ORIGINAL RESEARCH

Educational intervention in patients undergoing orthognathic surgery: Pilot study

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Received: January 9, 2015 **Accepted:** March 18, 2015 **Online Published:** March 23, 2015
DOI: 10.5430/jnep.v5n5p126 **URL:** http://dx.doi.org/10.5430/jnep.v5n5p126

ABSTRACT

Objective: This study was to assess the feasibility of educational intervention nusing printed materials and the appropriateness of the instruments chosen to assess the efficacy of the intervention in patients undergoing orthognathic surgery.
Methods: Nonrandomized pilot study was conducted with eight patients. In the preoperative period, an educational intervention using printed material and the application of instruments for data collection was carried out; in the postoperative period, only data collection was carried out. Friedman, Wilcoxon, McNemar and Rasch's statistical tests were applied in order to assess the variables and the instrument.
Results: Significant findings with respect to trait anxiety (p = .016), lower difficulty of patients to perform oral hygiene (p = .008), mild pain (p = .025), and moderate pain (p = .046). For the knowledge test, Rasch analysis showed that the model did not fit, since easy questions were stacked in the lower limit of the map, which showed the need to reformulate some questions.
Conclusions: The intervention was consistent, but it can only be confirmed as effective through a research with a control group. It was observed that the use of brochures could improve the management of the signs and symptoms experienced by the patients in the postoperative period.

Key Words: Patient-centered care, Patient education as topic, Orthognathic surgery, Booklet

1. INTRODUCTION

Nurses play an important role in health education. Educating patients includes providing information and support, correcting misconceptions and helping them to understand the roles and responsibilities of self-care.[1]

In surgical patients, education can help them and their families to: recognize and minimize fear and anxiety; cope with stress and avoid complications;[2] increase self-efficacy improving self-esteem;[3] and understand the health conditions, the surgery and recovery, preventing postoperative complications and reducing hospitalization costs by anticipating hospital discharge.[4]

Postoperative education has five dimensions: situational information; sensation and discomfort; patient's role; psychosocial support; and skills training.[5] The goal of postoperative education aims to ensure that the individuals are aware of postoperative home care after hospital discharge, in order to reduce potential surgical complications and improve quality of life.[6] This healthcare includes medication management, activity, nutrition, signs and symptoms of complications, wound care, pain, and monitoring during this period.[7]

Studies and educators stress that the best way to teach adults is the use of supplementary educational materials to reinforce the verbal information, as people retain 20% of what they hear, 30% of what they see, 50% of what they hear and see, 70% of what they hear, see and say and 90% of what they

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hear, see, say and do.[8]

The use of printed educational material can be a complement to verbal guidance helping patients to achieve empowerment. Nurses realize that postoperative complications could be minimized or avoided with the development of an educational process focused on the patients during the perioperative period.[9] The patients themselves have shown preference for the use of this tool and they show satisfaction with the method. On the other hand, many patients have little reading comprehension, which makes the application of the educational material difficult, since it has not been designed for patients with low levels of education,[10] as occurring in Brazil.

Despite the existence of other resources for patient education, the results achieved are similar to the printed material. A literature review on the effects of educational programs in post-operative pain, got on their findings, teaching strategies that included classes, leaflets, videos and website. These different programs reached the same result, improved pain postoperatively.[8]

The use of educational website[11] or leaflet[12] is a strategy that can complement oral information. For participants of educational programs can store the content presented, they need not only hear the information, but also discuss it, watch demonstrations of techniques or audiovisual, and, above all, have the opportunity to do something with the new information acquired.[13]

In Canada, an intervention study with application of a booklet as preoperative education strategy for patients undergoing hip surgery lowered anxiety levels in the pre-and postoperative periods, and guidelines on how to do the exercises in the postoperative period shortened recovering time. In this study with a control group, patients of the intervention group received a booklet four to six weeks before surgery, and the trait anxiety inventory (STAI) was applied at admission and at discharge in both groups. It was concluded that having knowledge about all the surgery process helped patients to better cope with hospitalization and the surgical procedure.[14]

