

Original Article

DEVELOPMENT AND EVALUATION OF EVIDENCE BASED PRE-OPERATIVE PATIENT EDUCATION BOOKLET IN LUMBAR DISCECTOMY

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ABSTRACT

Objective: The objective of this study was to contribute towards further understanding of the preoperative educational requirement of patients by developing and evaluating suitable evidence based patient education booklet in lumbar discectomy.

Summary of background data: The primary surgical intervention for lumbar radiculopathy is lumbar discectomy but its result remains variable. Patient education has been found beneficial in various surgeries and resulted in enhanced outcome of the surgery with respect to pain, disability and quality of life.

Methodology: It consists of 5 Steps. 1) Literature review, informal interview and questionnaire filled by 3 surgeons, 5 physiotherapists and 5 patients were used to determine the domains of the education booklet. 2) Literature review to develop the content for the domains of the booklet and formulate a rough draft of the booklet. 3) Modification in the booklet as recommended by surgeons and therapists to develop the final booklet. 4) Evaluation of the booklet on readability ease by Flesch reading ease and by Suitability assessment of Material questionnaire filled by surgeons and therapists. 5) Pilot study on patients to take their views regarding the booklet developed.

Results: The domains determined in step 1 were: Anatomy, understanding the mechanism of pain, about the surgery, complications associated with surgery and role of physiotherapy. The content was developed and modified in step 2 and 3. In step 4 Flesch reading score is 70.5 and suitability assessment of material questionnaire score- 77.3%. In step 5 patients rated the booklet easy to read and understand.

Conclusion: The developed patient education booklet came out to be fairly easy to read according to flesch reading ease and of superior quality according to suitability assessment of material questionnaire and hence should be made a part of patient education.

KEYWORDS: Lumbar discectomy; Pre operative patient education booklet; Flesch reading ease and suitability assessment of material questionnaire.

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INTRODUCTION

Low back pain is the most widely reported musculoskeletal disorder in the world which affects function and disability to a great extent¹. LBP can manifest itself in various clinical ways which can vary from a back pain to radiculopathy². Lumbar surgery for disc prolapse is well established and common, but the results

remain variable⁴, with the success rate of lumbar disc surgery varies between 60-90% as compared to more than 80% in studies where post operative rehabilitation has been provided^{3, 4, 6, 7}. The primary surgical intervention for lumbar radiculopathy is lumbar microdiscectomy and endoscopic discectomy⁴. Pre operative patient education has been found to be beneficial in veri-

ous surgeries and lead to effects such as decreased post-operative medication for pain, better knowledge or less cognitive errors, reduction in anxiety, better performance of exercise, better adherence to rehabilitation instructions and higher self-esteem^{8, 10, 12}. Patient education can be delivered by various methods¹¹, out of which booklets have been advocated as it is a simple, cost effective, and popular method of providing health-related information to patients, and has been shown to be feasible and effective in low back pain^{4, 13}. It also enhances understanding, retention, and application of the information¹⁴.

A booklet developed for patient education is more helpful if evaluated with most suitable measures available such as; readability ease (via Flesch reading ease, Flesch Kinaid reading score), questionnaires (such as Suitability Assessment of Material, bernier instruction scale), quiz and checklist about the content of the education material have been used in various studies^{5, 8, 9, 15}. It is also important to obtain feedback from the target audience on their preferences for the design and delivery of written information¹⁵. Pilot studies are done for evaluation of the patient education booklet by patients, in which there comments regarding the material provided are taken^{3, 9}. In this study, a pre-operative evidence based patient education booklet will be developed and evaluated by surgeons, physiotherapist and by patient undergoing lumbar discectomy.

Methods and Results:

STEP 1- Determination of domains of the evidence based pre-operative patient education booklet for lumbar discectomy on the basis of literature review, informal interview and questionnaire on patient education.

STEP 2- To develop the content of the evidence based pre-operative patient education booklet according to the domains found in step 1 and its compilation to form a rough draft of the booklet.

STEP 3- Modification of the rough draft of the booklet by spine surgeons and physiotherapists.

STEP 4- Evaluation of the evidence based pre-operative patient education booklet for lumbar discectomy by surgeons and physiotherapists using Flesch reading ease and Suitability assessment of material questionnaire.

STEP 5- Pilot study on patients for evaluation of the evidence based pre-operative patient education booklet for lumbar discectomy.

