



CLÍNICA

Anxiety in gastroscopies: Comparison of two nursing interventions in endoscopy without sedation

Ansiedad en gastroscopias: Comparación de dos intervenciones de enfermería en gastroscopias sin sedación

***García Sierra, Rosa, *Caballero Sáez, Yolanda, *Mena Sánchez, Raquel**

*Nurses of the endoscopy service. Hospital de Terrassa, Consorci Sanitari de Terrassa, Barcelona, Spain. E-mail: rgarcias@cst.cat

Keywords: Gastroscopy; endoscopy; Nursing Interventions; anxiety; tolerance; satisfaction; Investigation; Quasi-experimental; STAI.

Palabras clave: Gastroscopia; endoscopia; enfermería; intervenciones; ansiedad; tolerancia; satisfacción; investigación; quise-experimental; STAI..

ABSTRACT

There is a disparity between nurses about the ideal role of nurses in endoscopies without sedation. Some nurses think that providing information to the patient is sufficient to reduce anxiety and improve tolerance and satisfaction, while others believe that behavioral training and positive reinforcement during the procedure are also necessary.

The **objectives** of this study were to test the differences that are produced in the patient's state of anxiety between the two types of nursing intervention, as well as in the patient's tolerance and satisfaction.

The study included 109 outpatients who had an endoscopy without sedation. They were divided into two groups, the experimental group who received nursing support based on information, behavioral training and positive reinforcement during the procedure, and the control group, who received nursing support based solely on information provided about the procedure. Anxiety was evaluated with a STAI-state test and with psychophysiological parameters at different moments during the process. The data was analyzed with repeated measures of analysis of the variance, which resulted in the following: the STAI score decreased more in the experimental group. Tolerance was greater in the experimental group, patient satisfaction was equal in the two groups, and the difference in the levels of systolic and diastolic blood pressure and heart rate was equal in the two groups.

Experimental investigations are useful in nursing to obtain scientific evidence about the ideal clinical practice. It is possible to improve the tolerance of gastroscopy and reduce anxiety due to the procedure, with the intervention of the nurses centered in the cognitive and behavioral aspects of the person.

RESUMEN

Existe disparidad en las percepciones que las enfermeras de endoscopias tenemos sobre la intervención de enfermería idónea en gastroscopias sin sedación. Algunas enfermeras piensan que el aporte de información es suficiente para reducir la ansiedad, mejorar la tolerancia y satisfacción, mientras otras defienden que además es necesario un entrenamiento conductual y un refuerzo positivo durante la prueba.

Los **objetivos** de esta investigación fueron comprobar las diferencias que se producían en el estado de ansiedad del paciente entre las dos intervenciones de enfermería, así como en la tolerancia y su satisfacción.

Se incluyeron 109 pacientes que acudieron vía ambulatoria a realizarse una gastroscopia sin sedación. Se dividieron en dos grupos, el experimental, con una intervención basada en información, entrenamiento conductual y refuerzo positivo durante la exploración y el control, con una intervención basada en la información. La ansiedad se evaluó con el test STAI-estado y con parámetros psicofísicos en diferentes momentos del proceso.

Los datos se analizaron con medidas repetidas de análisis de la variancia que aportaron los siguientes resultados: la puntuación del STAI disminuyó más en el grupo experimental ($p=0,035$). La tolerancia fue mejor en el grupo experimental ($p= 0,008$), la satisfacción del paciente fue igual en los dos grupos ($p=0,5$) la diferencia en los valores de tensión arterial sistólica, diastólica y frecuencia cardíaca fue igual en los dos grupos ($p=0,085$, $p=0,690$, $p=0,984$)

Las investigaciones experimentales son posibles en enfermería para obtener evidencias científicas sobre la idónea práctica clínica. Es posible mejorar la tolerancia de la gastroscopia y disminuir la ansiedad debida al procedimiento, con una intervención de enfermería centrada en el aspecto cognitivo y conductual de la persona.

