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Comparison of proforma based history taking with descriptive history taking in the evaluation of low back pain: A hospital based study

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Abstract
Background: Lower back pain is the most common disorder in the population. It affects the both gender. Evaluation of lower back is the can be done with various methods. The present study aimed to compare the Proforma based history taking with descriptive history taking in the evaluation of low back pain.
Materials and Methods: This study was done in the Department of Orthopedic Surgery, SUT Academy of Medical Sciences, Vattapara, Kerala. Based on the inclusion and exclusion criteria 105 patients were included in the study. Study procedure was explained to each patient and informed consent was obtained. All the patients demographic, clinical data was recorded. Each patient was given set of questions to fill. After filling they were subjected to physical and clinical examination. Both the results were analyzed with SPSS (16.0) version software. The data was expressed in number and percentage.
Results: Males were more compared to females. 40 patients have age between 21-30 years and only 8 have age between 61-70 years. 57 give history of acute on set of pain. 53.33% had 3 weeks -3 months duration of lower back pain. 65.89% had radiation type of pain and 53.33% had pain due to stress. In the diagnosis of pain pattern 50 showed mechanical and 48 showed non-specific in MIND questionnaire. 80% patients had concurrence of diagnosis.
Conclusion: The MIND questionnaire has been shown to provide a rapid and comprehensive proforma to evaluate low back pain patterns.

Keywords: Lower back pain, MIND, history, stress, injury, prevalence

Introduction

Low backache is one of the most common ailments an Orthopaedician has to deal within his day to day practice. At some stage of their life, 80% of humans will experience low backache [1]. Several studies have suggested that most of the low backaches are due to non- structural causes and is usually a self-limiting disease, with dramatic improvement in one to several weeks. Improvement can be seen in up to 80% of people in the first two weeks [2]. In the United States, the annual incidence has been projected to be 5% of the population per year, with an associated prevalence of 60% to 90%. The one month prevalence of low back pain is estimated to be 43% of the population. The medical costs and vocational disabilities that occur with low back pain are substantial. The duration of the time that a patient is absent from work because of low back pain correlates with a decreasing chance of return to work [3]. In India, occurrence of low back pain is also alarming, nearly 60% of the people have significant low back pain at some time or the other in lives [4]. The economic impact and the therapy costs, the cost of disability and work absence have not been estimated in our country. With the limited information available from local resources it is apparent that vast majority of back pains and back pain disabilities are due to non-structural spinal pathology which most often require reassurance and simple life style modifications like reducing body weight and participating in regular exercises.
In modern medicine conventionally diagnosis of any pathology is based on history, physical examination and supportive investigations. In recent years there is increasing tendency to move away from history and physical examination and emphasize on laboratory and radiological investigations.

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Perhaps the reason for this is the advancement in technology, pressure from market forces, limited time available to clinicians etc. Nevertheless specifically in the case of low back disorders history taking can be critical because unlike other surgical pathology failed back surgery syndrome (FBSS) is a known entity. Vast majority of FBSS cases are attributed to poor evaluation during index procedure [5, 6]. Moreover it has also been documented that vast majority of normal population over 50 years of age will have pathological changes on Lumbar Spine MRI, which may not have any clinical relevance [7]. In this context history taking and physical examination assumes paramount importance rather than making a pathological diagnosis. There are several groups of diseases which can produce low back pain. Pain characteristics of each of these vary. There are many questionnaires, scoring systems and grading systems used to understand the intensity of pain, distribution of pain and the way pain affects the person's life style. There have been very few studies attempting to characterize pain patterns of low back pain. The present study is an attempt to take a detail history emphasizing on pain character and utilize these features to establish a clinical diagnosis and also if possible identify the pathological diagnosis. The basic premise of this study is the identification of the pain pattern which will help to isolate clinically significant pathology like infection or tumor from the more mundane everyday back pains. Thus a validated questionnaire made in a time-efficient manner will help making a realistic diagnosis based on pain pattern, while saving the valuable time of the clinician. The questionnaire that we have used is called the "Mind" Questionnaire. (Mind is an acronym for Mechanical, Inflammatory, Non Specific and Deconditioning).