Sample population

Inclusion Criteria: Spine surgeons who performs discectomy with a minimum of 5 years of experience. Physiotherapists registered with Delhi council of physiotherapy and occupational therapy or are a member of Indian association of physiotherapists and involved in treating lumbar discectomy patients for at least a period of 2 years. Patients with age 20-65 years, diagnosed of radiculopathy due to disc herniation, nerve root irritation, cyst and/or foraminal stenosis and underwent minimal invasive discectomy i.e. endoscopic discectomy or microdiscectomy. Patient who attended their first routine postoperative consultation with the surgeon in the first post surgical month.

Exclusion criteria: Absence of consent for participation. Patients not fluent in English / requires assistance, have undergone previous spinal surgery or is undergoing revision surgery. Patients who are diagnosed with conditions which include neurological disorders (e.g., stroke, dementia, seizures), uncontrolled cardiovascular disease, evidence of spinal cord compression, uncontrolled hypertension, infection, severe respiratory disease, pregnancy, rheumatic joint disease, peripheral vascular disease with sensory loss at the foot or any condition the subject identifies that might limit participation in physical activity.

Step 1- Literature review was done first, after which informal interview was framed and were asked from 3 surgeons, 5 physiotherapists and 5 patients along with questionnaire on Patient education material. During literature review a search strategy with following words was done on Google scholar, the Cochrane library, PubMed/ Medline and Science Direct: Patient education, patient satisfaction, patient information, Patient education in back surgery, Patient education in lumbar discectomy, microdiscectomy, and endoscopic discectomy. 50 articles relevant to the study were obtained at the end of the review out of which 15 were included in the study. After explaining the study, consent is taken from surgeons, therapists and patients for

their participation in the study.

Informal interview: The aim of this interview was to find out the areas which according to them must be included in the pre operative patient education booklet. It consists of few open ended questions that were formulated after literature review described earlier regarding the domains of the patient education booklet and in discussion with the research guide. It took around 15-20 minutes during the interview.

Questionnaire on patient education material: It was developed and proved as a valid tool in a study on patient education in spine surgery by Louw A. The questionnaire was requested from the author and permission to use the same in the present study was taken. The questionnaire was organized into three sections: Section one – Demographic information, Section two: instructions on completing the questionnaire; and Section three consisting of a series of questions regarding educational needs, divided into five categories (Table 1). A 10cm linear scale was used to rate the importance of a question being answered by them, ranging from “not important” to “very important”. Fifth category was on pain and had few open ended questions which were described in results.

Table 1: Categories of section 3 in questionnaire.

Category	Questions
1. Surgical procedure	Reason for surgery, risks associated, alternative treatment options and detailed description of the surgery
2. Medical care	Duration of anaesthesia, stopping medicines prior to surgery, hospital stay, brace, follow up visit
3. Prognosis, symptoms and recovery	Decrease in pain, surgical site pain, other pain and complete loss of pain
4. Activity, limitation and physical therapy	Return to work, driving, limitations, importance and content of physical therapy
5. Pain	Open ended questions

Result of Step 1: Few questions were reframed in questionnaire and informal interview on request of surgeons. Table 2 and 3 shows the result of literature review and informal interview respectively. Graph 1 shows the result of category 1-4 of the questionnaire used in step 1 whereas table 4 shows the result of the 5th category of the questionnaire.

Table 2: Domains obtained from literature review and their frequency.

Domain	Frequency
Anatomy	4
Surgical procedure	5
Reason for surgery	6
Risk and complications	5
Frequently asked questions	2
Activity limitation/ exercises/ protection of back/ Return to work/Pain management	13
When to seek medical help	2
Outcome	1
Implants	1
Medical care	2
Hospital stay	2

Table 3: Information regarding domains that were highlighted during informal interview.

Group	Domains highlighted after the informal interview
Spine surgeons	<ul style="list-style-type: none"> Pre operative functional status Information about the surgery Post operative physiotherapy Risk/ complications associated with the surgery Psychological aspects Outcome of the surgery Goal of the surgery
Physiotherapists	<ul style="list-style-type: none"> Surgical procedure Risk about surgery Posture education Post operative rehabilitation Activity modification Pre operative functional status Transfer education Outcome of the surgery
Patients	<ul style="list-style-type: none"> Surgical procedure Outcome of the surgery Post operative rehabilitation Activity modification Pain management after surgery

Table 4: Information obtained from 5th section of the questionnaire used in step 1.

