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SUB GROUPING ACUTE LOW BACK PAIN USING STarT BACK SCREENING TOOL

[1]R. Naveendran
[2]S.Yamini
[3]P.Antony Leo Aseer

ABSTRACT

Background: Low back pain (LBP) is one of the major and commonest musculoskeletal disorders among all age groups with substantial challenges for clinical management. The psychological overlay can be detected only in chronicity of the condition. Current research highlights sub grouping LBP is a priority for target specific treatments.Hence the aim of the study was to categorize subjects into three subgroups of risk using STarT Back Screening tool.

Methods: An observational-follow up study was conducted with subjects of sample size 40 (aged 18 to 65) having low back pain of duration less than one month. The principle investigator administered the screening tool to the subjects. The self- administered Tamil version of 9 items STarT back screening tool was administered. Based on the risk level, counseling was imparted and re analysis of values were done a month later using the same tool.

Results: The mean pre total score is 4.48±1.8 and post total score after a month is 2.03±1.18.The mean pre sub score is 2.28±1.21 and post total sub score after a month is 1.18±0.84.On comparing the pre and post scores, it was found to be statistically highly significant(p-.0005) in total and sub scores.

Conclusion: The study concludes that STarT back screening tool is an easy, simple tool in sub grouping acute low back pain. The tool proved to be efficient in predicting risk in acute low back pain in a short duration of follow up.

Keywords: Acute, low back pain, STarT Back Screening Tool, total score, sub score.

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[2]BPT Interns, Faculty of Physiotherapy
SriRamachandra University, Chennai.
[3]Professor and Vice principal,
Faculty of Physiotherapy,
Sri Ramachandra University, Chennai.

CORRESPONDING AUTHOR

[1]R. Naveendran

BPT Interns, Faculty of Physiotherapy
SriRamachandra University,
Chennai.

INTRODUCTION

Low back pain (LBP) is a most commonmusculoskeletal dysfunction which leads to disability in chronic situations. The dysfunction is faced among different age groups and cultures all throughout the globe. LBP is considered to have impact on Quality of life, performance at work and the leading cause for medical consultations.

Acute low back pain is fifth common most situations with good recovery without an effective intervention and may last for less than 3 months. The episode of acute LBP is for lesser duration but 60-80% reports of reoccurrence within a year [1]. The success of better outcomes in acute LBP is based on postulating the pain mechanism, framing the diagnosis and the knowledge of biomedical model of LBP.

The most accepted, current model in treating LBP is the bio psychological model which narrates the relationship between the biomedical, psychological and social impacts of the disorder [2]. This model clearly reflects the need for evaluating the psychosocial perspectives in the management of LBP as being proposed in western countries.

The symptoms include mild/moderate/severe back pain occurring due to astrenuous activity or lifting heavy object in an awkward posture. The pain may be a referral pain or radicular pain which radiates to groin region, glutei region, and upper thigh or below the knee with severe muscle spasm, dull aching and localized soreness.

The most common cause of acute low back pain is due to muscle strain or ligament sprain, where the structures tend to exhibit microscopic tears due to abnormal stretching of fibers. Recently a systematic review on analyzing the prognostic factors in low back pain concluded that psychological and occupational factors possessed high reliability [3]. Fear based avoidance belief questionnaire has used to elicit fear and avoidance behavior in chronic low back pain. Earlier practices revealed that psychological overlay can be detected only in chronicity of the condition and intervention can be employed in chronic situations. The current evidences clearly point out the difficulties in predicting psychological overlay in chronic LBP and mostly it is underdiagnosed. Current research highlights subgrouping of non-specific LBP is a priority for target specific intervention [1].

The nine item STarT Back Tool (SBT) isa questionnaire used to screen and categorize acute LBP as low, medium or high risk [4,5]. Based on risk level, a target specific treatment is recommended. Using the tool, overall and subscale scores are analyzed and from which high risk subgroup can be identified. The subscales are evaluated by adding the last five items of the tool (fear, anxiety, catastrophizing, depression and bothersomeness). It ranges from 0 to 5 with patient scoring 4 or 5 being classified as high risk [4].

The overall score is used to categorize the low risk from medium risk subgroups. The calculation of the score is by adding all items from 0 to 9; the scores between 0 to 3 are classified as low risk subgroup and 4 to 9 are grouped as medium risk [4].