A systematic review from 1986 to 2007 on postoperative education found 58 studies that met the criteria for inclusion (adult patients undergoing surgery, with intervention focused on self-care and results that measured experience, self-care results and learning). From these, 43 studies showed the use of the usual education technique, through which the nurses provide all the necessary information, and 13 used the individualized guidance technique, in which the patients inform what they want to know and are guided according to their needs. Two studies used the combined form, mixing the usual and the individualized techniques. With respect to the studies assessed, 27 used the educational material for support and showed that postoperative education was beneficial for self-care and reducing postoperative symptoms.[15]

It is important that the method and the educational program are tailored to the needs of the patient, as well as increases the chance of changing beliefs and erroneous behaviors, add new concepts and ideas.[8]

Regarding the benefits of using educational materials to complement verbal guidance for surgical patients, this study aimed to assess the feasibility of educational intervention using printed material and the appropriateness of the instruments chosen to evaluate the efficacy of the intervention in a group of patients undergoing orthognathic surgery. The hypothesis of the study is that educational interventions can: (a) reduce anxiety, (b) increase patients' knowledge about the surgical process, and (c) improve the management of signs and symptoms. The instruments chosen to measure the effects of intervention are related to those three aspects.

The goal of educational intervention is to evaluate the effectiveness of using an educational material by evaluation of acquired knowledge, anxiety levels and management of the signs and symptoms of post-operative.

2. METHODS

2.1 Study design

This is a prospective, nonrandomized pilot study.

2.2 Setting and sample

Participants in this study were patients with facial deformity during the surgical treatment in a private practice of oral and maxillofacial surgery and traumatology in the city of Sao Paulo, Brazil from February to July 2013. Surgical interventions are performed in small, medium or large hospitals of the public or private sectors located in the city São Paulo.

Inclusion criteria were patients undergoing orthognathic surgery (surgical technique: bilateral sagittal split osteotomy of the maxillary branch, vertical osteotomy of the maxillary branch, Le Fort I osteotomy, osteotomy combined with application or not of mentoplasty and maxillary disjunction). Exclusion criteria were patients undergoing reoperation after orthognathic surgery or those with cleft lip and palate.

2.3 Ethical considerations

The project was approved by the Research Ethics Committee of the Nursing School, University of São Paulo, under No. 193.454/13 and registered at the National Institutes of Health (NHI) - Clinical Trial (Identifier NCT01803204).

2.4 Measurement

The setting before the intervention consists of general verbal guidance on the surgical procedure offered by maxillofacial surgeon during the consultation before surgery. This intervention proposes the verbal guidance and educational material by a nurse specialist in perioperative care; this material was specific to this patient.

Different scales were used for this study. Knowledge pre-test, consisting of ten multiple-choice questions to assess patients' prior knowledge about the surgical process, the questions refer the necessary care in the postoperative period, this instrument was developed by the researcher and validated by two perioperative nursing professionals. STAI composed of 20 items in two ways (trait and state) anxiety, developed by Spielberger in 1970, and assesses two dimensions of anxiety, transient state and the relatively stable state of the patient's personality. Patients should respond scales assessing themselves, on two occasions, how you feel right now and how you feel in general, each statement has a response that takes points ranging from one to four. Assessment of biosocio demographic data with personal history, age, weight and height, search for and expectation toward surgery. Clinical assessment of the oral cavity for observation the edema, mobility and mouth opening, and assessment of pain and nutrition, this instrument developed by the researcher, is the physical examination of the oral cavity, applied during the consultation in the presence of the surgeon, and allows evaluating the patient and characteristic of the oral cavity.

2.5 Data collection

Two nurses experts in perioperative care collected data from the pre-and post-test to verify patients' knowledge about the surgical process, the assessment of anxiety levels with the State-Trait Anxiety Inventory (STAI), and clinical assessment of self-care in managing postoperative signs and symptoms.

The researcher 1 was responsible for the application of educational intervention using printed material and the application of instruments for collecting preoperative data. Researcher 2 was responsible for collecting postoperative data.

At the preoperative medical consultation, the following instruments were applied: knowledge pre-test, STAI and assessment of biosociodemographic data.

