Observational study

Feasibility of using Treatment based Classification System to Plan Management of Patients with Low Back Pain

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Abstract

Background: Low back pain (LBP) is an extremely common symptom and most troublesome of complaints in the general population. Pain can vary from a dull constant ache to a sudden sharp feeling. At any point in time 80% of general population will experience some type of low back pain[1.] Treatment efficacy for the increasing prevalence of this back pain is a great challenge for both health care providers and individuals coping with this problem[3].

In order to select an effective and efficient treatment in daily clinical practice, low back pain patients should be classified by symptoms during testing and physical examination. One of the main classification systems which focus individual clinical presentation is treatment based classification system. Treatment based classification system will also have impact on clinical decision-making in the management of low back pain[3].

Objectives*:* To educate all therapist working with patients with back pain to categorize each patients using treatment based classification system.

To establish the consistency and accuracy of therapists in using treatment based classification system for patients with LBP.

To analyze therapists opinion of the feasibility of treatment based classification system to plan the management of LBP.

Study design: Observational study

Method: A total of 46 patients were recruited in this observational study. Each patients was assessed and allocated to treatment based classification system. Visual analogue scale and Patient-Specific Functional Scale for first and last day of the treatment was taken and number of session also documented by the trained therapist.

Results: Results were analysed by the questions obtained from the five therapists. All five agreed for the accuracy in categorization and time, 60% agreed for the consistency in usage and goal setting and only 40% agreement for the usefulness. The total feasibility level was 75%.

Conclusion: The study concludes that using TBC system to plan management for low back pain is feasible in terms of categorization, accuracy and time but not cost effectiveness.

Key words: Low Back pain; PT Management and Low Back Pain; Treatment Based Classification System with Booleans AND, OR, IN.

Introduction

Low back pain is a very common symptom and most troublesome of complaints in the general population. Pain can vary from a dull constant ache to a sudden sharp feeling. At any point in time 80% of general population will experience some type of low back pain [1].

Low back pain may be classified by duration as an acute pain lasting less than 6 weeks, sub-chronic is 6 to 12 weeks, or chronic is more than 12 weeks[1].Some of the main causes of low back pain are hypothesized to include muscle strain, tendonitis, mechanical low back pain, herniated disc, and facet dysfunction[1].

In the majority of cases of low back pain, the principles of management depend on careful assessment and then appropriate treatment. The important aspects of LBP assessment may include measurement of pain severity using Visual Analogue Scale (VAS), measurement of range of motion, sensory and motor assessment, and functional disability profile using Patient-specific functional scale (PSFS) [2].The specific categorization of the patients by symptoms is not been followed in treatment approaches and hence the effect of these treatments cannot be generalised [3].

One explanation for the inability to identify effective interventions for acute low back pain, is the lack of success in clinical settings to defining subgroups of low back pain patients who were most likely to respond to a specific treatment categories. Because of difficulty in the grouping low back pain patients on the basis of pathoanatomic mechanisms, classification system has been made based on clinical examination findings. Treatment based classification system is one main approach used in treating LBP patients.[3]

This system is based on the information from the clinical examination and by patients self-reports on pain severity scale and functional disability scale. There by patients can be grouped into one of four treatment categories such as Stabilization category, Passive mobilization and manipulation category, Specific exercise category, Sustained positions or traction category to have an effective clinical decision making.[3]

In Indian physiotherapy clinics, an organized evaluation and management for low back pain is still challenging because of adherence to traditional management patterns. It has been postulated that treatment based classification system is a comprehensive system considering various clinical presentation of the patients with LBP. However, feasibility of this system must be evaluated before implementation.If the study results show that TBC is feasible and acceptable, it can be recommended as a routine method of plan of management for LBP.

The aim of this study was to explore the feasibility of using treatment based classification system to plan management of patients with low back pain.

The objectives were to educate all therapists working with patients with back pain to categorize each patients using treatment based classification system.To establish the consistency and accuracy of therapists by using treatment based classification system on patients with LBP. To analyze therapists opinion of the feasibility of treatment based classification system to plan the management of LBP.

Methodology

Research Design: An observational cross sectional design

Source of data: JSS physiotherapy department, Mysore

formed the cohort from which participants were selected.

Sampling method: All patients who fulfilled criteria during the duration of the study period (4 months) were recruited (Complete enumeration of available samples).

Duration of study: 4 months.

PARTICIPANTS CHARACTRISTICS: The following criteria of inclusion and exclusion were considered to recruit participants specify phase a, b, c

Ø Inclusion criteria of physiotherapists:

Practicing therapist with minimum BPT qualification.