INTRODUCTION

Upper digestive endoscopy or gastroscopy has become a common and safely done procedure. In the last few years, the caliber or size of the gastroscope has been reduced, while its maneuverability has improved, making this an easier technique to perform. Nevertheless, it is not a procedure which is comfortable for the patient, who can exhibit anxiety before the gastroscopy. If we can eliminate these symptoms of distress, the patient will have a higher probability of tolerating the gastroscopy without problems. An adequate informative intervention improves the cooperation of the patient during the procedure, reducing the need to repeat the gastroscopy and associated costs.^[1]

The literature reflects the preoccupation for the patient's pre-procedural state of anxiety in the surgical area^[2] and shows how a reduction in the levels of anxiety prior to the invasive procedure can facilitate the patient's adaptation to the procedure and post-procedure. Some of the techniques to reduce pre-operative anxiety include relaxation techniques or cognitive restructuring techniques, which have been shown to be effective in surgical procedures^[3].

Pharmacologic treatment can achieve adequate control of anxiety prior to gastroscopy. Nevertheless, the literature indicates that the majority of complications during an endoscopic exam are related to sedation^[4]. The risk of cardiopulmonary depression has been particularly observed in elderly patients^[5,6].

Other studies favor non-invasive means, with calming effects, to reduce anxiety, and examples such as scents of lavender^[7], the use of music^[8,9], and peaceful video

recordings related to the natural environment are associated with the reduction of anxiety and an improved hospital environment ^[10].

In addition, a bibliographic review reflects the importance of information about the endoscopic procedures in the improvement of the patient's acceptance of the test. A comparison of different ways of presenting this information shows that the ideal method is to accompany verbal information with written information, but this is emphasized more in potentially more complicated tests such as colonoscopy ^[11].

In relation to the studies resulting from the preoccupation for anxiety in digestive endoscopy, Ylinen, Vehviläinen-Julkunen, & Pietilä, in 2009 ^[12] showed a correlation between the state of anxiety prior to colonoscopy and the assessment of pain resulting from the procedure. Specifically related to gastroscopy, the article published by Maguire, Walsh, and Little in 2004 particularly stands out. They concluded that information prior to gastroscopy is an effective means for reducing anxiety as well as a combination of information and training; the latter, however, is comparatively less potent, and as such did not support their initial hypothesis and surprised the researchers ^[13].

More recently, Hoya showed how an optimum calm environment reduces anxiety prior to gastroscopy ^[14].

A bibliographic search done in the databases Medline and PsycINFO did not produce any study which integrated the scoring of states of anxiety, tolerance observed by the nurse, and satisfaction reported by the patient.

The principal objective of the investigation was to compare the anxiety in patients undergoing gastroscopy with the habitual intervention of the nursing staff centered on the cognitive aspect of the person, and a nursing intervention centered not only in the cognitive aspect but also in the behavioral aspect.

The specific objectives were to compare the two interventions in the aspects of tolerance of the procedure and the satisfaction of the patient.

The hypothesis which we presented was that a protocol focused intervention based on providing temporal and sensory information, behavioral training, and positive reinforcement during the exploration would diminish anxiety and improve the tolerance and satisfaction of the patient to a greater extent than intervention centered only on providing information.

METHOD

Participants

109 people between 18 and 85 years of age agreed to participate by means of an informational statement and signed consent form. The distribution of the group to the experimental or control group was according to the convenience of the healthcare organization, who assigned to the experimental group those patients with appointments between 9:00 and 14:00, and to the control group those patients with appointments between 15:00 and 20:00.

Between the dates April 1st, 2011 and June 30th, 2011 all patients who came to have a diagnostic gastroscopy without sedation were invited to participate, as long as they were outpatients, older than the age of consent, and passed first through an administrative point before arriving at the waiting area for the examination rooms. An excluding factor was if the person did not have sufficient reading ability to fill out the registration form.

Instruments

Spielberg State/Trait Anxiety Inventory (STAI)

The STAI is a questionnaire with 40 items of Likert type, which evaluates separately trait anxiety (20 items) and state anxiety (20 items). This study used the scale corresponding to state anxiety.

Heart rate

A pulsioximeter, brand Nihon Kehden model KC-013P, was used for the repeated intrasubject measurement of heart rate.

