

ORIGINAL RESEARCH

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Effectiveness of nursing intervention to control fear in patients scheduled for surgery

Eficacia de una intervención de enfermería para control del temor en pacientes programados para cirugía

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| Abstract |

Introduction: Fear before surgery has multiple consequences that can be handled by means of nursing interventions.

Objective: To determine the effectiveness of two nursing interventions to control fear in patients scheduled for surgery.

Materials and methods: Controlled clinical trial carried out in Bucaramanga on 45 people, 15 in the intervention group (preoperative teaching and reduction of anxiety) and 30 in the control group (usual management). Sample size considered power of 0.90, alpha error of 0.05 and intervention ratio of 1:2 in the control group. Block-randomized double-blind clinical trial. Internal consistency of the evaluation format of both result labels of the Nursing Outcomes Classification (NOC) was measured using Chronbach's alpha. The reproducibility of the formats was determined using Bland-Altman plots. The effects of nursing interventions on fear were established through covariance analysis (ANCOVA).

Results: The intervention group presented a coefficient of changes in the "fear control" label, controlled by initial NOC, age and sex of 1.09 (p=0.000). The coefficient of changes in the "knowledge on therapeutic scheme" label was 1.33 (p=0.000).

Conclusion: People who received nursing interventions showed a significant decrease in fear compared to those who received usual care (control group).

Keywords: Fear; Anxiety; Surgery; Perioperative Nursing (MeSH).

| Resumen |

Introducción. El temor prequirúrgico tiene múltiples consecuencias. Este se puede controlar mediante intervenciones de enfermería.

Objetivo. Determinar la eficacia de dos intervenciones de enfermería en el control del temor en pacientes programados para cirugía.

Materiales y métodos. Ensayo clínico controlado. Grupo intervención de 15 participantes y grupo control de 30. Se consideró un poder de 0.90, un error alfa de 0.05 y una razón de intervenido a control de 1:2. La asignación aleatoria utilizó el sistema de bloques. Se usó enmascaramiento tipo doble ciego. Se midió la consistencia interna del formato de evaluación de las dos etiquetas de resultados de la Clasificación de resultados de enfermería (NOC) mediante el alfa de Chronbach. Se determinó la reproducibilidad de los formatos usando los límites de acuerdo de Bland y Altman. Los efectos de las intervenciones de enfermería en el temor fueron establecidos mediante análisis de covarianza (ANCOVA).

Resultados. El grupo intervención tuvo un coeficiente de cambios en la etiqueta "Control del temor", controlado por NOC inicial, edad y género de 1.09 (p=0.000) y su coeficiente de cambios en la etiqueta "Conocimientos: régimen terapéutico" fue de 1.33 (p=0.000).

Conclusión. Las personas que recibieron las intervenciones de enfermería presentaron una disminución significativa del temor respecto a las que recibieron la atención usual.

Palabras clave: Temor; Ansiedad; Cirugía; Enfermería perioperatoria (DeCS).

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Introduction

Surgical procedures are individual, separate and systematic manipulations on or inside the body, which may be complete, and are performed by a physician or other qualified health professional, with or without instruments, to restore torn or deficient body parts, remove diseased or injured tissue, remove foreign bodies, assist deliveries or facilitate diagnosis. (1) In consequence, surgical trauma causes a series of physiological and psychological responses that, taken to the extreme, can alter the functions of the main organ systems. (2)

Studying fear related to surgical interventions is relevant considering the usual reaction that this state generates in people who will be operated, and also because of the multiple consequences it can have during the postoperative period. Fear is a feeling that can trigger negative impacts in social, family, affective and work environments.