After applying the data collection instruments, the educational intervention was performed. It consisted of individualized verbal guidance with respect to postoperative care using printed educational material with guidelines and illustrations related to the perioperative care of orthognathic surgery. The educational material entitled "Orthognathic Surgery for Patients", previously designed for this intervention, was based on the identification of orthognathic surgery patients' needs for information through a focal group,[15] searches in the virtual environment (blogs),[16] and knowledge of the guidelines currently given by surgeons. This material was validated by the professionals and the patients regarding the clarity and relevance of the information.[17, 18]

The educational material was delivered to the patients and the researcher 1 guided them using this material as a guideline. The information emphasized in the guidelines was related to postoperative care (oral hygiene, diet, facial exercises, lip hydration, sun exposure, limited opening of the oral cavity, pain management, rest, bathing, and bandages). This guiding process was carried out in about 15 to 20 minutes and the doubts expressed by the patients were clarified. The comprehension of the information was confirmed through patients' compliance toward the guidance and it was repeated as often as necessary in case the patients asked questions about the matter. Patients were encouraged to proceed with the reading at home and they did not need to return the material at the end of the survey.

After surgery, in the first postoperative medical consultation, the researcher 2 applied the knowledge post-test, the STAI and a tool for clinical assessment of the oral cavity. In the second and third follow-up visits, only the instrument for clinical assessment was applied. In the last visit (about 40 to 45 days after surgery), the STAI was applied in addition to the performance of a clinical assessment.

2.6 Limitations of the intervention

Among the limitations of the intervention, are the lack of patient adherence to educational intervention, which would lead to low response rates intervention and the possible use of other technologies during the process, which can result in incorrect information and infer the result post operative.

2.7 Data analysis

Descriptive data were presented in absolute and relative frequency and, when possible, in central tendency and variability measures. The analysis of STAI data was carried out using the Friedman's test; the comparison of data from the clinical assessment of the first consultation after surgery and the last one analyzed was performed using McNemar's test; and body weight was analyzed using the Wilcoxon's test, at 5% significance level.

The knowledge test was analyzed using the Rasch model, which uses the degree of difficulty of the item and the ability of the individuals for calibration, aligned on a continuous line and at equal intervals. The assumptions of the Rasch model are unidimensionality or measuring only one attribute and

the local independence, which means that the items of a test cannot provide clues that influence respondents to answer other items of the instrument.[19]

The Winsteps 3.8 software[20] was used for the Rasch model. The basic unit of this analysis is the logit. The higher the value of the logit of a given item, the higher the relative difficulty of an item compared to other items in the scale. Likewise, the greater the magnitude of the logit of the individuals, the greater the skill shown by them, compared with the other members of the sample group. The zero value in the arbitrary scale of logits represents the center; easiest items present negative values and the most difficult items present positive values. The fit statistics show how the data deviate from the model, and this information is given by mean square (MNSQ) or the t value of the in fit and outfit, considering MNSQ = 1.0 ± 0.3 and $t = \pm 2.0$ as appropriate values to indicate the adjustments of the items to the model. The calibration of abilities and difficulties can be represented on a map that allows identifying whether the items are evenly distributed or concentrated at the ends of the line, as well as whether the individuals are distributed according to their abilities. Rasch analysis provides reliability and for the persons also the reliability by Cronbach's alpha. In this case, the reliability by Cronbach's alpha is always greater than that given by Winstep.

3. RESULTS

3.1 Descriptive findings

Patients were aged 18 to 39 years (average 29.3 ± 7.0), the level of education ranged from 6 to10 years of study (average 7.7 ± 2.8), there was predominance of female patients (62.5%), 50% reported esthetic motivation to undergo the surgery, followed by 37.5% meeting surgeon's recommendations, and 12.5% undergoing the surgery due to functional problems. All patients expected physical/esthetics changes in the preoperative. In the postoperative stage, 87.5% reported improvement in facial change and 12.5% felt more confident. Satisfaction with the procedure occurred in 100% of the patients.

