


Does Structured Patient Education Reduce the Peri-Operative Anxiety and Depression Levels in Elective Chest Surgery Patients? A Double-Blinded Randomized Trial of 300 Patients

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Tilotma Jamwal, MBBS, DNB¹ , Reena Kumar, MBBS, MHA²,
Mohan Venkatesh Pulle, MBBS, DNB³, Arvind Kumar, MBBS, MS³,
and Kanika Jain, MBBS, DNB¹

Abstract

Psychological distress associated with surgery is an emerging issue. The study was conducted to assess the impact of structured patient education viz-a-viz routine patient education on anxiety and depression levels in patients undergoing elective chest surgery. It is a prospective, double-blind randomized study, conducted from February 2019 to February 2020 at a tertiary care center in India, on patients who underwent elective chest surgeries. A total of 300 patients were randomized using a computer-generated randomization sequence, into 2 equal groups (150 subjects each). Study group included patients who underwent structured patient education (Group A), whereas control group included patients who underwent routine patient education (Group B). The 2 groups were compared for anxiety and depression levels at admission as well as discharge using Hospital Anxiety and Depression Scale. Also, at the time of discharge, the groups were compared for the effectiveness of patient education using a validated Questionnaire B. In comparison to routine education, patients receiving structured education showed significantly lesser scores for anxiety and depression at discharge ($P < .001$). Also, structured patient education proved to be effective in comparison to the routine education in educating the patients in all parameters as determined by the Questionnaire B ($P < .05$). It can be concluded that structured educational intervention is strongly recommended in patients undergoing chest surgery which can help alleviate perioperative anxiety and depression. Such intervention helps patient get an understanding of the surgical procedure and assist them in facing the condition in a better way.

Keywords

structured education, anxiety, depression, chest surgery

Introduction

Conventionally, thoracic surgical procedures were considered a potential to cause significant morbidity and mortality. The fear of such surgery and undue psychological stress predisposes the patient and relatives to a lot of anxiety and depression. Lack of proper communication, fear of postoperative pain and whether they will return to normal life after lung removal along with its financial implications, adds to the problem. It was reported that nearly 60% of patients who opt for elective surgery are known to experience anxiety (1).

Even though, anxiety is a quite natural response, excessive psychological stress/distress reduces the adjustment of patients in the hospitals and is co-related with adverse

outcomes and unexpected results (2). Therefore, addressing patient's psychological needs by perioperative education and counselling is as essential as clinical needs. Patient

¹ Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi, India

² Department of Hospital Administration, Sir Ganga Ram Hospital, New Delhi, India

³ Institute for Chest Surgery, Medanta Hospital, Gurugram, India

Corresponding Author:

Tilotma Jamwal, Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi, 110029, India.
Email: tilotmajamwal@gmail.com



education, if done in a planned, organized, progressive, and logical manner can help alleviate a lot of psychological distress in patients in the clinical settings (3). It is known to be an essential tool to provide patients with information concerning their health condition, treatment, and recovery (4). Preoperative education includes information regarding the procedure, hospitalization, financial counselling, postoperative pain, recovery, and long-term functional outcome (5). In addition, patient educational program should be patient-centered, which means that the information should be patient specific and tailored towards their need (6).

In the recent times, with various pioneering advancements in the patient selection, operative methods and postoperative care, the outcomes of thoracic surgical procedures have remarkably improved. However, there were very little efforts to address the psychological aspect of the patients undergoing chest surgery. This study aims to fill this gap by studying the impact of structured patient education on anxiety and depression levels in patients undergoing elective chest surgery by using Hospital Anxiety and Depression Scale (HADS).

Materials and Methods

This prospective, double-blind randomized study was conducted from February 2019 to February 2020 at a tertiary care center in India. All patients admitted for elective chest surgery with age >18 years were included in the study. Age <18 years, emergency surgery, patients with psychiatric

diseases, unconscious or unwilling to consent were excluded from the study. Ethical clearance was obtained from the Institutional Ethical Committee of the hospital.

A total of 300 patients were included in the study and were randomized into 2 groups of 150 subjects each using a computer-generated randomization sequence. Study group included patients who underwent structured patient education (Group A), whereas control group included patients who underwent routine patient education (Group B). Representation of study methodology is illustrated in Figure 1.

