Effect of Pre procedure Education on Anxiety and Quality of Life on Patients Undergoing Upper Gastrointestinal Endoscopy

Noura Ewis Mohamed[1], Ahmed Ali Gomaa[2], Salwa Attia Mohamed[3]

[1]Demonstrator of Medical Surgical Nursing, Faculty of Nursing, Fayoum University

[2] Professor of Tropical Medicine, Faculty of Medicine, Fayoum University

[3] Professor of Medical Surgical Nursing, Faculty of Nursing, Fayoum University

Corresponding author: Noura Ewis Mohamed
Email: nem11@fayoum.edu.eg

Abstract

Background: Upper gastrointestinal (GI) endoscopy is a gold standard procedure for detecting upper gastrointestinal disorders which may cause anxiety to patients. This results in people skipping endoscopies, delaying diagnosis and treatment, and ultimately worsening their quality of life. **Aim:** To evaluate the effect of pre procedure education on anxiety and quality of life on patients undergoing upper gastrointestinal endoscopy. **Design:** Quasi experimental research design was utilized. **Setting:** The study was carried out in endoscopy unit at Fayoum University hospital, Egypt. **Subjects:** A purposive sample of 60 adult patients whose undergoing upper gastrointestinal endoscopic examinations who selected and assigned into two equal groups. **Tools for data collection:** Sociodemographic and Medical Data Questionnaire, Beck Anxiety Inventory Scale, and Short Form-36 Health Survey Questionnaire. **Results:** There was statistically significant improvement in total quality of life score for upper gastrointestinal endoscopy and alleviated in anxiety level in study group compared with control group ($P<0.05$). There was negative statistically correlation between anxiety level and quality of life among study group after pre-endoscopy preparation. **Conclusion:** Pre-procedure education for patients undergoing upper gastrointestinal endoscopy help for reducing the anxiety level and improving total quality of life of the patients **Recommendation:** The pre-endoscopy preparation program should be implemented as a routine nursing care for patients undergoing upper gastrointestinal endoscopy.

Keywords: Education, Anxiety, Quality of Life, Upper Gastrointestinal Endoscopy.

Introduction:

Gastrointestinal (GI) endoscopy is one of the most common invasive procedures in the clinical practice for both diagnostic and therapeutic interventions to assess and treat various gastrointestinal (GI) disorders. There are two types of endoscopies: upper and lower. The esophagus, stomach, duodenum, and jejunum are all examined with an upper GI endoscopy **(Mohamed et al., 2022).**

Upper gastrointestinal endoscopy, also known as esophagogastroduodenoscopy (EGD), is recommended for patients who exhibit alarm features or relevant physical examination findings, such as unexplained weight loss, recurrent vomiting, inflammatory bowel disease, gastrointestinal bleeding, anemia, and family history of upper gastrointestinal malignancy or inflammatory bowel disease.

Through direct inspection of the esophageal, gastric, and duodenal mucosa, upper endoscopy facilitates tissue sampling for histopathologic diagnosis and lesion detection in Peptic ulcer disease, stomach outlet obstruction, Helicobacter pylori infection, and celiac disease **(Cangemi et al., 2025).**

Upper gastrointestinal tract (UGIT) symptoms are commonly reported in clinical settings, are a common reason for patients to seek medical attention and productivity loss **(Abdelrazek et al., 2024).**

Upper gastrointestinal endoscopy is an invasive procedure that can cause pain, nausea, and discomfort. These side effects can cause anxiety, fear, and worry, which can significantly reduce patient participation **(Liu et al., 2025).**

GI problems are the main health issue facing the community, and improving quality of life is a key therapeutic objective when GI patients receive the right treatment to alleviate their symptoms. People with gastrointestinal (GI) problems have a lower health-related quality of life than compared to those without such symptoms. A negative impact on an individual's physical, psychological and social functioning has been demonstrated **(Bovenschen et al., 2004).**