Several factors, which can be classified as external or internal, may cause fear before surgery. External factors include the type of surgery, the quality of medical care (3), strange environments, lack of privacy in the rooms and surgical environments, undergoing anesthesia and lack of social support. On the other hand, internal factors include age, sex, socioeconomic status, occupation, physical condition, fear of hospital environment (3), personality type, internal locus of control, poor tolerance of ambiguity and emotion-focused coping. (4)

Patient care, defined as an activity that requires personal and professional value aimed at the conservation, restoration and self-care of life, is based on the nurse-patient therapeutic relationship and is the essence of the nursing profession. (5) This activity puts into practice knowledge in standard nursing language to generate high quality care.

Nursing diagnosis defines fear as the response to perceived threats that are consciously recognized as dangerous. (6) In this way, fear experienced by patients before a surgical intervention is caused by the psychological stress to which they are exposed. (7,8) Preoperative education involves any verbal, written or audiovisual information that seeks to provide emotional support and complete information about the procedure and its complications to patients, to help them understand that the surgical procedure is safe. (9-11)

Previous studies have shown that preoperative teaching can be applied to control fear in patients, establish a better therapeutic

relationship with them and their relatives, develop self-control and self-care behaviors and provide information about the surgical procedure through communication and humanization. (12-14) The information and education offered to patients through nursing interventions can reduce preoperative fear and increase the degree of satisfaction and well-being in patients and, therefore, the quality of care provided to them. (15)

The aim of this study is to evaluate the efficacy of nursing interventions in preoperative teaching and reduction of anxiety to control fear in patients scheduled for surgery, compared with usual preoperative care.

Materials and methods

Design and participants

A randomized controlled clinical trial was carried out in people scheduled for surgery in a private tertiary hospital located in the city of Bucaramanga. This hospital has two endoscopy rooms, a delivery room, and six operating rooms where 400 surgeries are performed per month on average.

This study included patients of different specialties scheduled for surgery aged >15 years, with a nursing diagnosis of fear established based on at least two defining characteristics: identification of the object of fear and a score of ≤ 4.0 in the "Fear control" result label. Patients who presented alterations in mental status or limitations to provide relevant information were excluded from the study.

Two evaluation labels of the *Nursing Outcomes Classification* (NOC) were used: "Fear Control", which consists of 18 indicators—five were selected—and "Knowledge: Therapeutic Procedures", which consists of 14 indicators—six were selected. The labels evaluated through operationalization of the selected indicators are presented in Tables 1 and 2.

The improvement of the NOC score was observed through two intervention labels from the *Nursing Interventions Classification* (NIC): "Decrease in anxiety", which has 22 activities that were applied in their entirety during the first educational session, and "Preoperative teaching", which has 26 activities that were applied in their entirety during the second educational session.

Table 1. Operationalization of the fear evaluation scale.

| Indicator | Never manifested | Rarely manifested | Sometimes manifested | Frequently manifested | Constantly manifested |
|---|--|--------------------------------------|--|--|-----------------------------------|
| | 1 | 2 | 3 | 4 | 5 |
| Use of effective coping strategies | No | Inquired but not used | One used without favorable outcome | Several used without favorable outcome | One used with favorable outcome |
| Reference to decrease in the duration of episodes | Fear 24/7 | Fear six times a day | Fear four times a day | Fear twice a day | Fear once a day |
| Maintaining realization role | None realized | Difficulty in realizing most of them | Difficulty for realizing two | Difficulty for realizing one | All maintained |
| Maintaining social relations | Isolated from others | Relationships with relatives only | Relationships with relatives and friends | Relationships with relatives, friends and colleagues | Relationship with the environment |
| Control of fear response | Crying, aggression, logorrhea, choked voice, silence, insomnia, etc. | 7-8 manifestations | 5-6 manifestations | 2-4 manifestations | One manifestation |

Source: Own elaboration based on the data obtained in the study.

A sample size of 45 people was estimated taking into account a power of 0.90, an alpha error of 0.05, a ratio of intervened to not intervened of 1:2, an average of 3.5 in the final NOC of the control group and an average of 4.0 in the final NOC of the intervention group regarding the "fear control" outcome label, and a standard deviation

of 0.5 for both groups. Randomization of the intervention was made using the block system. (16) After identifying the participants who met the inclusion criteria and prior acceptance of enrollment in the study, a nurse from the surgery department performed the randomization.