Routine Patient Education

Routinely, patients were educated at various point of care—at OPD (primarily), at the time of admission and at the time of discharge. The mode of providing the education was verbal and informal. Total time of interaction was usually not more than 10-15 min. No checklist was used and uniformity was not maintained. Therefore, possibility of skipping an essential information to the patient was high.

Structured Patient Education

In addition to the routine patient education, formal and structured patient education session was conducted at the time of admission, by a team comprising of a resident Doctor, nurse coordinator and Hospital Administrator. Structured patient education was given to the patients verbally as well as in the written format through a brochure and the patient was

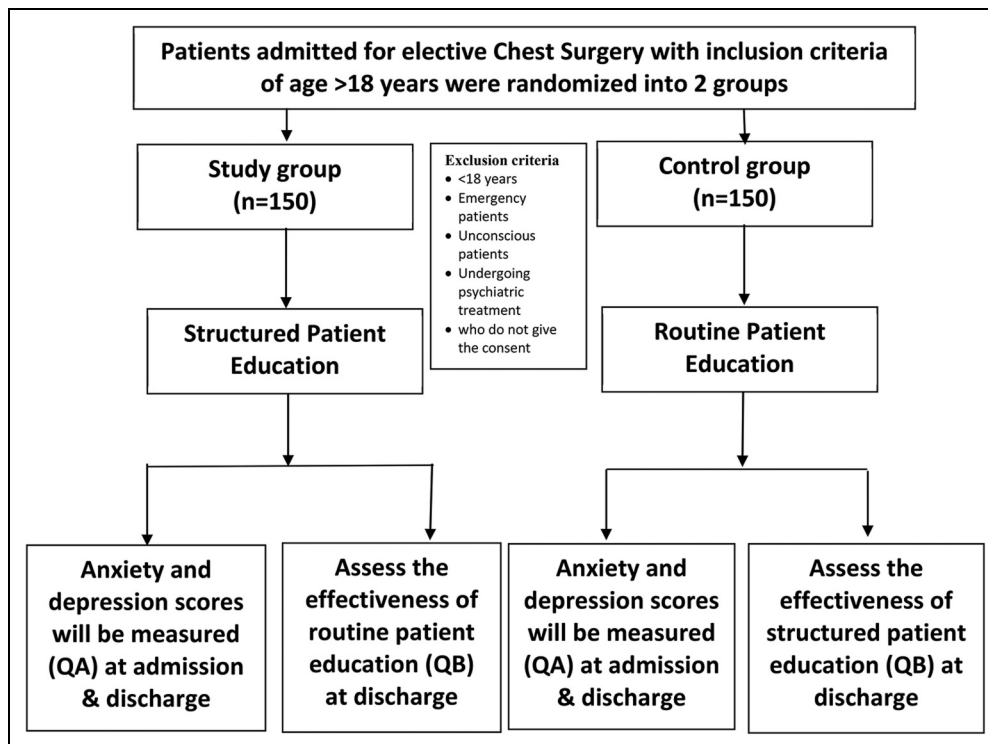


Figure 1. Flow chart of study methodology.

asked to repeat what he understood. At the end of the session the brochure was handed over to the patient and all queries of the patient were resolved by the team. In order to ensure that patients receive uniform information, a checklist was also used.

- Brochure—A brochure was designed after analyzing the data for the routine patient education so as to be specific about the information patient perceives as important. It included information highlighting the need and importance of physiotherapy as well as nutrition/diet plan. The emergency contact numbers were also mentioned along with the website address for the testimonials and updates (Figure 2).
- Check list—With the help of a check list, it was ensured that no information is being skipped so as to maintain uniformity while imparting patient education to all the patients (Figure 3).

Two questionnaires (Figure 4), i.e., Questionnaire-A: to measure anxiety and depression levels; and Questionnaire-B: to measure the effectiveness of the patient education were used.

1. Questionnaire-A (Q-A): HADS was used to measure the levels of anxiety and depression (7) (Figure 4: Q-A) which is an already validated scale developed by Zigmond AS, Snaith RP. It has total 14 questions—7 scoring anxiety and 7 scoring depression. The possible range of score is from 0 to 21. A score of ≤ 7 is normal, score of 8-10 indicates borderline abnormal, while score ≥ 11 is abnormal.
2. Questionnaire-B (Q-B): This was designed with 7 parameters to assess the effectiveness of patient education (Figure 4: Q-B). A standardized Likert scale (0-3 points) was used for scoring. The same was validated group of domain experts before administration.