Blood pressure

A blood pressure cuff, brand Nihon Kohden model KC-013P, was used for the repeated intrasubject measurement of blood pressure.

Tolerance

The nurse evaluated the patient's tolerance to the procedure by means of a form created *ad hoc* in which was registered, on a Likert scale from 0 to 5, nausea, vomiting, verbalization of pain, and attempts to remove the tube, with 0 being the minimum possible score and 5 the maximum. The total scoring ranged from 0 to 20 (Figure 1).

Figure 1. Assessment of tolerance made by the nurse.

NAUSEA	0	1	2	3	4
MOVEMENTS	0	1	2	3	4
PAIN GESTURES	0	1	2	3	4
ATTEMPS TO REMOVE THE TUBE	0	1	2	3	4

Satisfaction

The patient evaluated the satisfaction they felt with the procedure by answering a questionnaire created *ad hoc* with three questions and three choices of response (Figure 2)

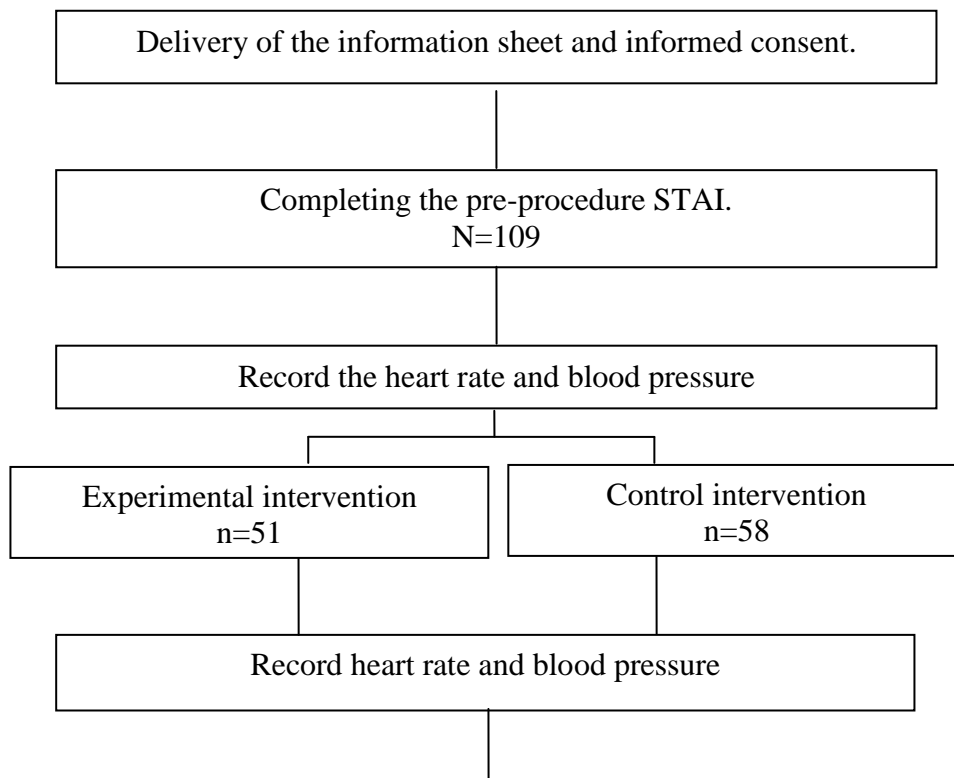
Figure 2. Patient satisfaction. Form completed by patient.