Materials and Methods
Study settings and sample collection
The study was conducted in the Department of Orthopedic Surgery, SUT Academy of Medical Sciences, Vattapara, Kerala. Study population was selected based on the inclusion and exclusion criteria. The study was approved by Institutional Human Ethical Committee (IHEC).

Inclusion criteria
- Age between 18-70 years
- Both gender
- Suffering with lower back pain
- Willing to give informed consent form

Exclusion criteria
- Patients with upper back pain
- Under gone any spinal surgery
- Acute traumatic low back pain
- Congenital anomalies in spinal cord
- Recent spinal injury

Procedure
The study included a total of 105 patients based on the inclusion and exclusion criteria. The patients were explained study procedure and informed consent was obtained. The patients were given a questionnaire related to lower back pain and asked to fill up. All the questionnaires were collected and analyzed.

Statistical analysis
The data was expressed in number and percentage. Statistical Package for Social Sciences (SPSS 16.0) version used for analysis. Microsoft excel 2018 used to calculate the percentage and to draw the graphs.
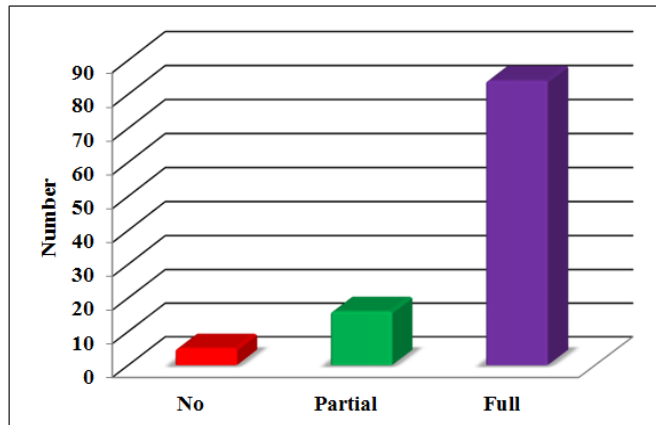
Results
The study results showed that 40 patients were between 21-30 years of age, 22 between 31-40 years, 18 between 41-50 years, 17 between 51-60 years and the remaining 8 were between 61-70 years of age (Table-1). The study consisted of 105 patients with low back ache of whom 54 (51.43%) were males and 51 (48.57%) were females (Graph-1). From the results it can be seen that the prevalence of back pain is comparatively among young population. Room the responses of the sample through the questionnaire it was found that 57 (54.29%) gave history of acute onset of pain and 48 (45.71%) gave history of pain of insidious onset. The duration of symptoms was less than 3 weeks in 23 (21.90%) between 3 weeks and 3 months in 56 (53.33%) patients and more than 3 months in 26 (24.76%). That majority of them reported between 3 weeks to 3 months of the duration of symptoms. The pain was associated with radiation in 69 (65.89%), numbness in 30 (28.55%) and Weakness in 14 (13.18%). Social activities were restricted in 41 (39.05%) and not restricted in 64 (60.95%) patients (Table-2). The total 56 (53.33%) patients had major domestic stress contributing to their personal well-being (Graph-2). The average time taken to fill the proforma was 11 minutes (range 10-15 min). As per the questionnaire there were 114 diagnosis based on the MIND paradigm. This means 9 patients had multiple overlapping pain patterns. Out of the 105 patients, 89 patients were accurately picked up by the questionnaire and 16 cases were missed. These 16 were distributed as follows 6 in non-specific patterns 5 each mechanical and deconditioning patterns and one from inflammatory pattern. There are several observations based on these results. Acute, serious spine pathology requiring emergent treatment is present in 7 out of 105 patients (out of which 3 were tuberculosis, 2 were pyogenic and 2 were tumour), none of these cases were missed by the questionnaire. Approximately 50 diagnoses out of 105 patients are mechanical and almost same number non-specific in both these categories the questionnaire appears to be very sensitive. This increase number of diagnosis compared to total number of patients was due to overlaps.