Statistical Analysis

Categorical variables were presented in number and percentage (%) and continuous variables were presented as mean \pm SD and median. Normality of data was tested by Kolmogorov–Smirnov test. If the normality was rejected then non-parametric test was used. Quantitative variables were compared using Mann–Whitney test (as the data sets were not normally distributed) between the 2 groups. A P value of $<.05$ was considered statistically significant. The data was entered in MS EXCEL spreadsheet and analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0.

Results

Demographic Characteristics

Both the groups were comparable in terms of age, gender ratio, educational status, marital status, and disease-related

characteristics. Only 10.6% patients in the total study group have visited the hospital for the first time and thus majority of the patients had prior knowledge of the disease in both the groups. It was also seen that majority of the patients had a history of self/family member undergoing a major surgery. The baseline socio-demographic profile and disease characteristics have been shown in Table 1.

Comparison of Anxiety Scores

At admission, majority of patients who received structured education (Group A) (68%) and routine education (Group B) (76.6%) had borderline anxiety scores, whereas 10% patients of Group A and 22% patients of Group B had abnormal anxiety scores. Overall, there was no difference in the preoperative anxiety scores between the 2 groups ($P = .19$).

At discharge, 84.6% patients who received structured education (Group A) had achieved normal anxiety scores, whereas in Group B it was seen in only 22% of patients. Fifty eight percent patients in Group B continued to have borderline anxiety scores (Table 2).

Comparison of Depression Scores

At admission, majority of patients in Group A (46.6%) and Group B (50.6%) had borderline depression scores, whereas 27.4% patients who received structured education and 36.6% patients receiving routine education had abnormal depression scores. Overall, there was no difference in the preoperative depression scores between the 2 groups ($P = .21$).

At discharge, 71.3% patients in Group A had achieved normal depression scores, whereas in Group B it was seen in only 42% of patients. In addition, 44.6% and 13.3% patients in Group B continued to have borderline abnormal and abnormal depression scores respectively (Table 3).

Comparison of Patient Education Effectiveness Score

Structured patient education (Group A) proved to be effective as compared to routine education (Group B) educating the patient in all parameters which was reflected in their mean scores as determined by the Questionnaire B at the time of discharge. The individual parameters and their results are mentioned in Table 4.

Discussion

Undergoing surgery is physically and psychologically stressful for patients and their families. A structured patient education rather than the routine education may help better, to reduce the psychological stress in such patients.

In our study, the patients undergoing elective chest surgery were predominantly males in their forties. Different studies conducted on patient education to reduce psychological stress during surgery reported varied ages, depending upon the type of surgery. For example, studies conducted