3.2 Anxiety

In all the periods in which anxiety was measured, the patients showed medium anxiety level,[21] characterized by scores $\geq$ 30 and $\leq$ 50. The average of STAI-state score-although not statistically significant-showed a decrease of 3.7 points between the preoperative and 45 days after surgery. The average STAI-trait score in the preoperative was greater than the STAI-state score and the reduction of the preoperative period to 45-day postoperative was 6.5 (p = .016), which was considered statistically significant when compared to preoperative values (see Table 1).

Table 1. Mean scores and standard deviation of anxiety inventory STAI for three times

STAI-S	Mean (SD)	*p**	STAI-T	Mean (SD)	*p**
Preop	38.9 (9.3)		Preop	41.6 (8.4)	
Postop	39.3 (9.5)	.882	Postop	35.3 (9.1)	.016
45days	35.2 (8.7)		45days	35.1 (6.5)	

* Friedman test

3.3 Clinical assessment

The signs and symptoms related to the postoperative care assessed were: oral hygiene; nutrition (body weight loss); facial sensitivity and mobility; lip hydration; characteristic of edema; measurement of pain; and sleeping and breathing difficulty. There was a reduction of the signs and symptoms from the first postoperative consultation to 45 days after surgery. In the preoperative, body weight showed average losses of -2.4$\pm$2.0; -2.5$\pm$2.6; -3.1$\pm$2.9 and -3.5$\pm$3.6, respectively, in each postoperative consultation ($p < .017$).

When comparing the findings of the first consultation (three to seven postoperative days) and the last one (40 to 45 postoperative days), the clinical evolution of the patients showed significant results that were not observed in the comparative assessment of the postoperative consultations.

The data regarding the evaluation of halitosis, peeling gums, gingivitis, coated tongue, suture with food residue, presence of bacterial plaque, mouth opening limitation, decreasing of tactile stimulation, preserved facial movements, dry lips, edema above expectations, severe pain, and difficulty to sleep and breathe were not statistically significant when the first and last postoperative consultations were compared (see Table 2).

With respect to care showing significant results in the postoperative, it was possible to observe difficulty of performing oral hygiene and the presence of mild to moderate pain.

3.4 Knowledge test

Regarding the knowledge test, the average degree of difficulty of the items was 5.90 ($\pm$ 2.60) and the average logit was -1.56 representing easy items (see Table 3). The average adjustment checked both by the in fit and the outfit was 1.0, falling within the expected pattern. However, when considering the results for each item, it was observed that only the item P9 presented infit and outfit values suitable for the adjustment of the model. Rasch measures were above three, both for negative (easy) and for positive (difficult) items. The standard error was high because the sample was small.

Table 2. Data's for clinical evaluation (n = 8), during the appointment

Variables	Postoperative (%)		p^*
	First return	Forth return	
Oral Hygiene			
Halitosis	38	0	.250
Discolored gums	13	0	1.000
Gingivitis	13	0	1.000
Coated tongue	25	0	.500
Suture with food residue	50	0	.250
Presence of plaque	50	0	.125
Difficulty preforming oral hygiene	100	0	.008***
Mobility and Sensitivity			
Limitation of mouth opening above the expected	13	0	1.000
Tactile stimulation decreased	50	0	.125
Facial movements preserved	87	100	1.000
Moisturizing lips			
Lips dry	38	0	.250
Evolution of Edema			
Swelling above the expected	13	0	1.000
Intensity of pain			
Light	25	87	.025***
Moderate	63	13	.046***
Intense	13	0	.317
Condition for sleep or breathing			
Difficulty for sleeping or breathing	75	25	.625
	Postoperative Mean (SD)		p^{**}
Nutrition (change in body weight)			
Weight	71.9(9.3)	70.8(8.5)	.484

* McNemar test; ** Wilcoxon test; *** $p < .05$.