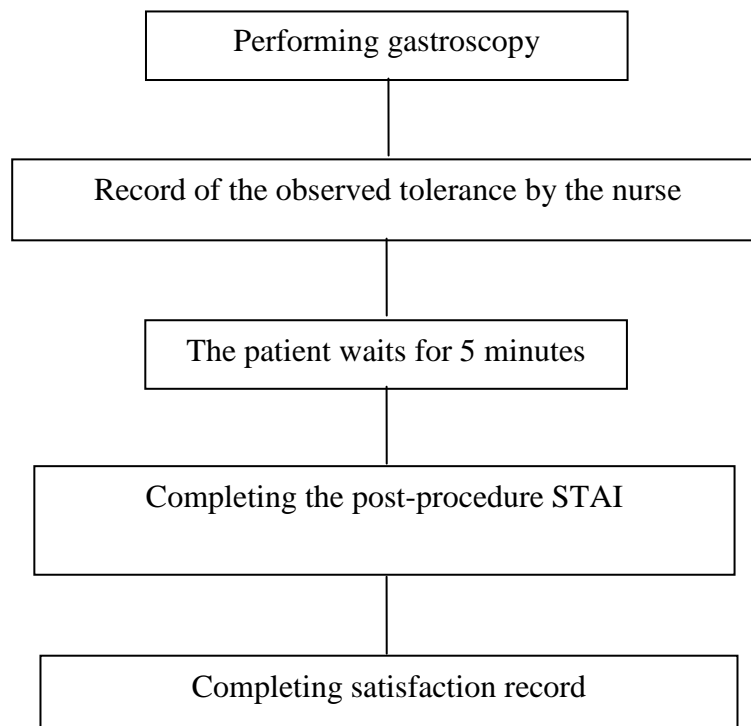
<i>Please, tick on the response that best indicate your satisfaction with the examination.</i>		
The explanation we have given you about the procedure has been		
Excellent	Good	Bad
The discomfort that you have felt during the procedure has been		
Unbearable	Tolerable	Any
Would you repeat the test in the same conditions?		
Never	Perhaps	Yes

Procedure

Upon arrival at the administrative point for the unit, the patient received an informational sheet about the study and a consent form which they had to sign if they agreed to participate. After agreeing to participate, patients were given a self-evaluation STAI-state form to complete while they waited their turn for the procedure. Figure 3 facilitates an overview of the process.

Figure 3. Algorithm of the procedure.





The nurse called the patient, measured their heart rate and blood pressure, and provided the appropriate nursing intervention: for the experimental group, supplying sensory information about the procedure, that is, telling the patient in detail what they would feel during the procedure and what they could do to counteract it, and temporal information specifying the approximate duration of the test (between three and four minutes). In addition, in the experimental group the nurse performed an intervention centered on the behavior of the patient, consisting of training in practices such as deep breathing. During the procedure, the nurse provided positive reinforcement to the patient supporting their attempts to follow the instructions.

The nursing intervention in the control group consisted of supplying the sensory and temporal information prior to the procedure.

After the nursing intervention, a new measurement of the heart rate and blood pressure constants were taken, and the endoscopy was done. Once the procedure was concluded, the nurse recorded observations about the tolerance of the patient.

When the patient had recovered from the procedure, approximately 5 minutes after removing the endoscope, they completed the post-procedure STAI questionnaire and the satisfaction questionnaire.

All the gastroscopies included in this investigation were done using Olympus model EVIS EXERA II GIF-H 180 gastroscopes.

Nurses who have performed in the control group and experimental group were always the same, 2 for each group.

The gastroenterologists who have done the explorations have been 6 gastroenterology physicians, who indistinctly participated in the explorations of the two groups.

Data analysis

The data were introduced in an Excel database and analyzed with the SPSS program, version 17.

Firstly, the characteristics of the two study groups were compared, using a T-test of independent samples to compare the equivalency of the two groups. Repetitive measures of variance analysis (ANOVA) were used to compare the experimental group with the control group in all the dependent variables evaluated: heart rate, systolic blood pressure, diastolic blood pressure, state of anxiety, tolerance, and satisfaction.

RESULTS

Demographic characteristics and descriptive results

Of the 109 patients who participated in the study, 66 were women, representing 60.6% of the sample. The age range of the participants was between 18 and 85 years, with a median age of 50.85 and a standard deviation of 15.1.

Quantitative analysis

The analysis revealed equivalence of the two groups for all variables. Table 1 shows the description of the sample.