Spine Surgeons	<p>10-15 % patients have pain at their 1st follow up ranging from 2-3 on VAS scale where 0 is rated as no pain and 10 is rated for excruciating pain.</p> <p>All of them think that patient will benefit from patient education and they will be interested in their prognosis after surgery. 2 out of 3 surgeons says that patient expect pain post operatively.</p> <p>Medicines, ice pack and rest are measures adopted by patients for pain relief.</p> <p>2 out of 3 surgeons wrote that their patients may feel depressed due to pain following surgery.</p>
Physiotherapists	<p>15-25 % patients have pain at their 1st follow up ranging from 3-4 on VAS scale where 0 is rated as no pain and 10 is rated for excruciating pain.</p> <p>All of them think that patient will benefit from patient education and 3 out of 5 believe that patients will be interested in their prognosis after surgery. All physiotherapists says that patient do not expect pain post operatively.</p> <p>Medicines, ice pack and rest are measures adopted by patients for pain relief.</p> <p>All physiotherapists believe that patients feel pain at surgical site, which will reduce with time.</p>
Patients	<p>4 out of 5 patients were having pain at their follow up visit. They rated their pain 2-3 on VAS.</p> <p>2 patients were having pain at surgical site whereas 2 were having pain in the leg but of less intensity. They were advised exercises for pain relief.</p> <p>3 patients expected no pain after surgery and hope that pain will disappear completely. 2 were still afraid that pain might come back.</p> <p>Only 2 patients received education prior to surgery but no one was satisfied with the education given.</p>

Selection of domains after step 1- Category 2 on medical care was rated least important in all and

hence was excluded. Whereas surgical procedure was included but information about alternative treatment was also excluded as the booklet was specific to discectomy. After reviewing all the results information stated important in 3rd category was included under "Outcome of surgery". Category 4 was included under the domain "role of physical therapy". More information was also obtained regarding domains of patient education material but due to lack of their importance or relevance they were excluded by the researcher and the research guide. The following domains were included in the booklet and were approved by surgeons and therapists: 1) Anatomy 2) Understanding the mechanism of pain 3) About the surgery 4) Complications associated with the surgery 5) Role of physiotherapy.

Step 2- A narrative review was done to develop the content for the domains. Standard books were referred for anatomy and understanding the mechanism of pain. About the surgery, complications and outcome of surgery were developed after reviewing few articles where as no detailed description was available regarding the immediate physiotherapy protocol after discectomy therefore information from various articles was used to decide on the dosage and description of exercises. Technical medical terminologies used in research articles were made easy by the researcher and non copyrighted images were used at appropriate places in the booklet. Images for the exercises were developed by a graphic designer and were used in the booklet. A rough draft of the booklet was thus developed.

Step 3- 3 spine surgeons and 5 physiotherapists were asked to read the booklet and suggest any modification regarding the content and language of the booklet that are relevant and within the aim of the study. Modifications were regarding making the language easy, labeling the diagram for easy understanding of patients. Most of the requested to delete one image describing discectomy to be changed as it could be misleading. Controversy was present regarding inclusion of nerve stretching exercise and lifting of driving restrictions which were done after suitable references were found¹⁶. Few additions were also recommended like precautions during

exercises, ankle toe movements, deep breathing exercise and sitting on inclined chair rather than straight back chair, these were also included after suitable evidence were found^{17, 18, 19, 20}.

Step 4- Evaluation was done on readability ease by using Flesch reading ease on readability statistics of Microsoft office word 2003. The readability ease came out to be 70.5 which rated the booklet as fairly easy to read. 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 77.3% which rated it of superior quality.

Step 5- Pilot study on 5 patients was done to get their comments regarding the booklet developed. The questionnaire had two parts:

- (1) 11 forced-choice questions;
- (2) Open questions about the most important messages they took from the booklet and their overall rating of the booklet on a scale from 1 to 10.

The questionnaire was used by A.H. McGregor in his study on patient education material. A copy of the questionnaire and permission to use it in the present study was taken.

- All the patients believed that the book was interesting, with clear information, enough practical tips and easy to follow. They also mentioned that they will look back the booklet from time to time, to check what to do; the book will help people as they learned some new helpful things and they will also recommend this book to a friend or family member.
- 4 out of 5 patients marked that the book was easy to read, is of the right length and they believe most of what is said in the booklet. Average patient rating for the booklet came out to be 9 out of 10.