Table 2. Operationalization of the “Knowledge: therapeutic procedures” evaluation scale.

| Indicator | None | Low | Moderate | High | Significant |
|--|--|---|--|--|---|
| | 1 | 2 | 3 | 4 | 5 |
| Description of the therapeutic procedure | No response | Response to one question | Response to two or three questions | Response to four questions | Response to five questions |
| Explanation of the purpose of the procedure | No knowledge on why the procedure is performed | Knowledge of the purpose but no comprehension | Knowledge of the purpose and request for clarification | Explanation and understanding of the purpose | Explanation and understanding of the purpose acknowledging advantages |
| Description of the steps of the procedure | None described | One described | Two or three described | Four described | Five described |
| Description of activity precautions | None described | One described | Two or three described | Four described | All precautions described |
| Description of restrictions related to the procedure | None described | One described | Two described | More than two described | All restrictions described |
| Description of possible undesirable effects | None described | Some symptom described | Two symptoms described | Three symptoms described | All side effects described |

Source: Own elaboration based on the data obtained in the study.

Instruments and procedures

The researchers and evaluators of the study did not know the randomization sequence. The evaluators of the outcome of interest did not participate in the nursing intervention sessions nor did they have knowledge of the group to which each study participant was assigned.

Before the information collection phase, a pilot test was carried out in 10 participants to test instruments, interviewers' training and execution of interventions. For data collection, three formats were applied: one of focused assessment that contained basic data about the patients, preoperative information and defining characteristics for the identification of fear diagnosis; one for the evaluation of initial and final results of the “fear control” label, and one for the evaluation of initial and final results of the “Knowledge: therapeutic procedures” label.

Interventions

Participants assigned to the intervention group received two individual sessions the day before the scheduled surgery. During the sessions, two interventions proposed in the NIC (17) were used: “Reduction of anxiety” with 22 activities, and “Preoperative education” with 26 activities.

During the first session, preoperative teaching was performed to provide structured preoperative information to the patient who was going to be operated. The information was provided by means of pictures, posters, diagrams and brochures. In addition, patients had direct contact with some elements used during surgeries such as masks, anesthesia bags, venoclysis equipment, catheters, probes, cystoflo bag, oxygen therapy equipment and surgical clothing.

During the second session, activities were carried out to know the response of patients to fear, its impact on their daily lives, its characteristics, the strategies used in previous experiences and the perception regarding the situation that triggers fear. Participants were instructed on some behavioral, cognitive and sensory coping techniques. Additionally, a guided imagery protocol, a relaxation music CD and a sheet with daily affirmations were delivered to patients, while the visual analog scale was applied to measure fear. Both sessions were held the day before surgery by last-year nursing students who were trained and had experience in this type of intervention.

In contrast, the control group received the usual care provided by the health personnel of the outpatient surgery service of the hospital where the study was conducted. This care consisted in verifying compliance with the authorization and the supplies required (orthopedics material,

meshes, ear valves), complete clinical history, pre-anesthetic sheet completion, additional surgery requirements (blood reservation, freeze biopsy), oral information on general instructions according to the surgical procedure, delivery of instructions, taking vital signs and weight control. The usual care ended with the pre-anesthetic assessment.

Evaluation of results

Nursing intervention for “Reduction of anxiety” was evaluated through the “Fear Control” label and the “Preoperative teaching” nursing intervention with the label “Knowledge: therapeutic procedures”. Both labels coincide with the NOC. (18)

The scales of the aforementioned labels were evaluated taking into account the operationalization of the formulated indicators, which was validated and used in a previous research. (19) Said operationalization consists in transforming the question into each indicator to allow its quantification and help the patient and the evaluator to understand them easily.