The tool has been applied and researched since 2008 but no studies are reported in Indian population. Hence, the study is intended to subgroup acute low back pain using STarT Screening tool in a specific clinical setup. The tool is also considered as prognostic indicator for future clinical outcomes and treatment decision making.

The clinical application of the tool involves a target specific treatment based on scores; one among the important step is the patient education/counseling. The patient education isthe recommended treatment option which involves a discussion of causes, treatment options, need for follow up and reassurance in acute low back pain. It is also evident that optimal duration of patient education produces effective outcomes than less intense education in acute LBP.

The brief screening tool was validated in French, Spanish [6] and in many other languages. Hence the current research aimed to subgroup acute low back pain and to analyze the change of score in follow up sessions following physiotherapy education program in a specific clinical setup in India.

METHODOLOGY

This Observational study with follow up with 40 samples was approved by Sri Ramachandra Ethics Committee for student proposals. The study was conducted in the Physiotherapy outpatient department, Sri Ramachandra Hospital, Chennai. All subjects were explained clearly about the intent and objectives of the study and informed consent was obtained. The study period was from June to December 2015. The study included subjects of both genders with acute low back pain of mechanical origin with less than 30 days of duration with age span of 18 to 65 years. Subjects with history of trauma, previous fractures and surgery around low back region, systemic diseases, inflammatory arthropathies, pregnancy and motor weakness of lower limbs were excluded.

PROCEDURE

The selected subjects were interviewed in a well-lit sound free environment. The principle investigator administered the 9-item STarT Back Screening Tool questionnaire to the subjects. Based on level of risk counseling is imparted. After a month the subjects have been informed of re-evaluation. Re analysis of the values were obtained. All subjects' demographic details as like age, gender, occupation were obtained.

ENVIRONMENT

The subjects are well seated and made comfortable, to ease low back pain symptoms. The rooms were well lit, and sound free to prevent subject distraction. Subject's irritability and pain severity was measured. Incase if on a higher end, pain relieving modalities were administered before counseling sessions.

ADMINISTRATION OF TOOL

The self- administered Tamil version of 9 items STarT back screening tool was administered. Approximately 10-15 minutes of duration is required to complete the tool.

Based on the subject's response, scoring was made and categorized as low risk, medium risk and high risk. Further, sub-score was calculated using questions from [5-9]. This indicated the psychological overlay in acute low back pain.

PATIENT–EDUCATION

Based on the scoring patient education and counseling were imparted in accordance to Elaine M Hay and Jonathan C Hill. Based on the scoring patient are classified into low risk (3 or less) from total score, the medium risk and high risk are classified based on the sub score values (question no.5 to 9). In sub score, if the patient scores3 or less is considered medium risk, scores 4 and above are considered as high risk category.

COMPONENTS OF TREATMENT

Subjects under low risk category were counseled on back care advices, whereas in medium risk categories were treated with pain relieving modality and back care advices. In high risk category, subjects were treated with pain relieving modality to reduce pain temporarily and back care advices emphasizing about physical activity and work. Counseling mainly consists educating and imparting the importance of re-assurance in low back pain individuals.

FOLLOW –UP

The subjects were instructed to follow the specific instructions related to the scoring. Through telephonic means subjects were instructed to follow-up the instructions and to revisit after a month period.

RE-EVALUATION

The tool was re-administered; scoring made and final interpretations were sorted using Wilcoxon signed rank test.

RESULTS

The observational study included 40 subjects with acute low back pain and all 40 subjects were followed up with nil drop out-rate. The change of categorization was considered to be the post test value. Totally 27 Females (67.5%) and 13 males (37.5%) participated in the study.

Graph 1: Gender distribution

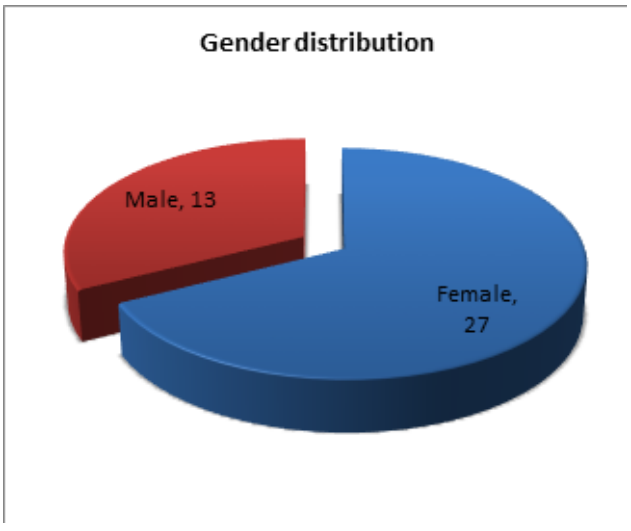


Table 1: General Characteristics of patients (n=40)