DISCUSSION

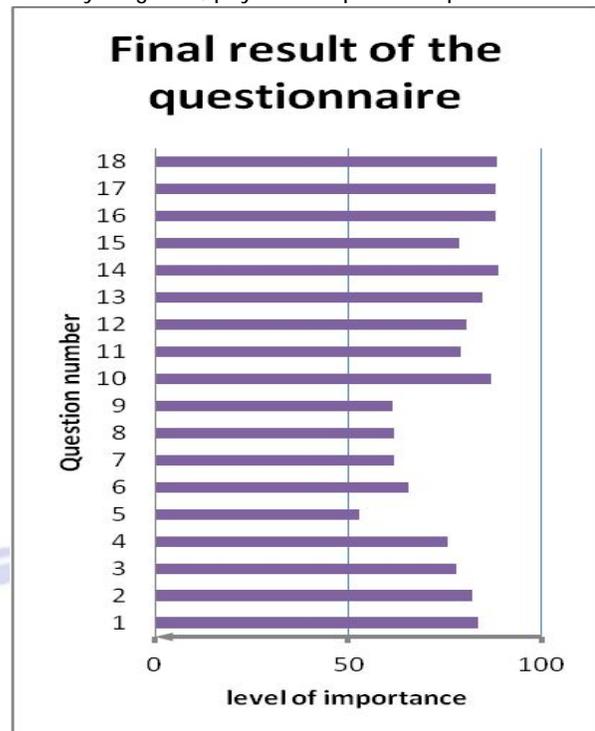
This study is designed to develop and evaluate an evidence-based pre operative patient education booklet through a focus group feedback process for lumbar discectomy patients.

Patient education programs aim to impart knowledge and skills to individuals so that they may be able to better manage their condition²¹. If patients are educated about their condition, the prognosis after the surgery and its management is associated with higher patient satisfaction and better short term outcomes³. Determination of domain was an important step in the study as it provides the basic framework for the development of the patient education booklet as here we are trying to find out domains and this step is not actively used in most studies available on patient education material. It also becomes easier for a reader to refer content in a booklet by presence of domains. Present study incorporates literature review along with informal interview and questionnaire given to spine surgeons, physiotherapists and patients to determine the domains of the booklet was not performed so extensively in any research reviewed during this step.

In the 2nd step of the study evidences available regarding immediate post operative rehabilitation and its dosage were limited, best possible effort was made to formulate the dosage and description of exercises during this phase with these limited evidences. However more randomized controlled trials are needed to come to a conclusive dosage. Post operative exercises of the initial phase i.e. from 1-3 weeks was included in the booklet, for later more specific rehabilitation patients would be advised to go to outpatient rehabilitation department as the motive of patient education material is not to provide it as a substitution for physiotherapy. The expert team was although consulted for the images but no detailed analysis or review of images was done because of lack of time.

After modifications were done in step 3, the final booklet was completed by making an attractive front cover by the researcher. The following information was also provided in the booklet: contact information for any suggestions, the copyright statement, the outcomes of the surgery may vary, all exercises described is for initial phase of rehabilitation and may not be performed by every patient. Finally acknowledgement and list of contents was added before the actually content of the booklet starts.

Graph 1: Level of importance rated to each question by surgeons, physiotherapists and patients.



In the above graph, Question number 1 – reason for surgery, 2- risk about the surgery, 3- alternative option available, 4- detailed description about the surgery, 5- length of anesthesia, 6- stopping medications prior to the surgery, 7-Length of hospital stay, 8- Brace after surgery, 9- Follow up visit after surgery, 10- relief of pre surgical pain, 11- surgical site pain, 12- other pain, 13- complete loss of pain, 14- return to work, 15- start driving after surgery, 16- limitation of activities, 17- Physical therapy after surgery and 18- content of physical therapy.

CONCLUSION

The evidence based preoperative patient education booklet developed is fairly easy to read according to Flesch Reading Ease and is of superior quality according to suitability assessment of material questionnaire and therefore can be given to patients prior to discectomy to prepare them for the surgery.

Limitations

1. Psychological issues were not addressed in the booklet.
2. Sample size was small due to time limitation.
3. Sample population was recruited from only one hospital.
4. Information obtained from the pain category of the questionnaire used in step 1 was described

in results but was not analyzed for determination of domains.