Educating the patient before to an upper gastrointestinal endoscopy may help them feel less anxious and to tolerate the process better. In order to ensure the high-quality and safety of the upper gastrointestinal endoscopy treatment, it is critical to ascertain the patient's degree of anxiety and the best ways to lower it while also improving the patient's understanding of the procedure (**Anwar et al., 2018).**

Significance of the study

Upper gastrointestinal endoscopy is used as a first-line method in diagnosing and treating digestive system diseases and gastrointestinal symptoms which are the most prevalent complaints and cause morbidity and mortality worldwide **(Kulkarni et al., 2024).**

There are an estimated 20 million upper endoscopy procedures performed each year in the United States **(Dermyer et al., 2025).** An

estimated 15 million endoscopic operations are performed annually on average in Egypt, with upper gastrointestinal endoscopies accounting for 55% of these procedures (Mohamed et al., 2024). According to statistical records of Fayoum University hospital, there were 3500 endoscopies is carried out yearly. Upper GI endoscopy constitutes about 75% of these procedures in 2024.

Most endoscopic patients experience anxiety that may range from minor to severe, and it might interfere with the procedure, delaying the diagnosis of the illness. According to studies, 8% of patients withdraw from the procedure due to fear and refusal to cooperate. Therefore, pre-endoscopy patient education should alleviate anxiety leads to patient more relaxed, well tolerance procedure; improve adherence and overall quality of life. **(Kaur & Williams, 2022).**

No previous studies done at Fayoum University Hospital to evaluate the effect of pre procedure education on anxiety, and quality of life on patients undergoing upper gastrointestinal endoscopy, for this reason, the study was conducted.

Aim of the Study:

The aim of the study was to evaluate effect of pre procedure education on anxiety and quality of life on patients undergoing upper gastrointestinal endoscopy.

Research hypothesis:

H_1: Patients level of anxiety will be improved post implementation of the pre procedure education.

H_2: Patient quality of life of will be improved post implementation of the pre procedure education.

Materials and Methods:

Research design:

Quasi experimental research design was utilized to conduct this study. This design used to evaluate the effects of an intervention in the absence of randomization to groups **(Miller, 2020).**

Setting:

The study was carried out at Fayoum University Hospital in endemic outpatient clinic and gastroscopy unit.

Subjects:

A purposive sample of 60 adult patients undergoing upper gastrointestinal endoscopic examination was selected for fulfilling the stated criteria. The sample divided into two equal groups; the study group (n=30) who received the pre procedure education on endoscopic procedure and control group (n=30) who received routine care.

Inclusion criteria:

- Definitive diagnostic endoscopic patient from both genders.
- Ages >18 years.
- Mentally alert and able to communicate freely.
- Agree to participate in this study.

Exclusion criteria:

- Patients who were sedated or confused.
- Patients who already exposed previously to gastroscopy.
- Patients who had end stage of liver.
- Patients who had speech disorder.
- Patients who were posted for emergency upper gastroscopy.

Tools for Data Collection:

Data were collected using the following forms:

Tool I: Sociodemographic and medical data questionnaire: This tool was designed by the researcher to collect patient data in relation to the following:

A. Sociodemographic data such as age, gender, marital status, level of education, occupation, residence area and family income.

B. Medical data: such as indications of endoscopy, present diagnosis, causes of hospitalization, associated disease, medications and family history.

Tool II: Beck Anxiety Inventory Scale: It used to assess anxiety level and adapted from **(Beck et al., 1988)**. It consists of 21 items; each item is rated on a 4-point scale, ranging from 0 (Not at all) - 3 (Severely). The total score is calculated by finding the sum of the 21 items such as: a) Low level of anxiety (0 – 21); b) Moderate level of anxiety (22 – 35) and c) Severe level of anxiety (36 and above).

