

The Effectiveness of Behavioral Intervention on Anxiety and Distress Levels among Upper Gastroscopy Patients

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Abstract Background: upper gastrointestinal endoscopy is the most preferable diagnostic examination for patients, Anxiety is one of the common problems and issues in the patients selected for surgery or invasive diagnostic and therapeutic methods. **This study was aimed** to investigate the effectiveness of behavioral intervention on Patient's anxiety and distress levels among upper gastroscopy patients in Benha University Hospital. **Study design:** This study experimental design (Pretest-Posttest study control group). **Setting:** The study was carried out in the endoscopy department at Benha University hospital in Benha city, Egypt. **Subject:** One hundred twenty patients alert mentally and willingness to participate in the study who were subjected for upper gastroscopy. The selected subjects were assigned to study and control groups (n= 60) in each group. **Three tools for data collection:** The 1st tool consists of two parts: **Part I:** It was concerned with the socio-demographic characteristic of the studied subjects. **Part II:** clinical variables. **2nd Tool:** The State-Trait Anxiety Inventory Scale (STAIYI) to measures the state and trait anxiety level. **3rd Tool:** Endoscopy Concerns Scale to measure patient's distress pre-procedure regarding a scope procedure. **Results:** The main findings of the study were: A majority of the control group had a severe distress and severe anxiety as compared with the study group post behavioral intervention had mild distress and mild level of anxiety. Therefore there was a positive association between total anxiety and total distress score within both the control and the study group post-intervention. **Conclusion:** The present study concluded that reduction of anxiety and distress level in the study group than the control group after behavioral intervention for upper gastrointestinal endoscopy patients. **Recommendations:** The nurses should be implement the behavioral intervention to reduce the anxiety and distress toward upper gastroscopy and enhance patient cooperate during the procedure.

Keywords: behavioral intervention, upper gastroscopy, anxiety, distress, level

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1. Introduction

Upper gastrointestinal endoscopy is a very important and highly sensitive method to detect esophago-gastro duodenal lesions and is commonly used as a screening test for stomach cancer in asymptomatic. However, the investigation and diagnosis of gastrointestinal diseases might be delayed by the discomfort, retching, and anxiety in patients during endoscopy Lee, et al., [1].

Endoscopy is an essential and very commonly used procedure for the evaluation of a multitude of gastrointestinal symptoms. Although it is used to confirm or exclude a particular diagnosis in patients with upper gastrointestinal complaints, to monitor the progression of a known disease, and for staging in patients with systemic disease [2]. The incidence of upper gastrointestinal bleeding is approximately 50 per 100 000 persons per year, the mortality of this condition is between 5% and 11% [3].

Endoscopy is normally part of a comprehensive evaluation by an Anxiety is one of the common problems and issues in the patients selected for surgery or invasive diagnostic and therapeutic methods. Anxiety affects mental and physical responses on gastrointestinal methods and endoscopy units shall use strategies in the respect of minimizing this anxiety [4].

High levels of anxiety can lead to incomplete, painful, difficult endoscopy and increase consumption sedatives and cause side effects caused by them. On one hand, anxiety and stress lead to the increase of the duration of endoscopy and increases its side effects. Thus, preventing or reducing anxiety is important during endoscopy [5].

Patients are entitled to be fully informed of the reasons why a procedure is recommended, its expected benefits, the potential risks, its limitations, and the alternatives. They also need to know exactly what will happen and have the chance to ask questions. Printed brochures can facilitate this education process and should be given to patients well in advance of the procedure. Therefore, that they can be studied carefully and digested [6].

There is a disparity between nurses about the ideal role of nurses in endoscopies. 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 [7].

The significance of the Study:

Upper gastrointestinal endoscopy is the preferred investigative procedure and therapeutic interventions for with low rate of complication. Patients often experience anxiety prior to gastroscopy due to fear. Which may lead to discomfort and distress to be a more difficult procedure. So, relieving the anxiety and distress before gastroscopy is done by an explanation regarding the procedure, teaching relaxation through behavioral intervention and cognitive intervention.