Ø Inclusion criteria of patients:

Both men and women aged 18-40 years who had low back pain with or without radiating

Patients who had a current episode of mechanical LBP with less than 3 weeks.

Men and women who were able to understand and follow the procedure

Ø Exclusion Criteria:

Patients who had recent musculoskeletal injury other than low back pain.

Patients with a history of recent surgery or surgical management for low back pain

Pregnancy related back pain

Cognitive impairment.

Severe cardiac deficit which doesn't allow them to lie on prone.

Outcome measures:

q Patient specific functional scale

q Visual Analogue Scale

Procedure

This is a three phase study

Phase A: Review of medical records

Objective: To observe the VAS, PSFS and number of sessions from the medical records of last 6 months of patients with low back pain in JSS hospital.

Permission was taken from JSS College of physiotherapy and ethical approval for the study was obtained from JSS medical institution of Ethical committee.

Based on the inclusion and exclusion criteria, patients who had undergone treatment for low back pain in the previous six months were identified from department register.

VAS, PSFS and number of sessions of these patients were documented.

Phase B: Reliability of treatment based classification system

Objective: To find out reliability of treatment based classification system.

This phase was to find out reliability of TBC system in order to ensure the internal agreement of categorization among therapists. Five sessions of training on TBC system was given to 5 therapists on various low back pain patients until they were familiar with the technique. Thereafter, reliability of TBC was established by observing the specific allocation of five patients into the subgroups of TBC system.

Phase C: Feasibilityof using treatment based classification system.

Objective: To find out the feasibility of using treatment based classification system.

Participants were selected on the basis of inclusion and exclusion criteria. Procedure was explained and written informed consent form had taken from the participants. Based on the inclusion and exclusion criteria, a therapist trained in phase B, categorized and treated the patients with low back pain according to treatment based classification system. VAS and PSFS for first and last day of the treatment was taken and totalnumber of session was documented.

After observational analysis the comparative analysis was done on phase A and phase C by using ICC (Intraclass Correlation Coefficient) Feasibility questioner was given to the trained therapists to evaluate their opinion of the feasibility of using TBC system.

Data Analysis

Data analysis and result generation was done using SPSS version 22.0. A 'p' value of ≤ 0.5 was considered as significant. Comparison between pre and post test of VAS and PSFS was analyzed using paired t test.

Results

Phase A

A total of 71 patients were selected, men (n=35) women (n=36) details were obtained from department register. Out of 71 records, only 10 records included VAS and PSFS with only pre values. Total number of sessions was calculated for obtained patients in order to find out the cost effectiveness.

Phase B

This was carried out by observing the specificity of allocation by five therapists. A 100% reliability match was obtained by all therapists.

Phase C

A total of 46 patients, men (n=24) women (n=22) were included in the study

Profile of patients under various categories

Table 1: Comparison between before and after treatment values of visual analogue scale

Groups	N	VAS	Mean (cm)	SD	T	Sig.(2-tailed)
Specific exercise	21	Pre	7	2	20.996	.000
		Post	4	2		
Traction	15	Pre	6	2	14.554	.000
		Post	4	2		
Stabilization exercise	10	Pre	6	2	8.573	.000
		Post	3	2		

Table 2: Comparison between before and after treatment values of patient specific functional scale

Groups	N	PSFS	Mean (cm)	SD	T	Sig.(2-tailed)
Specific exercise	21	Pre	4	1	-17.81	.000
		Post	6	1		
Traction	15	Pre	5	2	-5.12	.000
		Post	7	2		
Stabilization exercise	10	Pre	4	1	-2.29	.047
		Post	6	2		

Cost effectiveness:

To find out the Cost effectives of TBC, average number of sessions was compared between routine physiotherapy care and TBC (Table 5).

Table 3: Documentation of number of sessions to determine cost effectiveness

Routine physiotherapy care		Treatment based classification system		
Mean (no of days)	Std. Deviation	Groups	Mean (days)	Std.Deviation (days)
4	3	Specific exercise	7	2
		Traction	6	3
		Stabilization exercise	5	2

Number of sessions was statistically analysed by mean and standard deviation to determine cost effectiveness

Result shows routine physiotherapy had minimum number of sessions (4±3) when compare with treatment based classification system.