The questionnaire appears to be least sensitive in disorders due to deconditioning of the back, with around 50.0% misses. However since the numbers in that group are too small in this sample it may not be representative. A study with larger numbers of patients in this category might reveal the true sensitivity of this domain. In concurrence of diagnosis total 105 patients included in this study, Full Concurrence of diagnosis was seen in 84 (80%) of patients, Partial Concurrence in 16 (15.0%) patients and No Concurrence in 5 (5%) patients (Table-3. and Graph-3). Larger number of patients from multiple centres with independent evaluators is suggested for validation of the questionnaire.

Table 1: Distribution of patients based on the age

Age (Years)	Number	Percentage (%)
21-30Y	40	38.10
31-40Y	22	20.95
41-50Y	18	17.14
51-60Y	17	16.19
61-70Y	8	07.62
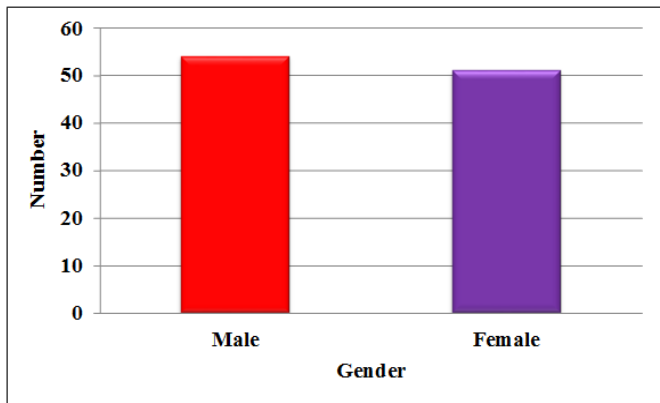
Graph 1: Distribution of patients based on the gender

Table 2: Distribution of patients based on the signs and symptoms

Signs and symptoms	Number	Percentage (%)
Onset of low back pain		
Insidious	48	45.71
Acute	57	54.29
Duration of low back pain		
< 3 weeks	23	21.90
3weeks to 3 months	56	53.33
>3months	26	24.76
Associate signs		
Radiation	69	65.89
Numbness	30	28.55
Weakness	14	13.18
Restriction of social activities		
Not restricted	64	60.95
Restricted	41	39.05
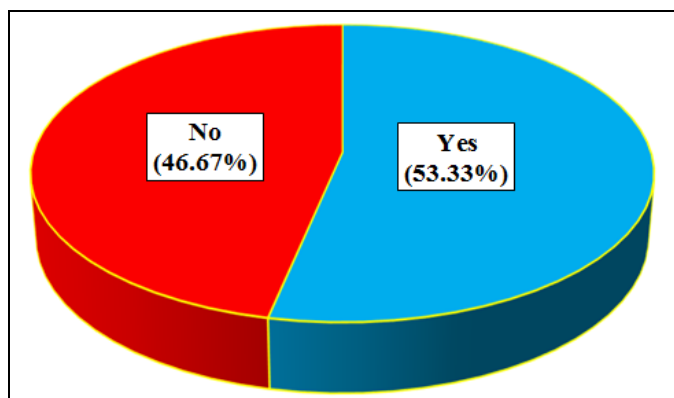
Graph 2: Distribution of patients based on association of stress with low back pain

Table 3: Diagnosis based on pain pattern as per MIND questionnaire

Categories	Positive		Negative		Total	
	n	%	n	%	n	%
Mechanical	50	43.86	5	31.25	55	42.31
Inflammatory	7	6.14	1	6.25	8	6.15
Non-specific	48	42.11	6	37.50	54	41.54
Deconditioning	9	7.89	4	25.00	13	10.00
Total	114	100.00	16	100.00	130	100.00