The aim of the study:

This study aimed to investigate the effectiveness of behavioral intervention on patient's anxiety and distress levels among patients subjected with upper gastroscopy in Benha University Hospital.

Research Hypothesis:

Upper gastroscopy patients at the study group will have low anxiety and distress level than those in the control group.

2. Subject and Methods

2.1. Technical Design

Design: The research design adopted by the researchers was experimental design (Pretest-Posttest study control group design).

Setting: This study was conducted in the endoscopy department. It's a unit situated on the 6th floor in the medical block at Benha University hospital in Benha city. It has gastroscopy, colonoscopy room, and the waiting area. The setting of the study was the waiting area as well as upper gastroscopy procedure room. It service nearly 15-20 gastroscopy procedure were done monthly.

This study conducted in this site because it's the only site of gastroscopy unit affiliated Benha University.

2.1.1. The Sample

The sample for this study was patients for upper gastroscopy and who fulfilled the inclusion criteria, whereas the accessible sample of the study were those who are enduring the same condition and subjected for gastroscopy at Benha University hospitals in Benha city.

2.1.2. Sample Size

The sample size in this study included 120 patients who were subjected for upper gastroscopy. The selected subjects were assigned to study and control groups (n=60) in each group.

2.1.3. Sampling Technique

A purposive sample was randomly divided into two groups, one as a study group where they were instructed to behavioral intervention and the other group who received the routine care for upper gastroscopy. Patients who fulfilled the inclusion criteria were included in this study.

2.1.4. Inclusion Criteria

Patients who are:

- a. Male or female (both sex).
- b. Aged between 20-50years.
- c. Mentally alert and able to communicate freely.
- d. Willing to participate in this study.

2.1.5. Exclusion Criteria

Patients who are:

- a. Posted for emergency upper gastroscopy.
- b. sedated/confused.
- c. having a diagnosis of significant behavior disturbance.
- d. Already exposed previously to gastroscopy.

2.1.6. Tools Used for Data Collection

Three tools were used in this study after an extensive review of related literature to collect necessary data from the participants; include: structured interviewing questionnaire, State-Trait Anxiety Inventory Scale (STAI Y1) & Endoscopy Concerns Scale.

Tool I:

A structured interviewing questionnaire was developed by the researchers composed of two parts:

1st part. Sociodemographic variables such as age, sex, education level, occupation, marital status, and residence.

2nd part. Clinical variables such as diagnosis and family history.

Tool II: The State-Trait Anxiety Inventory Scale (STAIYI):

The State-Trait Anxiety Inventory Scale measures the state and trait anxiety level by Spielberger et al., [8]. It clearly differentiates between the temporary conditions of "state anxiety". The scale has both positive and negative statements. The positive statements were 3, 4, 6, 7, 9, 12, 13, 14, 17 & 18 the options were scored as 1, 2, 3 & 4. The negative statements were 1, 2, 5, 8, 10, 11, 15, 16, 19 & 20, therefore reverse scoring as 4, 3, 2, & 1 was used.

The scoring system:

The total score system was considered as the following: Mild anxiety: score 60% equal less than 48 points, moderate anxiety: 60% to 75% with the score from 48 to 60 points, and severe anxiety: 75%equal more than 60 points.

Tool III: Endoscopy concerns Scale:

Endoscopy Concerns Scale was developed by Wardle et al., [9] to measure discomfort through assesses patient's distress level pre-procedure regarding a scope procedure. Contained 14-items aimed to capture embarrassment or worry experienced with upper endoscopic procedures, based on specific aspects of the procedure that patients have commonly reported as unpleasant. Items were rated using a 10-point response format, from 'not at all' to 'extremely' distressed, with a total score ranging from 14 to 140; a higher score indicated greater distress.