<ul style="list-style-type: none"> ❖ All <u>extension numbers</u> are displayed on the wall near the landline in your room ❖ In case of any assistance please feel free to contact our <u>nurse coordinator (2911)</u> or the <u>on-duty doctor (2070)</u> from the landline ❖ Please fill the feedback form at the time of discharge. Your feedback is valuable to us <p>For testimonial and updates, please visit our website: www.drarvindkumar.com</p>  <p>We wish you a speedy recovery!</p>	 <p>SIR GANGA RAM HOSPITAL Our Thoracic Surgery Department, at your service</p>	  <p>THORACIC SURGERY DEPARTMENT</p> <p>PATIENT EDUCATION</p> <p>❖ Our Commitment:</p> <ul style="list-style-type: none"> • Respect and Dignity • Medical Records Confidentiality • Freedom to Practice Your Belief • Answering Your Queries at the Earliest
<p><u>Treatment Advice by the Doctor</u></p> <ul style="list-style-type: none"> ❖ Disease <ul style="list-style-type: none"> • Diagnosis • Complications/Risks • Outcome ❖ Surgery <ul style="list-style-type: none"> • Alternatives available • Surgery options – Open/VATS/Robotic • Details of the procedure • Expected outcome ❖ Informed consent – informed decision making by the patient/attendant before <ul style="list-style-type: none"> • Administration of anesthesia • Surgery • Blood/blood products transfusion • Invasive/high risk treatment <p><u>Physiotherapy by the Respiratory Therapist</u></p> <ul style="list-style-type: none"> ❖ Customized physiotherapy plan for every patient (pre-surgery and post-surgery) ❖ Respiratory Therapist will assist you in performing: <ul style="list-style-type: none"> • Brisk walking • Sit ups – 6 to 7 times a day (200-250) • Stair climbing – 8 times a day (8 floors) • Breath holding – 40 seconds for every 15 minutes • Treadmill – 4 times a day for 30 mins • Shoulder exercises – 4 times a day (repetitions of 20) • Abdominal exercises– 4 times a day (repetitions of 20) • Cough practice 	<ul style="list-style-type: none"> ❖ To avoid common post-surgery complication, such as pneumonia: <ul style="list-style-type: none"> • Practice breathlessness by doing exercises for lung expansion • Exercise and sweat pre-surgery <p><i>For further assistance please contact the Respiratory Therapist (8800855883)</i></p> <p><u>Diet/Nutrition by the Dietician</u></p> <ul style="list-style-type: none"> ❖ Customized diet plan for every patient (pre-surgery and post-surgery) based on: <ul style="list-style-type: none"> • The current health status • Associated comorbidities • Specific choice of food ❖ High protein and high calorie diet is provided <ul style="list-style-type: none"> • Non-Diabetic patient, 3000 calories plus 105 gm protein • Diabetic patient, 2000-2500 calories plus 85 gm protein • RT feed supplement (post-surgery) <p><i>For further assistance please contact the Dietician (1029)</i></p> <p><u>Post-Surgery Patient Education by the Nurse Coordinator</u></p> <ul style="list-style-type: none"> ❖ Care of chest tube drains ❖ Use of Medela machine 	<p><u>Financial Counselling by the Doctor</u></p> <ul style="list-style-type: none"> ❖ Estimate of hospitalization and treatment: <ul style="list-style-type: none"> • Length of stay • Procedural charges • Room rent charges, as per the desired category- cat 1A,1B,1C,1D, cat 2, cat 3 ❖ Let us know if you have Medical Insurance within 12 hours of the admission: <ul style="list-style-type: none"> • Robotic surgeries are not covered under Medical Insurance • For claim we will connect you with our TPA <p><u>Room and Support Service Related Assistance</u></p> <ul style="list-style-type: none"> ❖ In case of support needed, inform the ward sister or the Patient Care Coordinators; they will connect you with the concerned service department <p><u>After Discharge</u></p> <ul style="list-style-type: none"> ❖ Follow: <ul style="list-style-type: none"> • Discharge summary advice by the Doctor • Dietary advice by the Dietician • Physiotherapy advice by the Respiratory Therapist ❖ Review in Thoracic Surgery OPD F-85 on the specified follow-up dates ❖ For appointments please call 011-42252328 between 9:30 AM – 5:00 PM (Monday to Saturday)

Figure 2. Patient brochure describing essential components of structured patient education.

S.No.	Check list for Healthcare Personnel imparting Structured Patient Education	✓ or ×
1.	Wear a smile and identify yourself	<input type="checkbox"/>
2.	Communicate softly	<input type="checkbox"/>
3.	Speak in a comfortable language/arrange a translator	<input type="checkbox"/>
4.	Explain <ul style="list-style-type: none"> • the disease • its stage • associated complications 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5.	Explain <ul style="list-style-type: none"> • Why surgery is the best option • Various alternatives to the offered treatment and its pros n cons • Explain about the surgical procedure in detail • Total time the surgery would take • Outcome of the surgery • Complications if surgery is not undertaken 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6.	Explain <ul style="list-style-type: none"> • the Importance of physiotherapy • motivate the person for physiotherapy before and after the surgery 	<input type="checkbox"/> <input type="checkbox"/>
7.	Diet counselling	<input type="checkbox"/>
8.	Diet plan <ul style="list-style-type: none"> • Before the surgery • After the surgery 	<input type="checkbox"/> <input type="checkbox"/>
9.	Educate about proper care of chest tube drains	<input type="checkbox"/>
10.	Give training to use the Medela machine	<input type="checkbox"/>
11.	Financial counselling with respect to <ul style="list-style-type: none"> • procedural charges • hospital stay (length of stay) 	<input type="checkbox"/> <input type="checkbox"/>
12.	Inform about the different categories of the room available and their charges	<input type="checkbox"/>
13.	Explain about TPA and medical insurance	<input type="checkbox"/>
14.	Follow up advice at the time of discharge <ul style="list-style-type: none"> • Explain about the intake of medicines • Advise to follow a physiotherapy plan • Advise to follow a diet plan • Inform the follow up dates along with the timings • Inform the important contact numbers in case of emergency 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Figure 3. Checklist.

