	83.0	45.46 + 11.67	24	75
Dysfunction	6	9.0	53.00 + 13.65	39	72
Postural	5	8.0	47.20 + 17.68	30	75
Total	66	100	46.20 + 12.34	24	75

dysfunction (9.0%) and postural (8.0%) syndromes put together .The distribution ratio of derangement to postural and dysfunction syndromes was 8:1:1.

Table 1 shows the pattern of distribution of mean age of the subjects for the three syndromes. The mean age of patients with derangement (45.63years) and postural syndrome (47.20years) were lower than those of patients with dysfunction syndrome (53years).One-way analysis of variance for the mean age of the patients across the three syndromes was not significant (P = 0.384) . As shown in Table 2, male and female patients were fairly evenly distributed.

Table 2: Distribution of sex and syndrome type

	Derangement	Dysfunction	Postural	Total
Male	30	4	4	38 (57.6%)
Female	25	2	1	28 (42.4%)
Total	55	6	5	66 (100%)

Discussion

Over eighty percent of patients in this study presented with derangement syndrome. This finding is consistent with the observation made by McKenzie [1,2] from his clinical practice of predominance of patients with derangement syndrome (95%) among Caucasians. Similarly other investigators [4,5,6] have postulated that LBP of Intervertebral disc origin is the most prevalent in the general population.

With respect to gender distribution, male and female patients were fairly evenly distributed 57.6% and 42.4% respectively among the studied population. Also, the finding from this study indicated that more males than females are affected across the three LBP syndromes. The reason for the predominance of males across the three McKenzie syndromes is not clear and literature is silent on this but it may be due to a combination of factors inherent in the activities of daily living of the male patients in terms of occupation, sports and leisure activities participation. It could also be a mere coincidence in view of the relative small population involved in this study.

From the findings of this study, age seem not to be a determining factor in the occurrence of the three syndromes among patients studied. However, it was observed that patients with dysfunction syndromes have slightly higher mean age in comparison to patients with derangement and postural syndromes respectively. This finding with respect to the mean age of the participants is consistent with previous findings [1,2]. The findings from this study suggest that people across different age groups can suffer from any of the three syndromes at any stage in their lifetime.

Conclusion and recommendations

Based on the findings of this study it is concluded that patients suffering from derangement syndrome are in the majority among patients presenting with LBP of lumbar spine origin in the Physiotherapy departments where this study was carried out.

It is recommended that the use of uniform and standardized classification system such as McKenzie approach should be promoted and used instead of the present medical diagnosis system in order to promote effective communication among clinicians in the management of LBP syndromes and to enhance the description of patients in research studies.

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