The scoring system:

The total score system was considered as the following: No distress: score 25% equal less than 35 points. No distress: score 30% equal less than 42 points. Mild distress: 25% to 60% score equal 35 to less than 84 points. moderate distress: 60% to 75% with the score from 84 to 105 points, and high distress: 75%equal more than 105 points.

2.2. Operational Design

2.2.1. Preparatory Phase

This phase included reviewing the available literature and the different studies related to anxiety and distress about upper endoscopy concerns intervention and discomfort to cover various aspects of the research problem using books, articles, magazines, and internet to develop the study tools for data collection.

Validity:

The study tools were tested for validity by 3 experts; 2 from the Faculty of Nursing (Psychiatric Nursing and Medical Nursing field) and 1 Statistical expert.

Reliability:

Cronbach's alpha indicated good internal consistency and reliability for the state-trait anxiety inventory, Cronbach's alpha equal to 0.92 and 0.87 for endoscopy concerns scale.

Pilot study:

After the tools have been designed, they were tested through a pilot study was carried out on 10% (12 patients) of the study sample to test tools for clarity, applicability and the time required for filling in the tools. Data obtained from the pilot study was analyzed and accordingly, the necessary modifications on the study tools were done; those who participated in the pilot study were excluded from the main study sample.

Fieldwork:

- An official approval to carry out the study was obtained from the directors of Benha University Hospitals.
- The average time consumed to nursing education regarding behavioral intervention on prevention of anxiety about the upper gastroscopic procedure and deep breathing exercise practices was 10 minutes, 15 minutes.
- The actual field work was carried out from the beginning of February 2016 until the end of April 2016. An average two days/week (Tuesday and Thursday) in the previously mentioned setting 9 am: 12 pm.

2.3. Nursing Intervention Construction

The nursing intervention was constructed in four phases:

Assessment phase: In this phase, the researchers collected the following data:

- Demographic data of the patients
- Patient's anxiety levels
- Patient's distress level

2.3.1. Planning Phase

Based on the results obtained from the assessment phase, the behavioral intervention was designed by the researchers.

General objective: The nursing behavioral intervention was practiced to reduce the anxiety and distress levels among upper gastroscopy patients.

Specific objective:

Improve discomfort and patient cooperation during the upper gastroscopy.

Content: The nursing intervention consists of nursing education about upper gastroscopy as a definition and its

uses and important, as well as education ,should emphasis more on imparting health information regarding behavioral intervention on prevention of anxiety therefor, as to minimize patient's distress, improve discomfort and patient cooperation during the upper gastroscopy.

Implementation Phase

The behavioral intervention was implemented about 3 months; The average time consumed to behavioral intervention on prevention of anxiety regarding the diagnostic procedure and deep breathing exercise practices was 10 to 15 minutes for anxiety, it was carried out either individually or in small groups from 2 to 3 patients in the waiting area, and assess patients' attitude toward discomfort in about 10-20 minutes. Different teaching methods were used including small group discussion, demonstration and laptop assisted teaching with deep breathing exercise does not cost the patients and is effective to reduce the fear and anxiety towards the upper gastroscopy.

Behavioral Intervention:

The nursing behavioral intervention consisted of behavioral intervention and cognitive intervention presented in the following order: 1) behavioral intervention, 2), cognitive intervention. The researchers performed the behavioral intervention through a face-to-face explanation with the subjects to reduce the interpersonal variation. First, the behavioral intervention consisted of a deep breathing exercise, a tongue depressor task, swallowing technique, and relaxation. The tongue depressor task and swallowing technique were rehearsed at least three times. Finally, the cognitive intervention used an audiotape containing music and narration to encourage the participants to relax to reduce the discomfort. The total duration of the behavioral intervention was approximately 15 to 25 minutes.