Characteristic	
Age	45.03 ± 13.99
Gender	
Male Female	13 32.5% 27 67.5%
Duration of symptoms	2.65 ± 1.14
Occupation Homemakers Geriatrics IT professionals Others	 12 13 7 8

The mean age of study subjects with acute low back pain is 45.03±13.99. Mostly all subjects suffered acute low back pain with mean duration of 2.65±1.14 .The key important factor influencing the outcome is occupation. The sample included 12 homemakers, 13 elderly group, 7 IT professionals and 8 in others category. The others category included carpenter, drivers etc.

Graph 2: Comparison of pre post total scores and pre--post sub scores

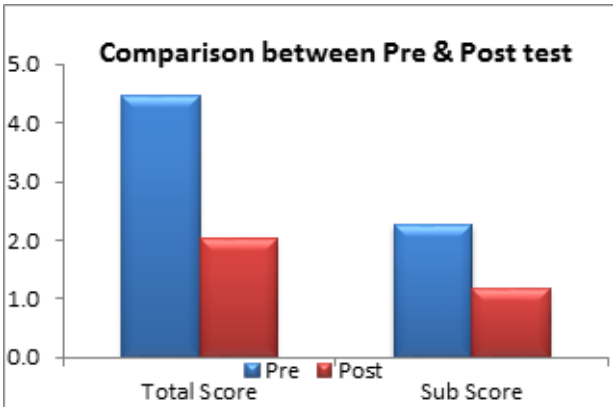


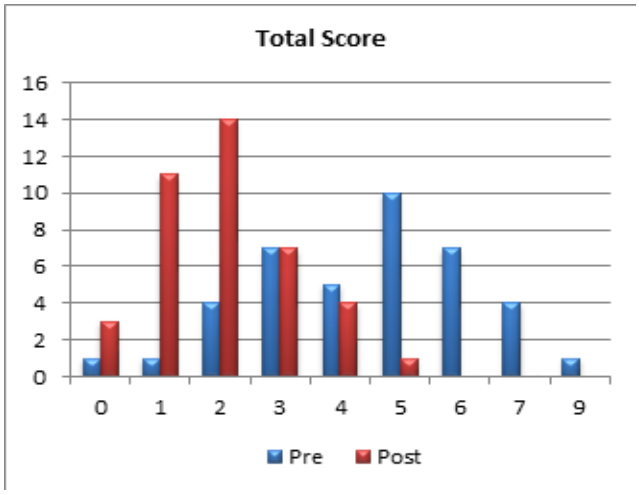
Table 2: Mean and standard deviation of pre-post total score and pre- post sub score.

	Mean	Standard deviation	Z-Value	P-Value
Pre Total score	4.48	1.8	5.417	.0005
Post Total score	2.03	1.18		
Pre Sub score	2.28	1.21	4.64	.0005
Post Sub score	1.18	0.84		

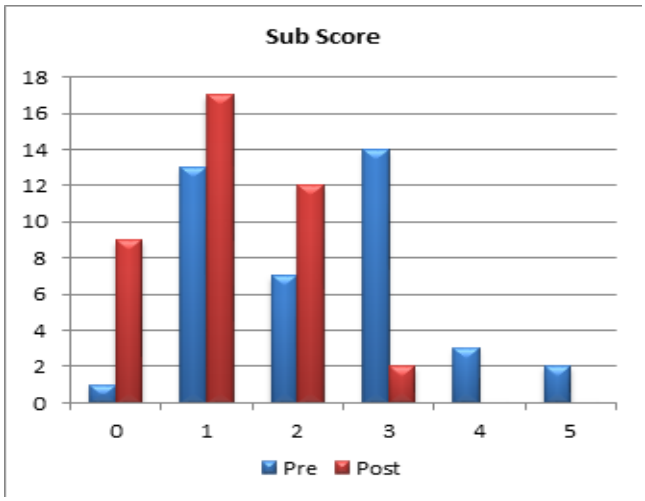
Table 2 represents the mean and standard deviation of the pre and post total scores and sub scores. The mean pre total score is 4.48±1.8 and post total score after a month is 2.03±1.18. On comparing the pre and post total scores, it was found to be statistically highly significant(p-.0005). Whereas the sub scores denotes the presence of psychological overlay. The mean pre sub score is 2.28±1.21 and

post total score after a month is 1.18±0.84. On comparing the pre and post total scores, it was found to be statistically highly significant(p-.0005).