on patients undergoing heart surgeries were having the mean age of 60-63 years with majority being males (69%-72%) (4,8). Most of the patients in our study were graduates and we made sure to select only those patients who could comprehend the information. Therefore, educating patients was not a limitation. A structured information was an appropriate way of letting the patients know about the various aspects of the disease to calm them down in this difficult phase of their life. Our data showed that both the groups were similar in terms of socio-demographic characteristics. Majority of the patients in both the groups were mainly referred, had

beforehand consultation from another doctor for the same ailment along with prior knowledge of the disease. This was mainly because ours is a tertiary care center and caters to all the referral patients for chest surgery nationally as well as internationally.

Previous similar studies showed a significant difference between control group (without education) and experimental group (with educational interventions) in relation to preoperative anxiety and depression levels ($P < .05$) (9,10). Study conducted by Kalliyath et al demonstrated that a planned pre-operative education including a handout with details can have

Anxiety Questionnaire		Depression Questionnaire	
1	I feel tense or 'wound up':	1	I still enjoy the things I used to enjoy:
3	Most of the time	0	Definitely as much
2	A lot of the time	1	Not quite so much
1	from time to time, occasionally	2	Only a little
0	Not at all	3	Hardly at all
2	I get a sort of frightened feelings as if something awful is about to happen:	2	I can laugh and see the funny side of things:
3	Very definitely and quite badly	0	Not as much as I always could
2	Yes, but not too badly	1	Not quite so much now
1	A little, but it doesn't worry me	2	Definitely not so much now
0	Not at all	3	Not at all
3	Worrying thoughts go through my mind:	3	I feel cheerful:
3	A great deal of the time	0	Not at all
2	A lot of the time	1	Not often
1	From time to time, but not too often	2	sometimes
0	Only occasionally	3	Most of the times
4	I can sit at ease and feel relaxed:	4	I feel as if I am slowed down:
0	Definitely	3	Nearly all the time
1	Usually	2	Very often
2	Not often	1	sometimes
3	Not at all	0	Not at all
5	I get a sort of frightened feeling like 'butterflies' in the stomach:	5	I have lost interest in my appearance:
0	Not at all	3	definitely
1	Occasionally	2	I don't take as much care as I should
2	Quite often	1	I may not take quite as much care
3	Very often	0	I take just as much care as ever
6	I feel restless as I have to be on the move:	6	I look forward with enjoyment to things:
3	Very much indeed	0	As much as I ever did
2	Quite a lot	1	Rather less than I used to
1	Not very much	2	Definitely less than I used to
0	Not at all	3	Hardly at all
7	I get sudden feelings of panic:	7	I can enjoy a good book or radio or TV program:
3	Very often indeed	0	often
2	Quite often	1	Sometimes
1	Not very often	2	Not often
0	Not at all	3	Very seldom

Figure 4. Questionnaire A—Hospital Anxiety and Depression Scale (HADS) & Questionnaire B—to assess the effectiveness of patient education.

a significant impact on reducing preoperative anxiety (11). In contrast, another study demonstrated that there was no benefit to be gained by preoperative education in cardiac

surgery (which was one day of education by members of the multidisciplinary team) (4). These contrasting results could be explained by the fact that heart surgeries are by