Evaluation Phase: Behavioral intervention was evaluated through posttest; by using both tools the same of pretest forms that were compared study group with control group, it was evaluated at the recovery room for study group after intervention, by comparing the change in patient's level of anxiety as to improve pain discomfort and patient cooperation during the upper gastroscopy.

2.4. Administrative Design

Official letters were issued from the Faculty of the Nursing, Benha University Hospital to the administrators of the selected health setting explaining the aim of the study and asking their permission for data collection and then it was possible to carry out the study with minimum resistance.

2.4.1. Ethical Considerations

The agreement of the subjects to participate in the study was taken verbally and that of the administrators of the selected settings through formal letters. Participants were assured that the information that was taken from them would be treated confidentially and used for the research purpose only. University hospital was taken for agreeing to hold research.

2.5. Statistical Design (Data Analysis)

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20. The first part of

socio-demographic and clinical variables were descriptive data, levels of anxiety and distress & beliefs of patients subjected toward gastroscopy procedure discomfort. Which were revised, coded, tabulated and statistically analyzed using the proportion percentage, arithmetic means, and standard deviation. Inferential Statistics. Independent “t” test was used to compare the effectiveness of behavioral intervention on anxiety. Degrees of the significance of the results were:

Non significant (NS), if $p > 0.05$.

Significant (S), if $p < 0.05$.

Highly Significant (HS), if $p < 0.001$.

3. Result

Table 1 showed that there was no statistically significant ($P < 0.05$) between both the control and the study group regarding their age, sex, marital status, educational level, occupation, and residence. That clarify there is a homogeneity between both control and study group.

Table 2: Displayed that there were highly statistically significant differences between control and study group in relation to different items of endoscopic concerns. The highest statistical differences the distress related discomfort after procedure followed by insertion of the intravenous line into the hand 41.99 and 38.49 respectively.

Figure 1: Illustrated that the vast majority (91.7%) of study group a mild distress, on the other hand, a majority of the control group had a severe distress (85%) (post behavioral intervention).

Table 3: showed that there were highly statistically significant differences regarding symptoms of anxiety among both the control and study group. The highest differences were found within the items of worries over possible misfortunes followed by feel steady, it was-12.237 and-11.841 respectively.

Table 1. Socio-demographic characteristics among studied subject Control group and study group (N=120)

Variable	Control group (n=60)		Study group (n=60)		Chi square test	P value
	No	%	No	%		
Age in years					0.416	>0.05
20≤30	13	21.7	13	21.7		
30≤40	20	33.3	22	36.7		
40≤50	27	38.3	25	41.6		
Mean±SD	32.4 ± 10.21		33.5 ± 9.78			
Sex					0.657	>0.05
Male	15	25.0	19	31.7		
Female	45	75.0	41	68.3		
Marital status					3.88	>0.05
Single	12	20.0	16	26.7		
Married	33	55.0	37	61.7		
Widow	12	20.0	5	8.3		
Divorced	3	5.0	2	3.3		
Educational level					2.08	>0.05
Illiterate	12	20.0	13	21.7		
Primary	25	41.7	18	30.0		
Secondary	6	10.0	6	10.0		
University	17	28.3	23	38.3		
Occupation					0.862	>0.05
Housewife	22	36.7	27	45.0		
Working	38	63.3	33	55.0		
Residence					0.834	>0.05
Rural	27	45.0	32	53.3		
Urban	33	55.0	28	46.7		

Table 2. Comparison of mean scores of concern of the participants in the study and the control group during the upper gastroscopy (N=120)

