Volume 4, Issue 6, 2000 ISSN 1329 - 1874

BestPractice

Evidence Based Practice Information Sheets for Health Professionals

Knowledge Retention from Pre-operative Patient Information

This *Best Practice* Information Sheet has been compiled by The Joanna Briggs Institute based on a Systematic Review of research, published by The Joanna Briggs Institute, entitled Knowledge Retention from Pre-operative Patient Information[1]. The primary references are available in the Systematic Review report which is available from The Joanna Briggs Institute (contact details on page 6) and also available at www.joannabriggs.net.au

Background

Pre-operative education is a common feature of the preparation for many surgical procedures. It is anticipated that this education will result in beneficial outcomes for the patient. For example, a meta-analysis found that patients who had received pre-operative information spent 1.5 fewer days in hospital. Another meta-analysis found that pre-operative education had a positive effect on patient fear and anxiety. Single studies have identified improvements in the level of psychological distress and pain experienced by patients.

Numerous other patient outcomes have been measured after provision of pre-operative information such as patient knowledge of pre-, intra- and post-operative procedures, compliance in the execution of prescribed activities, patient satisfaction, skills in instilling medications, analgesic usage, physical coping, mobility independence and discharge preparation.

This Best Practice Information Sheet Covers the Following Concepts:

- The Use of Pamphlets
- Videos
- Learning Packages
- Instruction

The question as to what is the best teaching protocol to improve patient knowledge has been the subject of numerous studies. Printed information (booklet or information sheet), learning packages, audio-visual presentations or a combination of these formats have all been tested. Individual or group teaching and the timing (pre- or post-admission) of pre-operative education have been subject to comparison.

However, although there has been substantial research and several meta-analyses undertaken on different aspects of pre-operative education, there has been no previous attempt to summarise research on teaching methods to improve patient knowledge and understanding.

Therefore, this Best Practice Information Sheet aims to identify the best available research related to the impact of the different types of pre-operative education on patient's knowledge and understanding. It should be noted that because of differences in protocols and outcome measures no two studies could be combined. All studies included in this sheet are discussed separately.

Levels of Evidence

All studies were categorised according to the strength of the evidence based on the following classification system.

Level I
Evidence obtained from a systematic review of all relevant randomised controlled trials.

Level II
Evidence obtained from at least one properly designed randomised controlled trial.

Level III.1
Evidence obtained from well designed controlled trials without randomisation.

Level III.2
Evidence obtained from well designed cohort or case control analytic studies preferably from more than one center or research group.

Level III.3
Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments.

Level IV
Opinion of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Objectives

The objective of this Best Practice Information Sheet is to present the best available evidence related to knowledge retention following pre-operative patient education. Specifically:

1) Is pre-operative education effective in improving patient knowledge of the surgical procedure, post-operative care and patient skill in performing desired activities?
2) Which form of pre-operative education results in the greatest improvement in knowledge and understanding of the operative procedure, post-operative recovery and patient skills?

The Use of Pamphlets

The most common form of patient instruction is the use of information pamphlets. Information sheets, or pamphlets are often given prior to surgery with the intended purpose of preparing the patient for the up-coming procedure. The question arises as to the best content and the optimal time to provide pamphlets in order to best inform the patient.

Pre-admission pamphlet vs no information

It is logical to first examine the effect of providing an information pamphlet to patients on knowledge of their up-coming surgery compared to providing no information at all.

In a single study, female patients provided with a surgical information pamphlet specifically designed for their procedure (hysterectomy) were able to correctly list significantly more up-coming surgical events than groups provided with general hospital and surgical information or no information at all (control). Control patients were identified as knowing the least about their procedure.

However, due to the nature of the data presented (incomplete), the population (female only) and the fact that it was a small single study, it is impossible to extrapolate these findings to the general populace.

The majority of studies on pamphlet use have generally made the assumption that providing written information is beneficial in terms of improving patient knowledge. Therefore, the remainder of studies on pre-operative pamphlet use examines different formats and timing of delivery on patient knowledge and skill improvement.