Table 3. Results of rasch analysis the items

Item	Score total	Measure (logito)	Error standard (logito)	*Infit* MNSQ	*Outfit* MNSQ
Q5	0	3.11	1.85	Measure	Maxim
Q4	4	0.00	0.87	0.5	0.5
Q9	4	0.00	0.87	1.00	1.00
Q10	4	0.00	0.87	1.50	1.50
Q1	8	-3.11	1.86	Measure	Minim
Q2	8	-3.11	1.86	Measure	Minim
Q3	7	-3.11	1.86	Measure	Minim
Q6	8	-3.11	1.86	Measure	Minim
Q7	8	-3.11	1.86	Measure	Minim
Q8	8	-3.11	1.86	Measure	Minim
Mean	5.90	-1.56	1.56	1.00	1.00
SD	2.60	2.09	0.45	0.41	0.41

Note. Q = question

The average ability of respondents was 7.40 (± 1.10) and the logit value was zero (see Table 4). The distribution of Rasch measures showed uniformity between negative and positive values, *i.e.*, half of the sample had the same distribution as the other half. Excluding the maximum and minimum in fit and outfit measures, the measures showed a good adjustment of patients' ability.

Table 4. Results of rasch analysis for people (answered)

Person	Score total	Measure (logito)	Error standard (logito)	*Infit* MNSQ	*Outfit* MNSQ
3	9	2.15	1.89	Measure	Maxim
4	8	0.69	1.22	1.00	1.00
5	8	0.69	1.22	1.00	1.00
6	8	0.69	1.22	1.00	1.00
2	7	-0.69	1.22	1.00	1.00
7	7	-0.69	1.22	1.00	1.00
8	7	-0.69	1.22	1.00	1.00
1	5	-2.15	1.89	Measure	Minim
Mean	7.4	0.00	1.39	1.00	1.00
SD	1.1	1.23	0.29	0.00	0.00

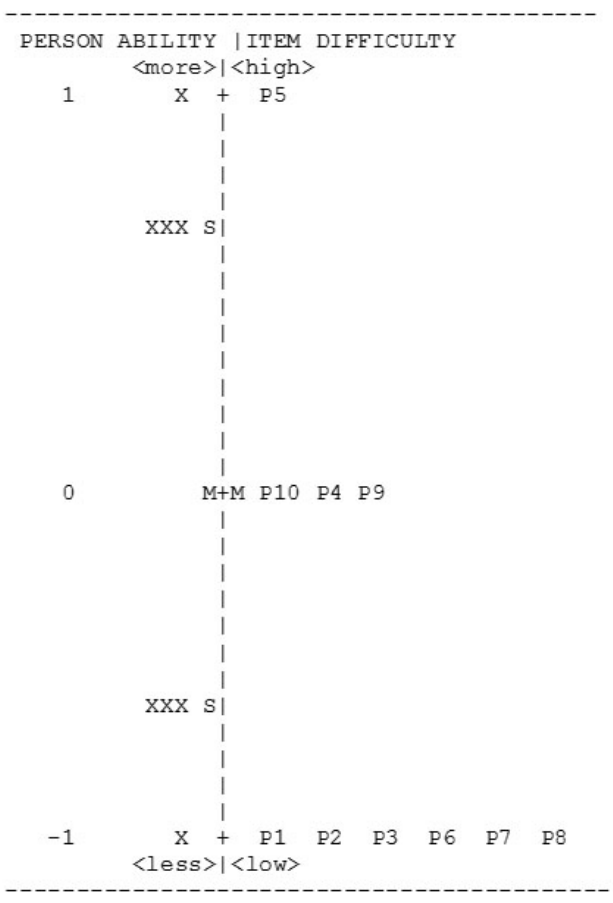

Figure 1. Map of the distribution of items according to the degree of difficulty and persons according to ability

Figure 1 shows the patients distributed according to their knowledge to the left, and the distribution of items according to their difficulty to the right. The individuals aligned to the item means that for these items they had a 50% chance of answering correctly. The individuals (n = 6, 75%) that were not aligned to any item represent a model misfit. It was also observed that items did not cover the entire construct; easiest and medium difficulty items were stacked.

The reliability of the model regarding the degree of difficulty of the items was 0.39 and it was zero for patients' ability.