Variables

The dependent variable of this study was fear control. Five indicators were considered for the “Fear control” label to determine the patient's condition and evaluate the effectiveness of the intervention. Said indicators were measured through a Likert scale, with a range from 1 to 5, going from never manifested (6) to constantly manifested. (4,18) The five indicators are: use of effective coping strategies, referring reduction of the duration of episodes, maintaining role performance, maintaining social relationships and controlling fear response.

People in both intervention and control groups were evaluated at two moments: the day before the surgery during the pre-anesthetic assessment, where the nursing diagnosis of fear was established using the focused assessment form (initial NOC), and the day of the surgical procedure before being transferred to the surgery service (final NOC). The evaluation was applied by two people so that each participant in the study was evaluated twice, at both moments. Evaluators did not know to which group the participants were assigned. The assigned score corresponded to the average of the two values given by the evaluators. In addition, variables of age, sex, marital status, socioeconomic status, schooling, weight, companion at the time of surgery, type of anesthesia, type of surgical procedure, previous surgeries, number of dependents, occupation, religion, and medical diagnosis were analyzed.

Data analysis

Once the information was collected, a database was created in the EpiInfo 6.04b program. Information was entered twice and compared with the Validate subprogram to correct errors.

Student's t-test and X² test were performed to determine if there were statistically significant differences in the study variables between the intervention and control groups. Parametric tests were used with previous assumption of normality and equality of variances. Chronbach's alpha was used to measure the internal consistency of the evaluation format for both result labels: "Fear control" and "Knowledge: therapeutic procedures".

To determine the reproducibility of the evaluation forms, the limits were calculated according to the Bland-Altman method, which allowed comparing the scores given by both evaluators. The analysis of covariance (ANCOVA) was used to calculate the effects of nursing interventions (final NOC), controlled by the initial NOC score, age and sex. The analysis was carried out by intention of treatment.

Ethical considerations

The project was approved by the directives of the hospital where the participants of the study were recruited. It was adjusted to the guidelines provided by Resolution 8430 of 1993 of the Ministry of Health of Colombia for research on human subjects. (20) Compliance with the principles and ethical standards of the Declaration of Helsinki was guaranteed at all times. (21) The participants signed an informed consent.

Results

A total of 437 people with scheduled surgeries were evaluated, of which 227 (52%) did not meet the inclusion criteria and 165 (38%) refused to participate in the research. The remaining 45 people made up the analytical sample: 15 were assigned randomly to the intervention group and 30 to the control group as shown in Figure 1.

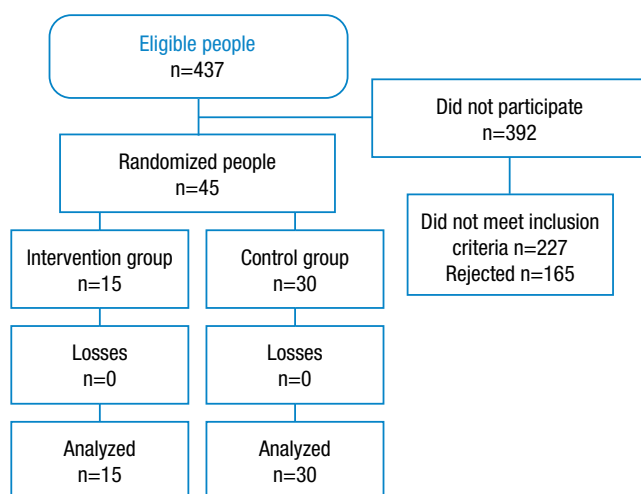


Figure 1. Flowchart of study participants.

Source. Own elaboration based on the data obtained in the study.

Table 3 shows the baseline characteristics of the participants. No statistically significant differences were found ($p < 0.05$) in any of the study variables between the intervention group and the control group.

