

# Development Of Post-Operative Rehabilitation Booklet For Lumbar Spinal Decompression And Fixation Surgery

Ayushi Maheshwari<sup>1\*</sup>, Mansi Srivastava<sup>2</sup>, Meenakshi Singh<sup>3</sup>, Monika Sharma<sup>3</sup>, Manvi Sharma<sup>4</sup>

<sup>1\*</sup>Masters of Physiotherapy, Institute of Applied Medicines and Research, ayushimaheshwari0608@gmail.com

<sup>2</sup>Assistant Professor, Institute of Applied Medicines and Research mansibptiph18@gmail.com

<sup>3</sup>Professor, Institute of Applied Medicines and Research

<sup>4</sup>Associate Professor, Institute of Applied Medicines and Research, drmonikasharma05@gmail.com

<sup>5</sup>Consultant Physiotherapist

## ABSTRACT

**RESEARCH DESIGN:** A methodological study

**OBJECTIVE:** To Develop And Validate A Booklet For Post Operative Rehabilitation Of Lumbar Spine Decompression And Fixation Surgery Individuals.

**BACKGROUND OF STUDY:** Individuals often have numerous questions regarding spine surgeries, including inquiries like: What actions should be taken? What actions should be avoided? Is undergoing surgery a safe option? What precautions are necessary after surgery? After examining a large number of studies to address these concerns, researchers discovered that there isn't a definitive physiotherapy program for LSDF patients that can ease their fears and dispel their misconceptions. Consequently, the researcher proposed the creation of an informational booklet.

Educating patients has proven to be advantageous in numerous surgical procedures, leading to improved surgery outcomes related to pain, disability, and overall quality of life.

**METHODOLOGY :** The booklet was developed using the following 5 step-by-step techniques. 1)The domains of the training booklet were identified by a literature study, informal interviews, and questionnaires completed by 5 neurosurgeons and 5 physiotherapists were used to determine the domains of educational booklet. 2) Literature review to create a preliminary copy of the booklet and develop the content for the various disciplines. 3)The booklet should be modified in accordance with the suggestions made by physiotherapists and surgeons in order to create the final version. 4) Evaluation of the booklet by Suitability Assessment and Material Questionnaire (SAM) filled by physiotherapists and surgeons. 5) Pilot study on patients to gather feedback on the created booklet.

**RESULTS :** According to the reliability given by 10 panelists i.e. 5 physiotherapists & 5 spine surgeons in a SAM Questionnaire and validity given by all 15 panelists i.e. 5 physiotherapists, 5 spine surgeons and 5 patients in a CVI value. After filling the SAM scale, 8 of 10 panelists gave the score between 38 and 42 SAM score, which translates to a % score between 70-100% SAM %. calculated by a specific formula.

The data analysis of SAM for this study represents superior quality content (70-100%). Thus, this confirms the reliability of the booklet. Lastly, Content Validity Ratio (CVR) was calculated. The CVR value achieved for all the 10 items is in a positive integer. Thus, this confirms the validity of the booklet.

**CONCLUSION:** According to the Suitability Assessment and Material Questionnaire, the developed patient educational booklet entitled "Treat Your Back By Yourself" was fairly easy to understand, therefore it should be included in patient education.

**KEYWORDS:** Lumbar spinal decompression and fixation; rehabilitation booklet; Suitability Assessment and Material Questionnaire; patient education; development ; validation.

## INTRODUCTION

One of the most prevalent disorders that causes trouble with ADLs is low back pain<sup>1</sup>. LBP is a common cause of decreased productivity in ways such as patients experiencing difficulty when long-sitting, difficulty to lift heavy objects, and difficulties with long-standing employment.<sup>2</sup> Lumbar Radiculopathy is a most common presenting complaint diagnosed by neurosurgeons. Its prevalence is approximated to be 3%-5% of the population, impacting on both male and females. Majority of patients resolve their LBA while doing conservative management of their condition via physical therapy and medication. But 10% of the population end up getting spinal surgeries <sup>5</sup> There are various types of lumbar spine surgeries which help to secure the spine and thus mitigates the pain. Decompression surgery, Lumbar microdiscectomy, lumbar laminectomy, lumbar spinal fusion surgery, Facet Arthroplasty, Vertebroplasty.