4. Discussion

According to the results obtained applying the STAI, it is possible to observe that individuals undergoing orthognathic surgery showed no anxiety related to the surgical time. This may be related to the fact that the patients wait long to undergo the surgery and when the moment finally comes, it is felt as a joy and faced with confidence. The significant values related to trait anxiety denote that such patients feel generally anxious and this can be a result of the long treatment period (it can last up to two years).

A study conducted in Santa Rosa, State of Rio Grande do Sul, Brazil,[22]assessed anxiety in surgical patients and found that anxiety related to the surgical procedure began when the patients were still in their residences and began to prepare themselves to go to the hospital. It seems that dealing with concrete things makes the patients turn to themselves and thus the concern that something can go wrong during the surgery appears.

The patients of this study were assessed in the medical office close to the date of the surgical procedure, and it may be possible that they had not experienced the increase of anxiety that is characteristic of the preoperative period. This partially explains the scores of the STAI-state score, which were statistically similar before and after surgery. However, it is observed that the scores of anxiety levels found after 45 postoperative days were classified as mild anxiety, being lower than previous measures of moderate anxiety in the preoperative and in the first postoperative measurement.

Trait anxiety refers to relatively stable individual differences in the tendency to anxiety, *i.e.*, the different ways of reacting to situations perceived as threatening that can intensify the anxiety state. The trait anxiety scores are less sensitive to changes due to environmental situations and they remain relatively constant over time.[23] In this study, the guidance using educational material seems to have been able to reduce

patients' trait anxiety in the postoperative period.

In general, our results are similar to those found in a study[24] conducted in Great Britain that assessed the effects fan educational intervention in patients undergoing regional anesthesia. In the present study, the results demonstrate the decrease in anxiety levels measured in the pre-and postoperative periods and state and trait levels decreased. However, only the STAI-trait score showed statistical significance.

Regarding the data from clinical assessment, there is the need to change the way of assessing some signs and symptoms. The items of normality were removed from the instrument, and have added a checklist of signs and symptoms with dichotomous response. The items "why" and "what" were applied to justify changes in care as proposed in the educational material. In the items mobility and sensitivity, a question regarding the use of orthodontic elastic by patients and paresthesia regions were inserted in the checklist. In the edema item, instead of inducing the patients to answer whether they had the use of ice bag or the proposed exercises, it was asked whether they had used some method to reduce swelling, and what methods had been performed. The item sleeping and breathing was dismembered and the question about the difficulty refers to sleeping and then breathing, since patients may have one and not the other.

A study conducted in Norway[25] with 35 patients on perception after orthognathic surgery reported effects related to: smiling (22.9%); sleeping (20%); eating and enjoying the food (17.1%); and oral hygiene, speech and social relationships (14.3%). The difficulty with oral hygiene was reported by 23% of the subjects who were satisfied with their treatment.

Studies conducted in Brazil[15,16] on the perception/knowledge of patients after orthognathic surgery reported the difficulty of patients in performing oral hygiene and eating properly, hence poor oral hygiene can predispose the presence of food residue and infection in the oral cavity.

The subjects assessed were satisfied with the result of the surgical procedure and, as in the study conducted in Norway; they had difficulty in performing oral hygiene. It is believed that patients were afraid to move their lips and cheeks and visualize or have contact with the gingival suture, thus finding it difficult to brush their teeth.

The difficulty in performing oral hygiene consequently leads to the increase of the bacterial plaque and the presence of food residue in the surgical incision, which are predisposing factors for surgical site infection.

Neurosensory changes are normally perceived in the immediate postoperative period, which result from the traction of the infra orbital nerve and the direct trauma on the anterior, middle and posterior superior alveolar nerves, the nasopalatine nerve and descending palatine nerve.[26] These changes may be temporary, lasting six to twelve months; however, some patients may experience permanent damage.

In the period in which patients experience a temporary paresthesia, the response to tactile stimulation may be diminished. As in our findings, patients presented diminished response to touch as well as temperature change due to experiencing the sensation of the anesthetized region.