Pre-admission vs post-admission pamphlets

One study attempted to determine whether providing specific or non-specific information pamphlets pre-admission was more effective on improving exercise performance, than providing the same non-specific information pamphlets, post-admission.

Patients provided with either the specific or the non-specific instruction pamphlet pre-admission learned the desired exercises significantly quicker than subjects given the same pamphlet post-admission. No differences existed between subjects receiving specific or non-specific pamphlets pre-admission.

Therefore, this study suggests that pre-admission information is more beneficial than post-admission information for learning of exercise behaviours.

Pre-admission general vs pre-admission specific pamphlets

When a specific information pamphlet containing explicit exercise instructions was provided pre-admission, subjects were found to correctly perform more exercise behaviours than did patients provided with the general instruction pamphlet (provided pre-admission). However, there was no significant difference in time required to teach correct exercise behaviours between the two pre-admission groups.

Pre-admission general information package vs pre-admission general information package plus specific pamphlet

The degree of specificity provided in pre-admission information on patient exercise performance was further examined in several other studies. A general pre-admission information package was compared with the same pre-admission package combined with a specifically designed information pamphlet for adult patients undergoing either a hysterectomy or total hip replacement (THR).

Here the results were contradictory or inconclusive. In hysterectomy patients, there was no significant difference between the two treatment groups for either pre- or post-operative exercise performance, or in time taken to teach correct exercise behaviour. In THR patients however, significantly more patients from the special booklet group *stated* that they performed desired exercises than did the control group. Unfortunately, the results from THR patients were based on an after surgery self-assessment and the validity of these conclusions must be questioned.

Other studies have examined the effect of combining information pamphlets with patient instruction at pre- and post-admission time periods on improving patient knowledge of the required exercise skills and the details of their up-coming surgery.

Pre-admission training pamphlet only vs post admission training pamphlet and instruction

One study questioned whether a specific pre-admission training pamphlet could be as effective at improving knowledge and skill as providing the same pamphlet post-admission combined with individual instruction. Patients provided with the pre-admission pamphlet followed instructions for physical exercise program more often than the post-admission group. However, knowledge of symptoms and complications were not significantly different for either group.

Pre-admission pamphlet and instruction vs post-admission instruction

If providing a pre-admission information pamphlet was as effective as giving the pamphlet post-admission combined with instruction on patient knowledge, could combining instruction pre-admission with a pamphlet improve knowledge compared to the same interventions provided post-admission?

Patients preparing to undergo their first cataract extraction with intra-ocular lens implant were provided with either pre-admission pamphlets plus instruction or post admission instruction only (control). The pamphlets and the instruction were designed to improve knowledge of cataracts and surgery, and skill in eye care. Both groups were found to improve in skill from pre to post surgery but only the pre-admission pamphlet group improved in knowledge of their condition and the surgical procedure.

Pre-admission training pamphlet with post-admission instruction vs post-admission training pamphlet and instruction

Another study made a similar comparison but provided the accompanying instruction session to the patient after their arrival in hospital. Adult patients presenting as first time coronary artery bypass graft (CABG) surgical patients were tested for their knowledge of their surgical procedure after providing either a combination of pre-admission training pamphlet and post-admission instruction or a post-admission training pamphlet with post-admission instruction.

Pre-admission teaching pamphlets were found to be useful in improving exercise behaviours after admission. Patients who received the pre-admission pamphlet were found to score significantly higher on the exercise behaviour checklist and to require significantly less time to learn correct exercise behaviours.

Therefore, in the previous two comparisons it is apparent that instruction given pre-operatively is more effective when an information pamphlet is provided pre-admission than when the same pamphlet is given post-admission.

Post-admission information pamphlet vs post-admission information pamphlet combined with instruction

Several other studies have examined the effectiveness of different pamphlet deliveries with instruction at post-admission only.