Tool III: Short Form-36 Health Survey Questionnaire (SF-36 QOL):

It used to assess quality of life and adapted from **(Link et al., 2010).** The SF-36 questionnaire consists of eight scales covering two summary measures: physical and mental health. The physical health measure includes; four scales of physical functioning (10 items), role-physical (4 items), bodily pain (2 items), and general health (5 items). The mental health measure is composed of vitality (4 items), social functioning (2 items), role-emotional (3 items), and mental health (5 items). The SF-36 offers a choice of recall format at a standard (4 weeks) or acute (1 week) time frame. Likert scales and yes/no options are used to assess function and well-being on this 36-item questionnaire. These scales further represent two distinct higher-ordered clusters due to physical and mental health variance, can range from 0 (worst health) to 100 (best health). Higher scores indicate better health status.

Validity and reliability:

Content validity was conducted to determine whether the tool covers the aim by a jury of five experts, one professor, and three assistant Professor of Medical Surgical Nursing at the faculties of nursing (Damietta & Helwan) universities and professor of Endemic Medicine at the Faculty of Medicine, Fayoum university, to review tools for clarity, relevance, comprehensiveness and applicability. Modifications of tools were done.

Testing reliability: To assure the tools were reliable before data collection of the study by using Alpha Cronbach Test. The tools used for its reliability using test-retest reliability and proved to be strongly reliable at (0.87; 0.89) for Tool II and III.

Pilot study:

The pilot study was done on 10% of the sample (6 patients) to evaluate clarity of questions, visibility, applicability, content validity, assess the ability of the tools to achieve the study objectives, and determine the time needed to complete the study tools. Subjects who shared in pilot

study were excluded from the main study sample.

Field Work:

- An approval was obtained from Fayoum University Supreme Committee for Scientific Research Ethics and approval was obtain from the hospital director to carry out the study after explained of the purpose of the study.
- Data collection for this study was carried out from October 2023 to February 2024.
- The study was conducted in four phases namely: assessment, planning, implementation and evaluation.
- Assessment phase: A baseline assessment was carried out by the researcher for all the study subjects in the study and control groups by using sociodemographic and medical data, beck anxiety inventory scale, and short form-36 health survey questionnaire. This assessment was collected prior to conducting the pre procedure education
- Planning phase: This phase was formulated based on the study subjects' assessment. Pre procedure education was given by the researcher through face-to-face communication with study groups in the form of a colored booklet that takes about one month for development. They were designed by the researcher in the Arabic language.
- The pre procedure education was planned according to two sessions; each session was taken for 30-40 minutes to study groups within two days /week. The teaching methods included a colored booklet that had been distributed to study groups and videos about endoscopy with discussion and answer any questions for the patient.
- Implementation phase**:** The researcher started the interview with each patient individually using the data collection tools. Study group who received pre procedure education and hospital routine care In this phase, the information about preparation for UGI endoscopy was given for study group patients only through an oral instruction as a method of teaching with booklet. The researcher interviewed the patients for 3 sessions; the first session for patient contact was provided to the patient approximately 1 week before the procedure when the patient came to the endoscopy unit to make an appointment for the procedure and took from 30 to 45 included the information about the upper gastrointestinal endoscopy procedure including definition, indications, contraindication, complications, preparations for the procedure, position of the patient during the upper endoscopy, steps of the procedure. Second session was started on the day of performing the procedure and took about 30-40 minutes. This session included the following: The patient learned to demonstrate the deep breathing exercise independently, relaxation techniques, discharge instructions, warning signs and requiring immediate care. The control group who received the routine hospital nursing care as prescribed by the medical team.

- Evaluation Phase: Each patient of the study and control group was evaluated three times; the first evaluation is in the baseline assessment. The second evaluation was done on the day of endoscopy for both study and control groups were assessed for their anxiety level. While third evaluation through day of follow up for both study and control groups within 15-20 minutes to estimate the effect of the pre-endoscopy education programs on quality of life.