Table 3. General characteristics of the study population.

| Variable | | Intervened (n=15) | Not intervened (n=30) |
|--------------------------|------------------------------|--------------------------|--------------------------|
| | | Average (σ) (%) | Average (σ) (%) |
| Age (years) | | 45(17) | 36(17) |
| Weight (kg) | | 63(7) | 63(13) |
| Years of school | | 9(5) | 10(4) |
| Sex: female (yes) | | 11(73) | 16(53) |
| Number of dependents | ≤2 | 8(53) | 21(70) |
| | >2 | 7(47) | 9(30) |
| Previous surgeries (yes) | | 8(53) | 16(53) |
| Social stratification | 1 | 2(13) | 2(7) |
| | 2 | 6(40) | 8(27) |
| | 3 | 1(7) | 11(36) |
| | 4 and 5 | 6(40) | 9(30) |
| Occupation | Home | 5(33) | 9(30) |
| | Teaching | 3(20) | 5(17) |
| | Other | 7(47) | 16(53) |
| Marital status | Married-domestic partnership | 11(73) | 16(53) |
| | Single-divorced-widower | 4(27) | 14(47) |
| Specialty | Orthopedics | 6(40) | 9(30) |
| | General Surgery | 5(33) | 7(24) |
| | Other | 4(27) | 14(47) |
| Anesthesia | General | 13(87) | 27(90) |
| | Regional | 2(13) | 3(10) |
| | Companion (yes) | 11(73) | 26(87) |
| Object of fear | Anesthesia | 12(80) | 21(70) |
| | Needles | 2(13) | 3(10) |
| | Surgery outcome | 3(20) | 8(27) |
| | Pain | 4(27) | 5(17) |

σ : standard deviation; %: percentage.

Source. Own elaboration based on the data obtained in the study.

Both internal consistency and reproducibility of the evaluation forms are shown in Tables 4 and 5. It should be noted that internal consistency was lower for the initial labels. In addition, data of both initial and final NOC were similar among the evaluators.

Table 4. Internal consistency of initial and final nursing result labels.

| Result | | Evaluator No. 1 | Evaluator No. 2 |
|-------------|-------------------------------------|-----------------|-----------------|
| Initial NOC | "Knowledge: therapeutic procedures" | 0.64 | 0.65 |
| | "Fear control" | 0.62 | 0.65 |
| Final NOC | "Knowledge: therapeutic procedures" | 0.90 | 0.91 |
| | "Fear control" | 0.80 | 0.79 |

NOC: Nursing Outcomes Classification.

Source. Own elaboration based on the data obtained in the study.

Table 5. Limits according to the evaluation instruments.

| Instrument | Initial | | Final | |
|---|---------|--------------|---------|--------------|
| | Average | Limits | Average | Limits |
| NOC "Knowledge: therapeutic procedures" | -0.085 | -0.540-0.369 | -0.044 | -0.453-0.364 |
| NOC "Fear control" | -0.067 | -0.50-0.372 | -0.006 | -0.153-0.142 |

NOC: Nursing Outcomes Classification.

Source. Own elaboration based on the data obtained in the study.

ANCOVA can be seen in Table 6.

Table 6. Changes in the labels *Classification of final nursing results* for "Fear control" and *Classification of final nursing results* for "Knowledge: therapeutic procedures".

| Changes in the final NOC of "Fear control" label | | | |
|---|-------------|-------|------------|
| Variable | Coefficient | p | CI95% |
| Intervention | 1.09 | 0.000 | 0.82-1.36 |
| Initial NOC | 0.41 | 0.001 | 0.18-0.64 |
| Sex | 0.01 | 0.949 | -0.24-0.26 |
| Age | 0.01 | 0.036 | 0.00-0.02 |
| Changes in the final NOC of "Knowledge: therapeutic procedures" label | | | |
| Variable | Coefficient | p | IC95% |
| Intervention | 1.33 | 0.000 | 1.00-1.66 |
| Initial NOC | 0.12 | 0.404 | -0.17-0.42 |
| Sex | 0.08 | 0.609 | -0.22-0.38 |
| Age | 0.00 | 0.031 | 0.00-0.02 |

p: p value; CI95%: 95% confidence interval; NOC: Nursing Outcomes Classification.