The question as to whether a pamphlet provided post-admission could be as effective as a combined post-admission pamphlet and instruction was also assessed. Knowledge of patients undergoing THR was examined after giving either post-admission information pamphlets or the same information combined with an explanation of its contents by staff. There were no significant differences in the ability to recall or perform exercises by either group or to recall advice provided by the information sheet. Therefore in this study, a pamphlet provided post-admission appeared to be equally as effective as the same pamphlet combined with instruction.

Post-admission information pamphlet plus pre-operative instruction vs pre-operative instruction only

The effectiveness of combining pre-admission instruction, as provided by the patients physician, with a structured teaching session and specifically designed pamphlet just prior to surgery on knowledge of patient controlled analgesia (PCA) use was examined in surgical patients.

Using pre-operative structured teaching along with a specifically designed pamphlet on PCA management did not improve questionnaire scores on PCA use compared to patients who only received the normal pre-operative instruction by their physician.

Summary of Pamphlet Use

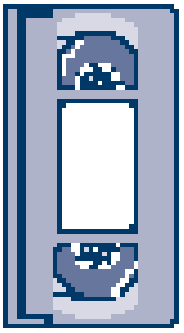
On the basis of these studies, the following findings have been identified. It should be noted however, that some of these conclusions have been based on single studies and the description of the interventions and results was at times inadequate.

Generally, the use of pamphlets appears to be beneficial in terms of knowledge of condition and surgical procedure, exercise or skills performance and time taken to learn exercises or skills. Pamphlets are more effective when given prior to admission and when they are specifically designed for the intended surgical procedure.

Summary of Effectiveness of Videos

There has been only limited evaluation of the role and effectiveness of videos for pre-operative education of patients. Results on its effectiveness are contradictory but it may have a role as part of broader pre-operative education program.

Videos



Studies have examined the use of pre-operative instructional videos to improve patient knowledge of anaesthesia, PCA, or to improve the use of a spirometer. In all studies the video teaching format was compared with a standard care (control) condition.

Pre-admission video instruction plus anaesthetic consult vs anaesthetic consult only

In a study of adult patients presenting to a pre-admission testing area for surgery the effect of including video instruction with an anaesthetic consult on patient knowledge of the surgical procedure was compared with providing the anaesthetic consult only.

The only significant difference found in knowledge between the two groups was the understanding of the correct procedure to follow if the patient felt unwell before surgery. It was concluded that overall either the video made no difference to these patients or that the assessment tool they designed was not sensitive enough to detect a difference.

Pre-operative instructional video vs no video

The use of an instructional video that described PCA use was trialled on patients who required PCA for at least 12 hours post-operatively. This structured pre-operative teaching program that involved an instructional video had a significant effect upon improving patient knowledge of the use of PCA and pain management. Although, both control and experimental groups showed improvement in PCA use, the experimental group still performed significantly better.

An examination of the effects of three different video formats in comparison to each other and a to a control (no video) was performed on male patients undergoing CABG surgery for the first time. Patients in all video groups were found to have repeated breathing exercises with the spirometer per session at a significantly higher level than the no video control. Frequency of spirometer use and amount of post-operative ambulation was similar for all groups.

Learning Packages

One study examined the use of learning packages on compliance with breathing exercises in orthopaedic and general surgical patients undergoing elective total hip-replacement surgery. Patients in the experimental group were significantly more compliant than control patients. Although this result is based on a single study, it suggests that these packages may be beneficial in improving patient compliance to post-operative exercises.

Instruction

Studies have also examined the effectiveness of different times of delivery and formats of structured instruction.

Pre-admission instruction vs general post-admission instruction

The effectiveness of specifically designed pre-admission instruction compared to the general post-admission pre-operative education of a community hospital was studied in patients undergoing elective CABG. Patients who received the pre-admission teaching had significantly higher knowledge scores than did the patients who received only the general post-admission instruction.