Concerns Scale	Control group (n=60)	Study group (n=60)	Independent t-test	P value
	Mean ±SD	Mean ±SD		
Telling friends/colleagues the nature of the upcoming test	7.9167±1.19734	2.6333±.90135	27.30	<0.001**
Fasting prior to the test	7.1167±1.40329	1.8500±.75521	25.60	<0.001**
Discomfort prior to the test	7.8833±.97584	2.4000±.78546	33.90	<0.001**
Gagging during the test	8.5167±.98276	2.1000±1.14537	32.93	<0.001**
Sensations of choking during the test	6.9167±1.59758	2.6000±.71781	19.09	<0.001**
Vomiting during the test	7.9167±1.01333	2.4167±.99646	29.97	<0.001**
The Doctor seeing food in the stomach during the test	7.6833±1.11221	2.6667±1.28441	22.87	<0.001**
Expressing emotions during the test	6.8333±1.22359	2.4500±.99873	21.49	<0.001**
Saying unintended things during the test	7.6000±1.06086	2.1667±1.07619	27.85	<0.001**
Body position assumed during the test	8.6000±1.02841	2.4333±1.06352	32.28	<0.001**
Insertion of the scope into the esophagus	7.2000±1.48210	2.1833±1.11221	20.97	<0.001**
Insertion of an intravenous line into the hand	8.1000±.75240	3.0333±.68807	38.49	<0.001**
Discomfort during the procedure	6.9000±1.53711	1.7333±.88042	22.59	<0.001**
Discomfort after the procedure	8.0000±.90198	2.4167±.49717	41.99	<0.001**
Total	107.1833±7.00966	33.0833±6.12661	61.65	<0.001**

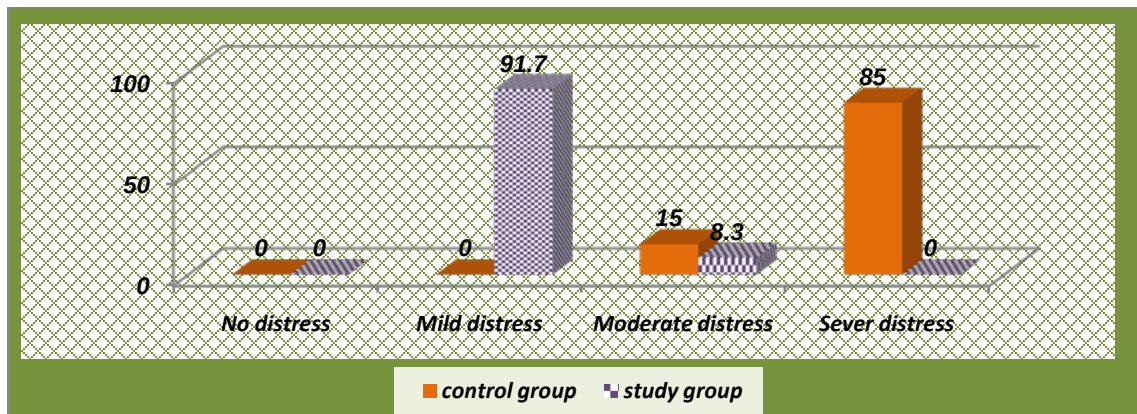


Figure 1. percentage distribution of levels of distress for the patients subjected to upper gastroscopy (post behavioral intervention) (N=120)

Table 3. Comparison of mean scores of state anxiety between the study group and control group during the upper gastroscopy (N=120)