A. Communication	B. Disease Information	C. Information related to Procedure
1. Were you able to understand the information given to you at various point of care? 0. Not understood 1. Somewhat understood 2. Understood 3. completely understood	5. Were you explained about your disease? 0. Not at all 1. Slightly explained 2. Explained 3. Thoroughly explained	9. Were you explained, why this surgery is the best treatment option for you? 0. Not at all 1. Slightly explained 2. Explained 3. Thoroughly explained
2. Were all your queries answered? 0. Not answered at all 1. Only a few were answered 2. Most of them were answered 3. All were answered	6. Were you informed about the stage of the disease and its outcome? 0. Not at all 1. Slightly informed 2. Informed 3. Completely informed	10. Were you explained about the procedure in detail? 0. Not at all 1. Slightly explained 2. Explained 3. Thoroughly explained
3. The information provided to you by Health Care Professionals was useful? 0. Not useful 1. Somewhat useful 2. Useful 3. Very useful	7. Were you informed about the possible complications associated with the disease, if treatment not undertaken? 0. Not at all 1. Slightly informed 2. Informed 3. Thoroughly informed	11. Were you informed about the total time the surgery would take? 0. Not at all 1. Slightly explained 2. Explained 3. Thoroughly explained
4. Did you feel respected by the health care professionals? 0. Not at all 1. Some of the time 2. Most of the time 3. All of the time	8. Were you informed about alternatives to the offered treatment and its pros & cons? 0. Not at all 1. Slightly informed 2. Informed 3. Thoroughly informed	12. Were you explained about the outcome of the surgery? 0. Not at all 1. Slightly explained 2. Explained 3. Thoroughly explained
D. Information related to Physiotherapy 13. Were you educated about the importance of physiotherapy? 0. Not at all 1. Slightly educated 2. Educated 3. Thoroughly educated	E. Information related to nutrition/ diet plan and care of chest tube drains 17. Were you educated about the importance of nutrition? 0. Not at all 1. Slightly educated 2. Educated 3. Thoroughly educated	F. Financial counseling and Hospital stay 21. Were you explained about the length of stay in the hospital for your surgery? 0. Not at all 1. Slightly informed 2. Informed 3. Thoroughly informed
14. Were you motivated for physiotherapy, before and after the surgery? 0. Not at all motivated 1. Some what motivated 2. Motivated 3. Fully motivated	18. Were you educated along with the Diet Plan before and after the surgery? 0. Not at all 1. Slightly educated 2. Educated 3. Thoroughly educated	22. Was financial counseling done with respect to procedural charges including the hospital stay? 0. Not at all 1. Slightly informed 2. Informed 3. Thoroughly informed
15. Was physiotherapy supervised by Health Care Provider all the time i.e. preoperatively and postoperatively? 0. None of the time 1. Some of the time 2. Most of the time 3. All of the time	19. Were you educated to take proper care of chest tube drains? 0. Not at all 1. Slightly educated 2. Educated 3. Thoroughly educated	23. Were you explained about TPA and medical insurance? 0. Not at all 1. Slightly explained 2. Explained 3. Thoroughly explained
16. Were physiotherapy sessions of any help in your well-being? 0. Not at all 1. Slightly helpful 2. helpful 3. very helpful	20. Were you given the training on the use of ijodj machine if applicable? 0. Not at all 1. Some what 2. Not properly 3. Properly trained	24. Were you informed about the different categories of room available and their charges? 0. Not at all 1. Slightly informed 2. Informed 3. Thoroughly informed
G Follow up advice		
25. Were you explained about the intake of medicines appropriately? 0. Not at all 1. Slightly explained 2. Explained 3. Thoroughly explained	27. Were you advised to follow a proper diet plan? 0. Not at all 1. Somewhat advised 2. Advised 3. Thoroughly advised	
26. Were you adequately advised to continue physiotherapy sessions? 0. Not at all 1. Somewhat advised 2. Advised 3. Thoroughly advised	28. Were you informed about the follow up dates given along with the timings? 0. Not at all 1. Slightly informed 2. Informed 3. Thoroughly informed	

Figure 4. (Continued).

far the most complicated and carry the burden of causing the highest anxiety in the patients; despite providing vast amount of information to the patients and the relatives. Our study was unique because of 2 reasons. First, it is first study of its kind from India which has prospectively evaluated the effect of structured patient education in thoracic surgical patients and second, the evaluation was compared at 2 levels, that is, preoperatively as well as postoperatively. Our study found that with structured patient education, the anxiety and depression levels were significantly decreased at discharge (postoperative) ($P < .05$) as compared to the routine

education. On further questioning in control group, the major reason for persistence of the anxiety at the time of discharge was improper follow-up advice and lack of information regarding proper dietary and physiotherapy plan. However, lack of knowledge with respect to the ability as well as the time required to return to normal activity were the major factors for persistence of depression.

The preoperative anxiety is multifactorial and can be influenced by the educational status of the patient, level of understanding of ground reality of the disease, economic status, level of trust on the surgical team and the hospital services.

Table 1. Socio-Demographic Profile and Disease Characteristics.