Graph 3: Pre and post total scores of nine items.



Graph 4: Pre and post sub scores of five items.



Graph 3 & 4 represents the distribution of pre and post total scores and sub scores. Graph 3 in specifically denotes subject's responses in a 9 item scale. The pre total scores responses were distributed throughout, whereas post total scores were shifted towards left. This shift from right to left reveals reduction from high to moderate or low risk. Likewise graph 4 represents the distribution related to pre and post sub scores. On follow up, the risk of psychological overlay was reduced.

DISCUSSION

The objective of the study is observe the sub grouping in acute low back pain and change in total/sub score following physical therapy education session. Based on initial score, patient education was imparted as per risk category. The findings of the study are as follows: 1. presence of psychological overlay was noted in acute low back pain (2.28±1.21); 2. Mostly all subjects were noticed to be in medium risk group; 3. On follow up, it was noticed to shift from medium risk to low risk; 4. Patient education program proved to show changes from medium risk to low risk and high risk to medium risk.

These findings goes in accordance to a study by Hill et al in 2011 [7] highlighting the importance of primary care management in LBP using STarT Back Screening Tool. Further they conclude that stratification of risk in LBP will have greater impact in future management. This observational study by Hill et al 2010 [8] was found to stratify and screen risk among acute low back pain was also reported. It states thatSTarT Back Screening Tool is easier to use, time consuming and an appropriate alternative in screening high risk LBP in primary care. Further the current study result findings of mean pre-post total score and sub scores were noted to be similar to study by Beneciuk et al in 2013 [9] and presence of high sub scores (Psychosocial) at baseline and reduction of scores at one month was also observed in the study.

This present study further adds more focuses on the timing of re-evaluation i.e. a minimum of one-month duration is required to follow up risk changes. Further in an outpatient setup, this simple 9-item tool will be useful in predicting outcomes. The process of reassessment/re-evaluation is an important variable in predicting low back pain related outcomes as reported by Dunn in 2006 [10]. The repeated measures of SBT at one month was also adopted in Beneciuket al in 2014 [11] stating risk pattern from baseline scores have dramatically changed after a month.

Initially the STarT tool was designed to screen acute low back pain; however the study results proved to measure treatment monitoring. Wideman et al in 2012 [12] has also suggested that STarT tool has dual purpose of screening and monitoring. On initial evaluation; all subjects received a week long nonspecific physiotherapy treatment in form of pain relief modalities. Patient education program is a key integral component in physical therapy practice. Based on level of risk (low, medium, high) counselling/education were given. During follow up period, subjects did not receive any active intervention rather followed instructions imparted through patient education program. In spite of a week duration of physical therapy intervention with appropriate education, subjects showed better improvement in reduction of scores and risk. The effectiveness of physiotherapy treatment on SBT scores were reported by Wideman et al in 2012 [12] stating that there is a strong association between them. The results of post scores further emphasize the importance of early intervention in acute low back pain and preventing into chronic syndromes.

Based on subjects' occupation, analysis related to scoring was done. The distribution of subjects occupation includes 12 homemakers, 13 retired personal (geriatric), 7 IT professionals and 8 in others category. The others category included carpenter, students and construction workers. In total score, geriatric population showed greater scores and IT professionals and homemakers showed greater scores in sub scores. These groups of population require effective counseling and education to prevent further deterioration.

The limitations of the study includes less sample size as being an observational study design and one month follow up may not predict accurate outcomes. In future, based on risk status a target specific treatment can be incorporated

and analyzed in a year follow-up. The tool was found to be easily administered and time consuming.

CONCLUSION

The study concludes that STarT back screening tool is an easy, simple tool in sub grouping acute low back pain. The tool proved to be efficient in predicting risk in acute low back pain and monitoring risk reduction through target specific education in a short duration of follow up.

CONFLICTS OF INTEREST: NIL

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