Feasibility Questionnaire:

Table 4: Percentage of therapist agreement for the feasibility in using treatment based classification system

Categorization	Percentage of therapists agreement
1) Accuracy in categorization	100
2) Consistency in usage and goal setting	60
3) Requirement of time	100
4) Usefulness	40

Questions analyzed through percentage

Results were analyzed by the questions obtained from the five therapists. All five agreed for the accuracy in categorization and time, 60% agreed for the consistency in usage and goal setting and only 40% agreement for the usefulness. The total feasibility level was 75% including a combination of opinion, cost effectiveness and reliability

Discussion

The study design will not permit any conclusions in regarding the effectiveness of any treatments used. Results however, support the further need for the efforts to determine the best methods for matching specific interventions to patients with particular clinical presentations. There are many guidelines for non-surgical for management of low back pain are available in current clinical setups. It is important to have accurate, feasible and reliable results for any newly introduced system. Observed data on routine physiotherapy care concluded that there was no established systems were used in any of the treatment plan and it was an experienced based treatment rather than structure based protocol.

Our study gives an insight that, even though there are lot of advanced treatments and scientific technology has been developed, still documentation in physiotherapy was lagging and the management protocols were generalized instead of condition or cause specific. Out of 71 records, 48 records did not have details of outcome measures and 13 records were found with inadequate assessment. These findings were strongly recommending that there should be a need of newly established condition specific categorization system in management of LBP.

In order to find out the agreement between the therapists the reliability of TBC system was assessed in phase B. This is supported by the study done by Fritz et al on evaluation of a classification approach for low back pain. The study suggests that before implementing any therapeutic techniques, the agreement among the therapists has to be measured [3]. To find out the feasibility of TBC system the patients is placed into four classification groups, each with its own treatment approach.

Patients exhibiting the centralization phenomenon during lumbar flexion or extension range of motion testing are treated with the specific exercises group that promote symptoms of centralization. Numerous findings from patients clinical examination reportedly is associated with clinical instability are treated using stabilization exercise group. Finally, patients who do not demonstrate centralization phenomenon can be treated with spinal traction.

The most common combination of subgroups for which the criteria were met was manipulation + specific exercise (n=6) [5]. The complexity of the symptoms and clinical presentation might be the major factor that would have been attributed for this phenomenon. This is supported by the study done by Stanton et. al, on evaluation of a treatment-based classification algorithm for low back pain. The findings shows that 25% of the participants did not fell into any of the subgroup and the most common combination of subgroups was manipulation and specific exercise [6, 5].

VAS and PSFS for first and last day of the treatment was taken and number of session also documented by the trained therapist. Paired T-test was done for documented VAS and PSFS to find out the significant difference and the results shows that data is statistically significant (.000) between pre and post values of VAS and PSFS. This might be because of increased number of sessions, proper initial evaluation and findings in TBC group than traditional group. It was observed that the number of sessions patients came for physiotherapy was more in using classification system compare to usual care. Because initial treatment sessions were not based on patients symptoms in usual care.

Hence, TBCS used in the study was not cost-effective in compared with usual physical therapy care. However this cannot be considered as a drawback of TBC as the aim of all system of treatment is to get a satisfactory outcome irrespective of number of session or the cost of it. Apeldoorn et al also observed that mean total societal costs for the classification- based group were more than the routine physical therapy care group.

After the observational analysis, Feasibility questioner was given to five trained therapist to find out the feasibility of using treatment based classification system. Among five trained therapist, 100% agreement for easily categorizing the patients and time necessary to use treatment based classification system, 60% agreement for feasibility in usage and goal setting and only 40% agreement for feasibility in accuracy and useful than traditional evaluation method and goal setting.

Overall findings of this study suggest that the classification system is feasible to use for patients with low back pain. But may not be a cost-effective in comparison with usual physiotherapy care.

Strength:

Ø Therapists were blinded to find out the reliability of TBC system by asking the therapists to write the allocated patients name with group of exercise and drop inside the box kept in treatment room.

Ø Training of therapist on TBC was given to ensure consistency in agreement

Ø Continues monitoring and observation during allocation and during treatment

Limitation:

Limitation of this study was relatively small sample size. And a large number of patients who were screened

did not meet the participant's criteria. The large number of patients excluded emphasizes that the classification system was designed to apply to non-elderly patients with acute low back pain. No certified manual therapists in the group.

Clinical Implication:

When using the treatment based classification system the finding shows that many patients meet the criteria for more than one subgroup or did not clearly fit in any subgroup, a therapist may begin with the treatment subgroup indicated by the classification system and should monitor the patient's response to the treatment. Careful monitoring of a patients response to treatment may be particularly important for those patients who do not clearly fit a subgroup.

5.4. Research Implications:

Future research could investigate whether clinical outcomes would be improved by application of the classification system to patients and applying a different strategy to improve patients with an unclear classification based system.

Conclusion

The study concludes that using TBC system to plan management for low back pain is feasible in terms of categorization, accuracy and time but not cost effectiveness.

Conflict of Interest: None

Source of Funding: None

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