Parameters	Group A (n = 150) (Structured education)	Group B (n = 150) (Routine education)	P-value
Age in years (Mean ± SD)	47.2 ± 15.8	44.2 ± 15.3	.092
Gender (n, %)			
Males	105 (70%)	110 (73.3%)	.522
Females	45 (30%)	40 (26.6%)	
Education (n, %)			
8-10 class	4 (2.6%)	3 (2%)	.123
11-12 class	16 (10.6%)	24 (16%)	
Graduates	71 (47.3%)	82 (54.6%)	
Post-graduates	59 (39.3 27.3%)	41 (27.3%)	
Married (n, %)	129 (86%)	129 (77.3%)	.052
Joint family (n, %)	100 (66.6%)	85 (56.6%)	.096
Disease-related characteristics			
First visit to doctor—Yes	4 (2.6%)	12 (8%)	.069
Consultation from another doctor for the same ailment before—Yes	135 (90%)	128 (85.3%)	.292
Prior knowledge of the disease—Yes	115 (76.7%)	107 (71.3%)	.357
History of self/family member undergoing major surgery—yes	108 (72%)	99 (66%)	.318

Table 2. Comparison of Anxiety Scores Between Groups.

Anxiety score	Group		P-value
	Group A (n = 150) (Structured education)	Group B (n = 150) (Routine education)	
At admission (n, %)			
Normal (≤7)	33 (22%)	2 (1.3%)	.19
Borderline abnormal (8-10)	102 (68%)	115 (76.6%)	
Abnormal (≥ 11)	15 (10%)	33 (22%)	
Mean ± SD	9.0 ± 1.9	8.7 ± 1.5	
At discharge (n, %)			
Normal (≤7)	127 (84.6%)	33 (22%)	<.001
Borderline abnormal (8-10)	23 (15.3%)	87 (58%)	
Abnormal (≥ 11)	0 (0%)	30 (20%)	
Mean ± SD	2.7 ± 2.6	5.4 ± 2.4	

Table 3. Comparison of Depression Scores Between Groups.

Depression score	Group		P-value
	Group A (n = 150) (Structured education)	Group B (n = 150) (Routine education)	
At admission (n, %)			
Normal (≤7)	39 (26%)	19 (12.6%)	
Borderline abnormal (8-10)	70 (46.6%)	76 (50.6%)	
Abnormal (≥ 11)	41 (27.4%)	55 (36.6%)	
Mean ± SD	8.8 ± 1.7	9.1 ± 2.4	.21
At discharge (n, %)			
Normal (≤7)	107 (71.3%)	63 (42%)	<.001
Borderline abnormal (8-10)	43 (28.6%)	67 (44.6%)	
Abnormal (≥ 11)	0 (0%)	20 (13.3%)	
Mean ± SD	2.1 ± 1.3	4.9 ± 1.9	

Table 4. Patient Education Effectiveness Score.

Parameters	Group A (Mean ± SD) (Structured)	Group B (Mean ± SD) (Routine)	P-value
Communication	11.3 ± 1.3	10.9 ± 1.9	.03
Disease information	10.8 ± 0	8.1 ± 1.2	<.0001
Information related to procedure	11.8 ± 0.3	10.6 ± 1.3	<.001
Information related to physiotherapy	10.7 ± 1.2	10.3 ± 1.5	.01
Information related to nutrition/diet plan	10.5 ± 1.1	10.2 ± 1.3	.03
Financial counselling and hospital stay	10.9 ± 0.9	7.1 ± 1.5	<.0001
Follow-up advise	11.3 ± 0.1	9.5 ± 1.2	<.0001

Since we included only elective thoracic surgery cases, we were able to alleviate anxiety and depression by providing structured information to the patient. As mentioned earlier, apart from structured information, this may also be affected by various other factors. A similar study by Ortiz et al (12) concluded that patient education handouts improved patient satisfaction regarding their knowledge of the perioperative process but did not reduce anxiety related to surgery.