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Conflicts of interest: None

REFERENCES

1. Kulig K, Beneck GJ, Selkowitz DM, Flanagan S.P., Poppert E. M., Yamada K. A. et al; An intensive, progressive exercise program reduces disability and improves functional performance in patients after single-level lumbar microdiscectomy. *Phys Ther* 2009; 89:1145–1157.
2. Ostelo RWJG, de Vet HCW, Wadell G, Kerckhoffs MR, Lefflers P, Tulder M.; Rehabilitation following lumbar disc surgery. *Spine* 2009; 34(17):1839-1848.
3. Louw A, Louw Q, Crous L; Preoperative education for lumbar surgery for radiculopathy. *SA Journal of physiotherapy* 2009; 65 (2): 3-8.
4. Gulati Y.; Lumbar microdiscectomy. *Apollo medicine* 2004; 1: 29-32.
5. McGregor A. H., Burton A.K., Sell P., G. Waddell: The development of an evidence based patient booklet for patients undergoing lumbar discectomy and uninstrumented decompression. *European Spinal Journal* 2007; 16:339-346.
6. Grevit M. P., McLaren A., Shackelford I. M., Mulholland R. C.: Automated percutaneous discectomy: An outcome study. *J Bone Joint Surg [Br]* 1995; 77-B: 626-9.
7. Taha M., Faeadh M.H.: Functional Recovery for Patients with Lumbar-Sacral Disc Prolapse Undergoing Laminotomy & Discectomy. *Eur J Sci Res* 2010, 45, 22-36.
8. McClune T., Burton A. K., Waddell G.: Evaluation of an evidence based patient educational booklet for management of whiplash associated disorders. *Emerg Med J* 2003; 20: 514–517.
9. Spiegel B., Talley J., Shekelle P., Agarwal N., Snyder B., Bolus R. et al: Development and Validation of a Novel Patient Educational Booklet to Enhance Colonoscopy Preparation. *Am J Gastroenterol* 2011; 106: 875–883.
10. Henrotin Y., Cedraschi C., Duplan B., Bazin T., Duequesnoy B.: Information and Low back pain Management: A systematic Review. *Spine* 2006; 31(11), 326-334.
11. Friedman A., Cosby R., Boyko S.: Effective Teaching Strategies and Methods of Delivery for Patient Education. *Program in Evidence-Based Care* 2009, 20-22.
12. Johansson K, Nuutila L, Virtanen H, Katajisto J, Salanterä: Pre-operative education for orthopedic patients: Systematic review. *Journal of Advanced Nursing* 2005; 50(2):212-223.
13. Chou R., Qaseem A., Snow V., Casey D., Cross Jr. J., Shekelle P., et al: Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med* 2007; 147: 478-491.
14. Lee T., Yeh Y., Liu C., Chen P. et al: Development and evaluation of a patient-oriented education system for diabetes management. *International journal of medical informatics* 2007; 76; 655–663.
15. Eames S., McKenna K., Worrall L., Read S.: The Suitability of Written Education Materials for Stroke Survivors and Their Carers. *Top Stroke Rehabil* 2003; 10(3): 70–83.
16. Scrimshaw V. B., Maher C. G.: Randomized Controlled Trial of Neural Mobilization After Spinal Surgery. *Spine* 2001; 26 (24); 2647-2652.
17. Wilke H.J., Neef P., Caimi M., Hoogland T., Claes L. E.: New In Vivo Measurements of Pressures in the Intervertebral Disc in Daily Life. *Spine* 1999; 24: 755–762.
18. Rosenquist R. W., Rosenberg J.: Postoperative Pain Guidelines. *Reg Anesth Pain Med* 2003; 28: 279-288.
19. Agnelli G. Prevention of Venous Thromboembolism in Surgical Patients. *Circulation* 2004; 110: IV-4-IV-12.
20. Kwon OY, Jung DY, Kim Y, Cho SH and Yi CH: Effects of ankle exercise combined with deep breathing on blood flow velocity in the femoral vein. *Australian Journal of Physiotherapy* 2003; 49: 253–258.
21. Osborne R., Buchbinder R., Ackerman I.: Can a disease-specific education program augment self-management skills and improve Health-Related Quality of Life in people with hip or knee osteoarthritis? *BMC Musculoskeletal Disorders* 2006,7:90-10.

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