The guidelines for facial exercises aimed to aid in the mobility and sensitivity are recommended by the staff (speech therapist and maxillofacial surgeon). The types of action carried out for muscular changes may be the mytherapy and miofuncional therapy. In myotherapy, the specific activity occurs in the muscle to be modified by doing isotonic and isometric exercises.[27]

In our findings, the patients reported a higher incidence of mild to moderate pain rather than severe pain. Postoperative pain is moderate and painkillers can control it; it may also be associated with satisfaction or dissatisfaction related to the result of the surgery.[28,29] Patients who are not satisfied with the results how pain conditions of greater intensity in the postoperative period.

An initial consequence of the surgical procedure is body mass loss due to difficulty chewing, edema, pain and paresthesia. Patients are subjected to a liquid diet in the postoperative period and this diet is not always balanced at their homes, causing malnutrition and significant body mass loss, thus compromising the healing of the surgical wound and increasing the susceptibility to infection.[30]

Although body weight was not statistically significant between the first and last postoperative consultation, it showed a significant loss when analyzed individually comparing the weight in the preoperative period and the weight in each consultation. The same finding can be seen in other studies[12,13,31,33,34] and it is recommended that patients understand the necessity for a soft and nutritional high-calorie diet after surgery in order to maintain their body weight, thus accelerating recovery.[18,31,33]

Small to medium magnitude beneficial effects of educational intervention were found in a meta-analysis conducted with small samples (less than 30) and effectiveness of educational intervention in adult surgical patients has been reconfirmed with larger samples.[35]

A study conducted in Jordan[36] assessing the perception

of patients undergoing orthognathic surgery states that patients believed that preoperative information was adequate, but they suggested the use of additional materials, including brochures or videos in order to be able to assimilate incoming information. In the present study, the patients also suggested it, because they had met the nurse of the operating room before the surgery.

Regarding the knowledge test, the individuals showed good fit to the model with respect to the ability to respond to the test. However, the Rasch analysis for the items showed that the model did not fit, with easy questions stacked at the lower end of the map. Furthermore, the items were centered at certain points showing a gap in the construction of the construct. Ideally, participants should be evenly divided into three skill levels: low; medium; and high.[37]

A MNSQ value less than 0.7 reveals little variance of the items score or a pattern of predictable response.[36] In the present study, 70% of the items had less than or equal to 0.5 value. It is generally assumed that when more than 5% of the items do not fit the model, the items of the scale do not measure a unidimensional construct[38] and they should be revised.

The P4 question, for example, was too general; the alternatives focused on several cares and there was an option for "all are correct". The degree of difficulty of the P4 item was zero. The P3 item related to the use of braces after the surgery was too easy and it could be answered correctly by deduction.

The reliability of the degree of difficulty and individuals' ability was low. The results show that it is necessary to increase the sample size for better reliability of the items and increase the number of items to improve the reliability of individuals' ability.[20]

From the results obtained for conducting the future randomized and controlled clinical trial, some modifications were made regarding the instruments for the knowledge test and clinical assessment. The knowledge test questions were reassessed and it was found that some statements could measure more than one construct and there were answers that could induce responses of other tests.

5. Conclusion

The pilot study showed that it is possible to use educational material for perioperative education inpatients undergoing orthognathic surgery with a positive effect on self-care during the postoperative period. The results of the clinical assessment were consistent, but they can only be confirmed through studies conducted with control groups. This study contributed to verify adjustments in the instruments applied for the analysis of patients' knowledge and clinical assessment that needed modifications to better measure the results. The hypotheses of the researchers could not be answered in this pilot study due to the absence of a control group, but it revealed the necessary gaps for intervention toward proceeding to a randomized clinical trial.

We suggest that further studies of educational interventions are developed with use of other educational technologies or procedures and their results are compared to those found in this study.

This pilot intervention has the potential to fill a significant gap in the guidance and help in self-care of patients undergoing orthognathic surgery. Studies state the need for providing information to the patients with respect to managing the signs and symptoms experienced in the postoperative period; however, little is found in the literature discussing this type of intervention.

Acknowledgements

We would also like to thank the Aline Uchoa Araujo by her assist during the collection of data of this study.

Conflicts of Interest Disclosure

The author declares that there is no conflict of interest statement.

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