Table I. Equivalence independent variables

VARIABLE	EXPERIMENTAL GROUP n= 51	CONTROL GROUP n= 58
Age (years)		
M (SD)	53,36 (17)	48,64 (13)
Sex (% of women)	64,7	56,9
Pre-procedure STAI (%)		
M (SD)	44,6(18,5)	36,3 (16,9)
Heart rate on arrival		
M (SD)	77,1(15,3)	80,5 (14)
Systolic Blood Pressure on arrival		
M (SD)	138,3(21)	137 (20)
Diastolic Blood Pressure on arrival		
M (SD)	81,9 (13,25)	78,31(13)

Repeated measures of variance analysis (ANOVA) were carried out to compare the differences in all the parameters measured between the control and experimental groups, and break down the results in each of the analyzed variables. Table 2 shows a summary of the analysis.

Table 2. Analysis of Variance.

	F	Sig
STAI Percentage difference * Type of intervention	4.585	0.035
Satisfaction * Type of intervention	0.453	0.503
Tolerance * Type of intervention	7.206	0.008
Heart rate on arrival- Heart rate at the start * Type of intervention	0.000	0.984
Systolic Blood Pressure on arrival- Systolic Blood Pressure at the start * Type of intervention	3.016	0.085
Diastolic Blood Pressure on arrival – Diastolic Blood Pressure at the start * Type of intervention	0.160	0.690

Anxiety

Anxiety was scored with four different parameters: the first was the difference in the STAI-state test between arrival at and departure from the hospital; the second parameter was the difference in heart rate between the arrival at the hospital and the moment of the start of the procedure; the third parameter was the difference in systolic blood pressure between arrival at the hospital and the beginning of the procedure; and the fourth was the difference between diastolic blood pressure between arrival at the hospital and the beginning of the procedure. Of these four criteria, the percentage of difference in the STAI score between the experimental group (mean 12.78%, confidence interval of 95% between 0.95 and 10.05%) and the control group (mean 5.5%, confidence interval between 7.67 and 17, 90%) was statistically significant ($p=0.035$). The differences between the means for the two groups in the rest of the parameters measured were not statistically significant. It is notable, nevertheless, that the means of the differences in blood pressure were positive-- that is, that the blood pressure decreased between the arrival at the hospital and the start of the test-- and the heart rate values were negative-- that is, the heart rate increased between the arrival at the hospital and the start of the procedure.

Satisfaction

The mean of satisfaction with the procedure, as self-reported by the patient, showed no significant difference between the two groups ($p=0.503$).

Tolerance

The difference between the measurements of tolerance perceived by the endoscopy nurse in the two groups was statistically significant ($p=0.008$), with the mean of tolerance for the experimental group of 1.08 (IC: 0.65-1.50) and for the control group of 2.07 (IC 1.48-2.66).

DISCUSSION

The objectives of this study were to compare the anxiety, tolerance, and satisfaction in two groups of people who were to undergo a diagnostic gastroscopy without sedation. This study came about from a need for scientific evidence to support the perception that the investigators had in daily healthcare practice that a nursing intervention consisting of both cognitive and behavioral preparation was more effective in reducing patient anxiety than a purely cognitive intervention, and that this reduction in anxiety

favors improved tolerance of the procedure and higher patient satisfaction with the procedure.

The results obtained only partially support this hypothesis. The percentage of pre-to-post procedure anxiety reduction as measured by STAI was higher (statistically significant) in the experimental group. This fact supports the study's hypothesis. Nevertheless, the differences in the psychophysiological parameters of anxiety were not statistically significant, with very similar differences in both groups. This last result is consistent with those obtained by Maguire ^[13]. The lack of differences found in the psychophysiological parameters coincides with the results of a study carried out by Hayes in 2003, in which significant pre-post differences were found in the STAI results, though no differences were found in the pre-post vital signs.

On the other hand, the tolerance of the gastroscopy as observed by the nurse was indeed statistically significant, keeping in mind that both groups showed good tolerance. In the scale used, the best possible tolerance has a value of zero and the worst a value of 20. In this study the control group had a tolerance score of 2, and the experimental group a tolerance score of 1, and although they are significantly different in both cases they are satisfactory; that is, the perception of the nurses regarding how the patient tolerates the procedure was good in all cases.

The third point in our objectives was to know how the patients found the experience. Their satisfaction was measured with a survey created to this end, with the score of 0 signifying the worst possible experience and the score of 6 the best possible experience. The results obtained in the two groups were approximately 4, which invites one to think that the experience of the patient was good, and from that we can conclude that the perceptions of the nurses coincides with the experience of the patient. This would be a consideration to analyze in more depth, and with all of the possible variables which might confuse the results.