Group vs individual post-admission instruction

The effectiveness of individual versus group instruction post-admission on patient ability and learning time was examined in patients admitted for surgery, with non-emergency conditions. Patients were expected to perform a stir-up (breathing and moving) regime, be able to perform pre-and post-operative tests of ventilatory function and be in hospital for at least 2 days post-op.

Group teaching was as effective as individual teaching as measured by patient ventilatory function. However, patients in the group teaching program were found to require a significantly shorter time to perform exercises correctly than patients in the individual teaching program.

Summary of Effectiveness of Instruction

Teaching is another method used to provide pre-operative education. The two studies included in this review suggest that:

1) pre admission teaching is more effective than post-admission teaching in terms of patients knowledge
2) group teaching is as effective as individual teaching
3) group teaching may reduce the time needed to acquire exercise skills

Discussion

Although numerous studies have evaluated the effectiveness of pre-operative information on anxiety, patient outcomes and satisfaction, little high quality research has assessed the effectiveness of this information on patient knowledge and ability to perform specific skills such as exercises. An important finding of the systematic review was the need for further research to fully evaluate the range of options available for providing pre-operative information to patients.

Recommendations

These recommendations are based on NHMRC level II evidence (RCT).

Knowledge

Patient knowledge was a measure of the surgical procedure and the events that surround it. Results of the review suggest that:

1) Pre-admission pamphlets are more effective than providing no information and at least as effective as providing a post-admission pamphlet combined with instruction that explains the contents of the pamphlet.
2) Providing a pre-admission pamphlet only, is as effective as providing the same pamphlet with instruction pre- or post-admission.
3) Videos may have a role as a component of a larger teaching method.
4) The instructional method is more effective if provided pre-admission.

Skills Performance

Assessment of a patient's ability to perform specific skills or exercises was also measured.

1) Generally, providing pre-admission pamphlets was more effective than providing post-admission ones.
2) When pre-admission pamphlets were combined with post-admission instruction this was found to be more effective than pre-admission pamphlets or a combination of post-admission pamphlets and teaching.
3) Post-admission, the provision of either the pamphlet alone or instruction was equally as effective as providing a pamphlet and instruction.
4) Post-admission, group instruction is equally as effective as individual instruction.

Time Taken to Learn Skills

Finally, when exercises or skills were performed incorrectly the time required for each patient to master the skills was recorded.

1) Generally, patients provided with pre-admission pamphlets learned proper exercise technique or skills faster than patients provided with information post-admission.
2) A pre-admission pamphlet combined with post-admission instruction was also found to result in quicker learning times compared with subjects given post-admission pamphlets combined with instruction.
3) Group instruction is effective in reducing time required to attain exercise skills when compared to individual instruction.

[1] Hodgkinson B, Evans, D and O'Neill, S. Knowledge Retention from Pre-operative Patient Information. The Joanna Briggs Institute for Evidence Based Nursing and Midwifery; 2000 Report No. 6

- The Joanna Briggs Institute for Evidence Based Nursing and Midwifery, Margaret Graham Building, Royal Adelaide Hospital, North Terrace, South Australia, 5000.
  http://www.joannabriggs.edu.au
  ph: +61 8 8303 4880, fax:+61 8 8303 4881
- Published by Blackwell Science-Asia

The series Best Practice is disseminated collaboratively by:

The Joanna Briggs Institute for Evidence Based Nursing and Midwifery

Acknowledgments

This publication was produced based on a systematic review of the research literature undertaken by The Joanna Briggs Institute under the guidance of a review panel of experts and was led by Mr Brent Hodgkinson - Research Officer, Mr David Evans, Coordinator Reviews, The Joanna Briggs Institute and Ms Sue O'Neill, Nursing Director, Royal Adelaide Hospital. The Joanna Briggs Institute would like to acknowledge and thank the review panel members whose expertise was invaluable throughout this activity. The review panel members were:

- Ms Lyn Mercer
- Ms Lee Maddern
- Ms Cathy Davy
- Ms Annemarie Roche
- Ms Elizabeth Williamson