This study also, revealed significant rise in the effectiveness of the patient undergoing structured education related to all the parameters as per Q-B. Our structured patient education helped the patients to understand the information in a better manner as all their queries were answered on one-to-one basis by the healthcare professionals. It allowed the patients to know in detail about the disease as well as surgery and its outcome. The patients were thoroughly educated about the need and importance of physiotherapy and were also motivated to do the exercises in presence of the physiotherapist. Also, patients were educated about the importance of nutrition by the dietician and proper customized diet plan was handed over to each patient. The follow-up treatment and care of patients were better managed. Through the brochure as well as the check list, the uniformity was maintained while educating the patients, without missing any important information. Patients were thoroughly informed about the health insurance details, length of stay, and the finances as per the room categories available. All the important contact numbers were mentioned on the brochure along with the website details.

This is the largest randomized study from India which has evaluated the role of structured patient education in thoracic surgical patients. However, this study has a limitation, that is, only subjective outcomes were assessed and the objective outcomes such as related to pain, type of disease, chest drain duration, complications, and so on were not assessed. Encouraged by the results of this study, we are planning our next study taking all these parameters into consideration. So, we would recommend that patient education must be a continuous effort at various intervals aimed at both subjective as well as objective outcomes. A single day of education without an associated program of support may be inadequate.

It is imperative to provide written material as well as visual aids for patients to consult after the education sessions. Information needs to be in a language and format which is easy for the patients and relatives to understand. More studies need to be conducted and the results incorporated in overall patient management plans to have a better psychological outcome after the chest surgeries.

Conclusion

It can be concluded that perioperative structured educational intervention can help alleviate anxiety and depression in patients undergoing elective chest surgery. Such intervention helps patient get an understanding of the surgical procedure and assists them in facing the condition in a better way. A good communication between the healthcare professionals and patients during admission and at discharge, to cover all required information related to their disease, surgery and its outcome, physiotherapy, diet/nutrition, financial counselling, medical insurance as well as follow-up advice, may play a positive role in battling the psychological distress of the patients. Our study strongly recommends the replacement of ongoing practice of “informal routine” education with the “structured” one for alleviating the patients’ anxiety and depression in a better way.

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ORCID iD

Tilotma Jamwal  <https://orcid.org/0000-0002-9999-4978>

References

1. Boker A, Brownell L, Donen N. The Amsterdam preoperative anxiety and information scale provides a simple and reliable measure of preoperative anxiety. *Can J Anaesth.* 2002;49(8): 792-98.
2. Cosco TD, Doyle F, Ward M, McGee H. Latent structure of the Hospital Anxiety and Depression Scale: a 10-year systematic review. *J Psychosom Res.* 2012;72(3):180-84.
3. Alibhai SM, Han RK, Naglie G. Medication education of acutely hospitalized older patients. *J Gen Intern Med.* 1999;14(10):610-16.
4. Shuldham CM, Fleming S, Goodman H. The impact of preoperative education on recovery following coronary artery bypass surgery: a randomized controlled clinical trial. *Eur Heart J.* 2002;23(8):666-74.
5. Lepczyk M, Raleigh EH, Rowley C. Timing of preoperative patient teaching. *J Adv Nurs.* 1990;15(3):300-06.
6. Akinsulore A, Owojuyigbe AM, Faponle AF, Fatoye FO. Assessment of preoperative and postoperative anxiety among elective major surgery patients in a tertiary hospital in Nigeria. *Middle East J Anaesthesiol.* 2015;23(2):235-40.

7. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand.* 1983;67(6):361-70.
8. Ertürk EB, Ünlü H. Effects of pre-operative individualized education on anxiety and pain severity in patients following open-heart surgery. *IJHR.* 2018;12(4):26-34.
9. Chivukula U, Nandinee V. Coping, hospital anxiety and depression and pain experience in elective surgery patients: role of psycho-educational interventions. *IJR.* 2018;7(5):45-7.
10. Guo P, East L, Arthur A. A preoperative education intervention to reduce anxiety and improve recovery among Chinese cardiac patients: a randomized controlled trial. *Int J Nurs Stud.* 2012;49(2):129-37.
11. Kalliyath AK, Korula SV, Mathew A, Abraham SP, Isac M. Effect of preoperative education about spinal anesthesia on anxiety and postoperative pain in parturients undergoing elective cesarean section: a randomized controlled trial. *J Obstet Anaesth Crit Care.* 2019;9(1):14-7.
12. Ortiz J, Wang S, Elayda MA, Tolpin DA. Preoperative patient education: can we improve satisfaction and reduce anxiety? *Rev Bras Anesthesiol.* 2015;65(1):7-13.