CONCLUSIONS

Experimental investigations are useful in nursing to obtain scientific evidence of the ideal clinical practice. It is possible to improve the tolerance of gastroscopy and reduce anxiety due to the procedure, with the intervention of the nurses centered in the cognitive and behavioral aspects of the patient.

REFERENCES

1. Abuksis, G., Mor, M., Segal, N., Shemesh, I., Morad, I., Plaut, S., Weiss E., Sulkes J., Fraser G. & Niv Y. A patient education program is cost-effective for preventing failure of endoscopic procedures in a gastroenterology department. *Am J Gastroenterol* 2001;96: 1786-1790
2. Fincher, W., Shaw, J. & Ramelet, AS. The effectiveness of a standardised preoperative preparation in reducing child and parent anxiety: a single-blind randomised controlled trial. *J Clin Nurs.* 2012; 21(7-8): 946-955.
3. Stoddard, Jill A., White, Kamila S., Covino, Nicholas A., & Strauss, Lisa. (2005). Impact of a brief intervention on patient anxiety prior to day surgery. *Journal of Clinical Psychology in Medical Settings.* 2005; 12 (2): 99-110.

4. Scheffer, GJ. Conscious sedation for endoscopic procedures. *Neth J Med.* 2004; 62 (1): 1-3.
5. Christe, C., Janssens, JP., Armenian, B., Herrmann, F. & Vogt, N. Midazolam sedation for upper gastrointestinal endoscopy in older persons: a randomized, double-blind, placebo-controlled study. *J Am Geriatr Soc.* 2000; 48(11): 1398-1403.
6. Trevisani, L., Sartori, S., Gaudenzi, P., Gilli, G., Matarese, G., Gullini, S. & Abbasciano V. Upper gastrointestinal endoscopy: Are preparatory intervention or conscious sedation effective? A randomized trial. *World J Gastroenterol.* 2004;10: 3313–3317.
7. Motomura, N., Sakurai, A. & Yotsuya, Y. Reduction of mental stress with lavender odorant. *Percept Mot Skills.* 2001; 93(3): 713-718.
8. Gillen, E., Biley F, & Allen D. Effects of music listening on adult patients' pre-procedural state anxiety in hospital *Int J Evid Based Healthc.* 2008;6 (1): 24-29.
9. Hayes, A., Buffum, M., Lanier, E., Radahl, E., & Sasso, C. A music intervention to reduce anxiety prior to gastrointestinal procedures. *Gastroenterol Nurs.* 2003; 26 (4): 145–149.
10. Wesa, KM. and Grimm RH. Jr. Recommendations and guidelines regarding the preferred research protocol for investigating the impact of an optimal healing environment on patients with hypertension. *Journal of Alternative and Complementary Medicine.* 2004; 10, Suppl 1: 245-250.
11. Coombes, JM., Steiner, J.F., Bekelman, DB, Prochazka, AV. & Denberg, TD. Clinical Outcomes Associated with Attempts to Educate Patients about Lower Endoscopy: A Narrative Review. *J Community Health.* 2008; 33: 149–157.
12. Ylinen, ER., Vehviläinen-Julkunen, K. & Pietilä, AM. Effects of patients' anxiety, previous pain experience and non-drug interventions on the pain experience during colonoscopy. *J Clin Nurs.*2009; 18(13): 1937-1944.
13. Maguire, D., Walsh, J.C. & Little, C.L. The effect of information and behavioural training on endoscopy patients' clinical outcomes. *Patient Educ Couns.* 2004; 54: 61–65.
14. Hoya, Y., Matsumura, I., Fujita, T. & Yanaga K. The use of nonpharmacological interventions to reduce anxiety in patients undergoing gastroscopy in a setting with an optimal soothing environment. *Gastroenterol Nurs.* 2008; 31(6): 395-399.

ISSN 1695-6141

© [COPYRIGHT](#) Servicio de Publicaciones - Universidad de Murcia