State of anxiety	Control group (n=60)	Study group (n=60)	Independent t-test	P value
	Mean $\pm$ SD	Mean $\pm$ SD		
Feel calm	1.8500 $\pm$.36008	2.8167 $\pm$.85354	-8.083	.000
Feel secure	2.0167 $\pm$.34404	3.0167 $\pm$.96536	-7.558	.000
Feel tense	1.9667 $\pm$.41032	2.6667 $\pm$.91442	-5.410	.000
Feel strained	1.9500 $\pm$.21978	3.0667 $\pm$.79972	-10.429	.000
Feel at ease	2.4667 $\pm$.89190	3.2500 $\pm$.79458	-5.080	.000
Feel upset	1.3000 $\pm$.72017	2.8000 $\pm$ 1.03825	-9.195	.000
Presently worrying over possible misfortunes	1.3000 $\pm$.72017	3.0833 $\pm$.86928	-12.237	.000
Feel satisfied	1.7333 $\pm$.97192	2.6500 $\pm$.81978	-5.584	.000
Feel frightened	1.9833 $\pm$.39020	2.7333 $\pm$.82064	-6.393	.000
Feel comfortable	2.1167 $\pm$.32373	3.0000 $\pm$ 1.08924	-6.021	.000
Feel self-confident	1.9833 $\pm$.39020	2.9167 $\pm$.90744	-7.319	.000
Feel nervous	2.0667 $\pm$.25155	2.6167 $\pm$ 1.07501	-3.859	.000
Feel jittery	1.9667 $\pm$.41032	2.7500 $\pm$.96770	-5.773	.000
Feel indecisive	1.8500 $\pm$.57711	2.9167 $\pm$.97931	-7.269	.000
Feel relaxed	1.8500 $\pm$.36008	2.9333 $\pm$.82064	-9.364	.000
Feel content	2.0167 $\pm$.34404	3.1833 $\pm$.83345	-10.023	.000
Feel worried	2.0167 $\pm$.34404	3.1500 $\pm$.81978	-9.874	.000
Feel confused	1.8500 $\pm$.36008	3.1333 $\pm$.81233	-11.187	.000
Feel steady	1.9500 $\pm$.38730	3.2333 $\pm$.74485	-11.841	.000
Feel pleasant	1.9500 $\pm$.38730	3.2000 $\pm$.85964	-10.269	.000
Total	38.1833 $\pm$ 2.31789	59.1167 $\pm$ 6.60018	23.18	

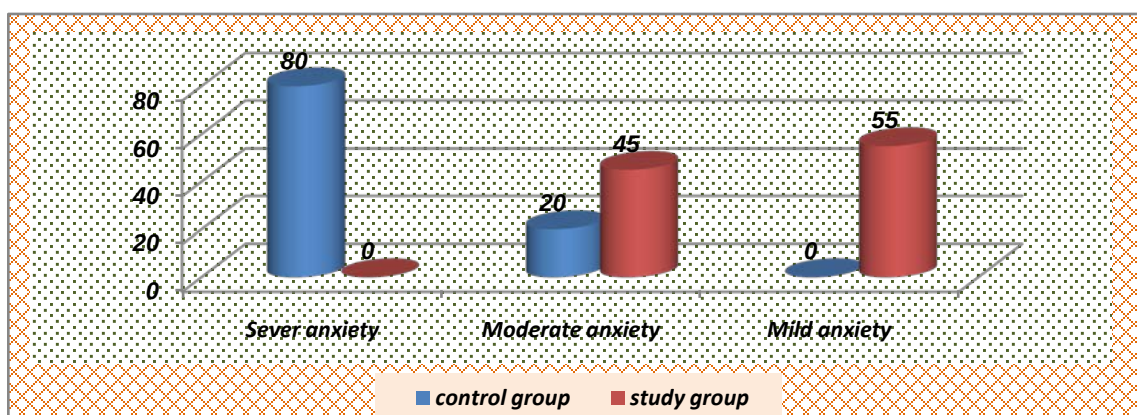


Figure 2. percentage distribution of levels of anxiety of the patient subjected to upper gastroscopy (post behavioral intervention) (N=120)

Figure 2: Illustrated that, the majority (80%) of control group have a severe level of anxiety as compared with 55% of the study group had a mild level of anxiety (post behavioral intervention).

Table 4: Showed that there was a positive association between total anxiety and total distress score within both the control and study group post-intervention.

Table 4. Correlation between total anxiety score and total distress score among both the control and study group (post-intervention)

Variable	Total distress score post intervention			
	Control group		Study group	
	r	P value	r	P value
Total anxiety score post-intervention	0.023	0.860	0.212	0.104

4. Discussion

Invasive diagnostic tests such as endoscopy are a stressful procedure that leads to increase patient's anxiety level. So this study aimed to investigate the effectiveness of behavioral intervention on Patient's anxiety and distress regarding a scope among patients subjected with upper gastroscopy. The result of this study showed that there was a significant reduction of anxiety level among patients undergoing upper gastrointestinal endoscopy.