Lumbar Spinal Decompression and Fixation Surgery(LSDF), this surgery is a combination of lumbar decompression and spinal fusion surgery <sup>7</sup>,used to treat the compressed nerves within the lumbar spine whereas Spinal fusion is used when 2 or more vertebrae are fused in order to stabilize the joint and provide stability to the joint. Aim of LSDF is to alleviate radiating pain or any continuous pain which is caused by any nerve compression

at the lumbar spine, any type of numbness in the leg due to nerve compression, neural impingement, intervertebral disc bulge or extra bony growth (osteophytes) <sup>8, 7</sup>. Since post-operative rehabilitation is a straightforward, affordable, and well-liked way to give patients health-related information, a booklet was created for patient education. Evaluation of the booklet was done by Suitability Assessment and Material Questionnaire scale, checklist containing numerous exercises and more evidence based information extracted from various studies.

Getting input from the intended audience i.e. patients regarding their preferences for the format and presentation of written content is also crucial. Pilot Studies are conducted so that patients can assess the booklet. Surgeons, physiotherapists, and patients all contributed to the study's content validity and reliability.

## METHODOLOGY

The booklet was developed using the following 5 step-by-step techniques.

Step 1 : Determination of Domains for post-operative educational booklet for LSDF subjects on the basis of literature review, informal interview and questionnaire on patient education. The domains acquired for the review of the literature are: Anatomy, Sign & Symptoms, Type of pain, Lumbar Spinal Decompression and Fixation, Need for surgery, Physio Queries. The 5 physiotherapists and 5 surgeons participated in the informal interview and completed the questionnaire. Using the following keywords, a search approach was conducted on Google Scholar, the Cochrane Library, PubMed/Medline, and ScienceDirect during the literature review: Patient information, patient education, and patient satisfaction Patient education on lumbar spinal procedures and back surgeries At the conclusion of the review, 50 pertinent publications were found, 15 of which were used in the study.

Following an explanation of the study, patients, therapists, and surgeons give their consent to participate.

Informal interview: The purpose of this interview was to learn what topics they felt needed to be covered in the post-operative patient education booklet. It is made up of a few open-ended questions that were developed following the literature review previously discussed in relation to the patient education booklet's domains and in consultation with the research guide. Approximately 15 to 20 minutes were spent on the interview.

Demographics of physios and surgeons are following.

|                                   |                        |
|-----------------------------------|------------------------|
| Total physios                     | N = 5                  |
| Gender                            | Male - 2<br>Female - 3 |
| Age                               | 28 - 41 years          |
| Experience in treating LSDF cases | > 5 years              |

### DEMOGRAPHICS OF PHYSIOS

|                              |             |
|------------------------------|-------------|
| Total spine surgeons         | N = 5       |
| Gender                       | Male - 5    |
| Age                          | 40-60 years |
| Experience in operating LSDF | >8 years    |

### DEMOGRAPHICS OF SURGEONS

Step 2 : Development Of Educational Booklet involves developing the booklet in accordance with step 1 literature review and modifications to the rough text under the advice of experts.

The material for the domains was developed using a narrative review. Anatomy and mechanism of pain was understood by standard sources. While there was no comprehensive description of the immediate physiotherapy protocol following a lumbar spinal decompression and fixation surgery, information from a variety of articles was used to determine the dosage and description of exercises. As for the surgery, complications, and outcome, these were developed after reviewing a few articles. Non-copyrighted photographs were utilized in the booklet at the proper locations, and the researcher clarified technical medical terms used in study publications. A graphic designer created the images used in the booklet for the exercises. This led to the creation of a preliminary version of the booklet.

Step 3 :Modification Of Booklet Via Checklist from various physiotherapists by circulating a Google form. 5 physiotherapists and 5 spine surgeons were asked to read the booklet and recommend any changes to its language and content that were pertinent and within the study's objectives. The majority of the participants asked to remove neural gliding techniques as they are not required, advised when spinal extensions should be started. Few additions were also recommended like precautions during exercises, these changes were made after receiving appropriate references.