Graph 3: Concurrence of diagnosis of patients

Discussion

The practice of modern medicine hinges on arriving at a pathological diagnosis. Elimination or reversing the pathology would therefore affect the cure. This is typical in most surgical disorders such as appendicitis, tonsillitis, cholecystitis etc. Nothing could be further from the truth in the case of low back pain. It is well acknowledged that while we do know some sources of pain in the low back most pain generators are still obscure. Therefore treating visible pathology on images rarely effect alleviation of symptoms [7]. In the examples quoted above social, legal and psychological factors rarely contribute to augment the pathological process, whereas in back pain this is notoriously so. This then is the importance of a comprehensive strategy to identify the pathology as well as the possible aggravating components [8]. A detailed history to evaluate patient's pain pattern, fears and apprehensions and outcome expectations is mandatory to achieve good therapeutic results. This questionnaire based evaluation is the first step towards this goal. As a pilot to this study 200 consecutive patients arriving at our spine clinic were categorized for pain pattern. Four discrete categories of pain were identified [10]. Mechanical implying chronic structural disorders typically aggravated by movements; Inflammatory refers to acute and sub-acute pain patterns typically seen in infection, tumors and inflammatory disorders. Deconditioning referring to dull aches and muscular fatigue characteristically seen urban sedentary population and the non-specific pain pattern which includes other categories as well as atypical presentations and a large volume of psychosomatic disorders [11, 12]. Statistically each category was found to occur in approximately the following percentages - Mechanical - 44%, Inflammatory - 9%, Non-specific - 50% and Deconditioning 10%. There were multiple overlaps. This dissertation is a preliminary attempt to evaluate the MIND concept and also study whether the current questionnaire can accurately pick out each category of spine disorder in a time-efficient manner. Because several of the questions tend to overlap within the MIND characterization it would be optimal to computerize the questionnaire and assign statistical weightage to each, which is a task for the future.

So far, there are studies based on pain quantitation, eg VAS only, but none on pain characterization of low backache. We actually need to look at the pain pattern for various reasons like understanding the patient and the pain in a better way, to arrive at the specific diagnosis and thereby the appropriate therapy [13]. Little emphasis has been placed on the history, yet this is what tells you about the patient's concerns and expectations. In our study, 105 new cases of low back pain patients who presented to our spine clinic over a period of one year were included, after ruling the exclusion criteria. The present work is with study number 105 and also performed in a single centre. The results were evaluated by the authors themselves. Not with standing these limitations there are several conclusions to be drawn from the results. The pathologically most important category of patients "the inflammatory ones" are picked out with high accuracy. The most commonly occurring entities the mechanical and the non-specific ones are identified with 93% accuracy. The number of deconditioning cases in this group of patients was unduly small "9". There was an about 50% false negative isolation of these cases [15]. There were 9 cases where the pain pattern overlapped between two conditions. The overlap typically acquired with mechanical and non- specific pain patterns. At present most of the questions have only Yes or No answer boxes. Once weightage is assigned to each question, issue of overlay would reduce substantially. An interesting observation was that in one case the questionnaire actually detected a feature that was undetected by the control. Another interesting observation was that in 80% of the cases a clinically significant diagnosis could be arrived from the history alone compared to what a control had achieved with history, physical examination and imaging studies. This was obviously facilitated by the systematic history taking method employed by the questionnaire. Partial concurrence in diagnosis was achieved in another 15% suggesting that the questionnaire was ineffective in establishing the diagnosis in only 5% of the cases. Most significantly all Red flag disorders and yellow flag disorders were accurately picked out by the questionnaire. The significance of characterization of pain pattern is to see if they co- relate well with established pathological entities and to assign treatment for specific pain patterns rather than pathologies. The study has major advantages and some disadvantages.

Conclusion
The MIND questionnaire has been shown to provide a rapid and comprehensive proforma to evaluate low back pain patterns. Compared to the average time taken for standard history taking, clinical examination, review of images and diagnosis was approximately 42 minutes (40-45 minutes). The patients who have been subjected to our MIND questionnaire were able to be disposed by about 28 minutes (26-31 minutes) which includes filling up of the questionnaire, short history taking clinical examination, review of imaging and diagnosis.

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