Regarding socio-demographic characteristic of studied groups. The current study findings showed that more than half of the study and control group were females (75% and 68%) respectively. This finding was inconsistent with Seda et al., [10] they found that the majority of the study sample were male, This could be explained that the males are exposed to risk factors of gastric disorder such as gastric and duodenal ulcer these factors smoking, alcoholism, stress.

The present study reported that the gastrointestinal tract disturbances especially gastric disorder occur with the greatest frequency in people between the age group 40-50. This finding was in line with Lee et al., [1] who reported that the gastrointestinal tract disturbances, especially gastric disorders occur with the greatest frequency in people between the age group 41-49. This could be explained that this age represents working age population which exposed to unhealthy lifestyle such as stress, fast food, smoking, and increased consumption of caffeine and misuse of medications as analgesics that effect on the gastrointestinal tract.

As regard residence, the result of the present study revealed that both groups of the patient were having the same chance of upper the gastrointestinal tract diseases occurrence in the rural and urban setting. This was supported by Kennedy et al., [11] they reported that rural patient with lowest socioeconomic status had the same chance for risk of gastric diseases as those in a big cities with high socioeconomic status, there is increasing evidence to suggest that there no interaction between socioeconomic status in the development risk factors for the upper gastrointestinal tract diseases.

Concerning educational level, the current study denoted that nearly half of the study and control groups were primary school. This was supported by Mohamad et al., [12] who mentioned that the majority of the studied sample who undergoing upper gastrointestinal endoscopy

was illiterate. In the same time, these findings were supported by Quick., [13] who revealed that patient with low educational levels had a negative effect on health. The researchers clarified that Illiterate People lived in a rural area do not seek the hospital or clinics except in cases of necessity only and ignore any symptoms or any pain sufferers.

The present study indicates was no statistically significant ($P > 0.05$) between both the control and study group regarding their age, sex, marital status, educational qualification, occupation, and residence. That clarify there is a homogeneity between both control and study group. There was a highly statistically significant difference between control and study group in relation to different items of endoscopic concerns. The vast majority of study group a mild distress, on the other hand, a majority of the control group had a severe distress there were highly statistically significant differences regarding symptoms of anxiety among both control and study group.

A majority of the control group have a severe level of anxiety as compared with study group had a mild level of anxiety. To reduce anxiety and the negative affect elicited by the impending upper gastrointestinal endoscopy, and encourage self-confidence, various preparatory education programs have been developed. There was a positive association between total anxiety and total distress score within both control and study group, Previous studies Kowsalya et al., [14] indicate that the behavioral intervention was an effective method to reduce the anxiety and improve the tolerance of the patients subjected to gastroscopy. Anxiety is found to be more common among the patients subjected to gastroscopy.

The results compared with the anxiety and distress of the gastroscopy patients showed that few behavioral distresses during the procedure and shorter time to induce the gastroscope. The study revealed that there was a statistically significant difference between the groups.

5. Conclusion

Present study revealed that behavioral intervention before upper gastrointestinal endoscopy is a very important concern and had beneficial effects to reduce the anxiety and distress of the patients subjected study group than the control group to gastroscopy.

6. Recommendation

This study highlights that:

- The nurses should be implement the behavioral intervention to reduce the anxiety and distress toward upper gastroscopy and enhance patient cooperate during the procedure.

Further studies:

- Future studies should consider replicating the study on patients with gastroscopic patients.
- Impact of waiting time and it's relation with the anxiety among patients in the endoscopy unit.
- Implemented an educational program on patient's family/and relative with patients as well as patients selves in the endoscopy unit.

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