Step 4 : Evaluation of Booklet was done by spine surgeons and physiotherapists using Suitability Assessment and Material Questionnaire scale. The suitability Assessment of Material Questionnaire was filled by surgeons and physiotherapists after reading the instructions to use it. The questionnaire had 22 questions which were divided into 6 categories: Content, literacy demand, graphics, layout and typography, learning stimulation and motivation and cultural appropriateness. According to this questionnaire the booklet score obtained was between 70-100%between 70-100 which rated it of superior quality.

|    |                                    |                       |
|----|------------------------------------|-----------------------|
| 1. | Content                            | 5<br>Physiotherapists |
| 2. | Literacy Demand                    |                       |
| 3. | Graphics                           |                       |
| 4. | Layout & Typography                | 5<br>spine surgeons   |
| 5. | Learning, Stimulation & Motivation |                       |
| 6. | Cultural Appropriateness           |                       |

#### SAM SCALE DRAFT

Step 5 : Pilot Study was conducted on patients for evaluation of the evidence based post-operative educational booklet on Lumbar Spinal Decompression and Fixation surgery. Conducted to gather feedback on how useful the booklet is. The patients were asked a few open-ended questions about the booklet, like: Can they understand the terminology and language used? Do they find the embedded visuals easy to understand? Do they actually find the booklet useful? Patients were free to contact the researcher at any moment for any queries. All of the patients thought the booklet was fascinating and very beneficial, with concise, easy-to-understand material and ample illustrations. Additionally, they found that the booklet includes time-consuming and highly beneficial exercises. The 4 out of 5 patients believed that the majority of the information in the booklet, found it easy to read, and thought it was the appropriate length. By completing the SAM Questionnaire and computing CVR, the 5 surgeons and 5 physiotherapists validated the booklet.

### RESULTS

Result Estimation For Content Reliability Of Booklet Is:

After filling the SAM scale, 8 of the 10 panelists gave the score between 38 and 42 SAM score, which translates to a % score between 70-100% SAM %. calculated by a specific formula.The data analysis of SAM for this study represents superior quality content (70-100%). Confirming reliability of booklet

Result Estimation For Content Validity Of Booklet Is :

CVI was done in order to receive the validity of the booklet which was given by 15 panelists by completing the CVI scale which comprises 10 enlisted items.The CVI of all the 10 retained items is 9.93, was calculated by a specific formula.

Further, Scale Level CVI (S- CVI ) was also calculated. The cumulative CVI or S-CVI of all the retained items is 0.993, which represents good content validity.

Lastly, Content Validity Ratio (CVR) was calculated.The CVR value achieved for all the 10 items is in a positive form. Thus, this confirms the validity of the booklet.

| ITEM NO. | ITEM NAME          | CVR  |
|----------|--------------------|------|
| 1        | Low back ache      | 1    |
| 2        | Need of surgery    | 1    |
| 3        | LSDF               | 1    |
| 4        | Day 1 physio       | 1    |
| 5        | Day 2 physio       | 0.86 |
| 6        | Day 3 - 7 physio   | 1    |
| 7        | Week 2 physio      | 1    |
| 8        | Week 3 -5 physio   | 1    |
| 9        | Week 6 - 12 physio | 1    |
| 10       | Precautions        | 1    |

#### CONTENT VALIDITY INDEX

### DISCUSSION

The objective of the presented study is to develop and validate a booklet for post operative rehabilitation of lumbar spine decompression and fusion surgery individuals.

The Suitability Assessment & Material Questionnaire and Lawshe's Disability Index are the tools used to assess the content reliability and content validity of the booklet. SAM scale gives a maximum score of 44.

The CVR consisted of 10 items in the list, whose value was calculated through a formula.

Booklet development, validation and pilot study was conducted in five steps.

#### Patient Views On The Booklet -

Patients indicated that they believed the information in the booklet was very useful, easy, and it was the appropriate length which can be also followed in a busy schedule.

#### Physiotherapists Views On The Booklet -

Physiotherapist expressed that the booklet clearly mentions and demonstrates all the exercises in a week-wise protocol. Booklet helps patients understand when to increase their exercise. Thus the consistency of the patient helps them in speedy recovery and early return to routine.

#### Spine Surgeons Views On The Booklet-

Surgeons found that there is enough clarity mentioned in the booklet which will help the patient to follow precautions and remember contraindications. Surgeons found the patients who were consistently following the booklet with regular follow ups with physiotherapists are recovering well with decrease in pain and increasing mobility day by day.

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