Source. Own elaboration based on the data obtained in the study.

Discussion

Several studies have evaluated the effectiveness of nursing interventions to reduce anxiety and fear in patients who will undergo different types of surgeries. These intervention strategies range from clinical hypnosis (22) to guided visits to health centers. (23) Some of these studies have demonstrated the efficacy of preoperative nursing interventions on postsurgical recovery and on the control of anxiety in surgical patients. (24-26)

This study demonstrated that nursing interventions in preoperative education and anxiety reduction are effective to control fear in people scheduled for surgery. A good level of internal consistency and reproducibility of the evaluation forms was observed. In the same way, agreement limits using the Bland-Altman method indicate that the agreement of the measurements between evaluators is acceptable.

The analysis of covariance showed changes in both the "Fear control" result label (1.09) and the "Knowledge: therapeutic procedures" label (1.33), which were statistically significant after adjustment by sex and age.

The results of this study corroborate the findings found in a controlled clinical trial conducted in Bucaramanga, Colombia, in which the effectiveness of nursing interventions for the diagnosis of fear was also evaluated. (19) In said study, the group received four nursing interventions (anxiety reduction, preoperative education, preparatory sensory information and increased coping, while this study provided the group with two interventions (reduction of anxiety and preoperative education) and obtained more significant results.

The need for preoperative interventions has been acknowledged in other studies, such as the one carried out in Malaga, Spain, on the emotional impact of medical information offered to preoperative patients. (12) In that study, 87.7% of the participants preferred to be informed about their pathology and its surgical management. In turn, providing the right information did not increase anxiety.

Díez *et al.* (25) reported that the patients who received a nursing visit showed a favorable result in the study performed regarding the effect of structured and individualized nursing visits on anxiety (a term used in that study as a synonym of fear) in surgical patients.

On the other hand, Alorda *et al.* (13) state that there are statistically significant differences between the group that receives structured nursing information and that which does not receive it, according to the study they conducted on the effectiveness of information in the postoperative emotional state of patients undergoing cardiac surgery.

One of the strengths of this study was the equitable distribution of the baseline characteristics observed between both comparison groups. In addition, the evaluators involved were trained and had experience in this type of intervention, which helped obtaining more precise measurements.

The main limitation of this study was the difficulty for getting patients to attend several appointments before surgery. The reason is that surgical schedules are not planned well in advance in most cases. Therefore, the intervention sessions had to be done the day before surgery, taking advantage of the pre-anesthetic assessment appointment, and on the same day of surgery during the final evaluation.

Nursing professionals are a team of health workers with great potential to implement and evaluate interventions that facilitate the prevention and reduction of adverse outcomes such as pre-surgical fear.

Conclusions

The analysis of the results obtained in this study allow to confirm that nursing interventions in preoperative education and reduction of anxiety, suggested to control fear in patients scheduled for surgery, have a high applicability in the surgical area. The study showed that patients who received these interventions achieved a significant increase in fear control compared to patients who did not receive them.

It is necessary to further study this topic considering that nursing interventions generate a tangible impact on the population, physically and emotionally, improving their conditions during the surgical process. In this way, it is possible to justify to health promoting entities (EPS by its acronym in Spanish) and health service delivery institutions (IPS by its acronym in Spanish) the benefits that implementing these interventions represents for the patients and for the quality of the care provided.

Future research should include a cost analysis in order to demonstrate convincingly the cost-benefit of nursing interventions and to evaluate more objective outcomes such as complications, surgical times and even mortality.

The individuality of each patient makes their responses to fear vary significantly, hence the advantage of having the nursing process as a tool that allows personalized care.

The results and conclusions of this study have been validated externally to the extent that they can be extrapolated to populations >15 years, scheduled for surgery with a nursing diagnosis of fear.

Conflicts of interest

None stated by the authors.

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