Ethical considerations:

Ethical research approval was obtained from Fayoum University Supreme Committee for Scientific Research Ethics before initiating the study work. The purpose of the study was explained to the patients and oral consent was obtained from them to participate in the study. Patients were given the possibility to withdraw from the study at any time without explaining the purpose and they were assured that anonymity and confidentiality of information was protected. Ethics, values, and beliefs were respected.

Statistical Design:

- Each data assessment sheet was coded and scored manually prior to computerized data entry.
- Descriptive statistics (frequency, percentage, mean and standard deviation) were performed for quantitative and qualitative variables.
- Pearson's correlation coefficient (r) and tests of significance (paired and unpaired t-test and chi-square) were applied.
- P values were considered significant if less than 0.05
- The above-mentioned statistical techniques were obtained by using Statistical Package of Social Science **(SPSS)** software version 22 in windows 7 (SPSS Inc., Chicago, IL, USA).

Results:

Table (1): shows that, the mean age of the study and control groups was (40.8±17.6, 38.3±14.9), The majority (63.3%, 60%) of studied patients were females.

As regards to marital status, more than two quarters (60%, 63.3%) of studied patients were married and (50%, 46.7%) of them were illiterate education. In relation to occupation (53.3%, 56.7%) of studied patients were not working and (90%, 73.3%) of them were rural area. Considering monthly income, (83.3%, 76.7%) of them were insufficient income respectively.

Also, this table shows that there was no statistically significant difference between study group and control group as regards different demographic characteristics such as age, gender, marital status, education level, occupation, residence and income level with p-value >0.05.

Figure (1): illustrates that, there is a statistically significant decrease in anxiety score among study group and improve in anxiety level after the intervention, as pre intervention majority of cases show higher percentage of severe anxiety (50%) which change to higher percentage of low degree of anxiety after the intervention (86.7%).

Table (2): Indicates that there was no statistically significance difference in

quality of life domains before the intervention between study and control groups with p-value >0.05.

Table (3): shows that there was statistically significant difference between mean scores of the physical domain regarding general health, physical functioning and bodily pain (61.5, 72.3 and 75.6) respectively in study group compared to (54.02, 62 and 60.4) respectively in control group. There was a statistically significant difference between the mean scores of total QOL of both groups post intervention (p-value 0.03).

Table (4): illustrates that, there was a statistically significant negative correlation between Anxiety score and quality of life score post intervention which indicated increase in anxiety score will be associated with decrease in quality of life score either with p= 0.008.

Table (1): Sociodemographic characteristics for study and control groups (N=60)

Variables	Study group (n=30)		Control group (n=30)		t-test	p-value
Age (years)						
Mean ±SD	40.8±17.6		38.3±14.9		0.58	0.56
Range	19-60		19-55			
Gender	**No.**	**%**	**No.**	**%**	**X^2 test**	**p-value**
Male	11	36.7%	12	40%	0.07	0.99
Female	19	63.3%	18	60%		
Marital status						
Single	10	33.3%	10	33.3%	3.02	0.38
Widow	2	6.7%	0	0%		
Married	18	60%	19	63.3%		
Divorced	0	0%	1	3.3%		
Educational level						
Illiterate	15	50%	14	46.7%	2.2	0.52
University	6	20%	4	13.3%		
Basic education	8	26.7%	12	40%		
Post graduate	1	3.3%	0	0%		
Occupation						
Employed	14	46.7%	13	43.3%	0.06	0.99
Unemployed	16	53.3%	17	56.7%		
Residence						
Urban	3	10%	8	26.7%	2.7	0.18
Rural	27	90%	22	73.3%		
Family Income						
Sufficient	5	16.7%	7	23.3%	0.41	0.74
Insufficient	25	83.3%	23	76.7%		

***statistical significant p-value >0.05**

Figure (1): Percentage distribution of Beck Anxiety Inventory (BAI) scale Pre and post intervention in study group.

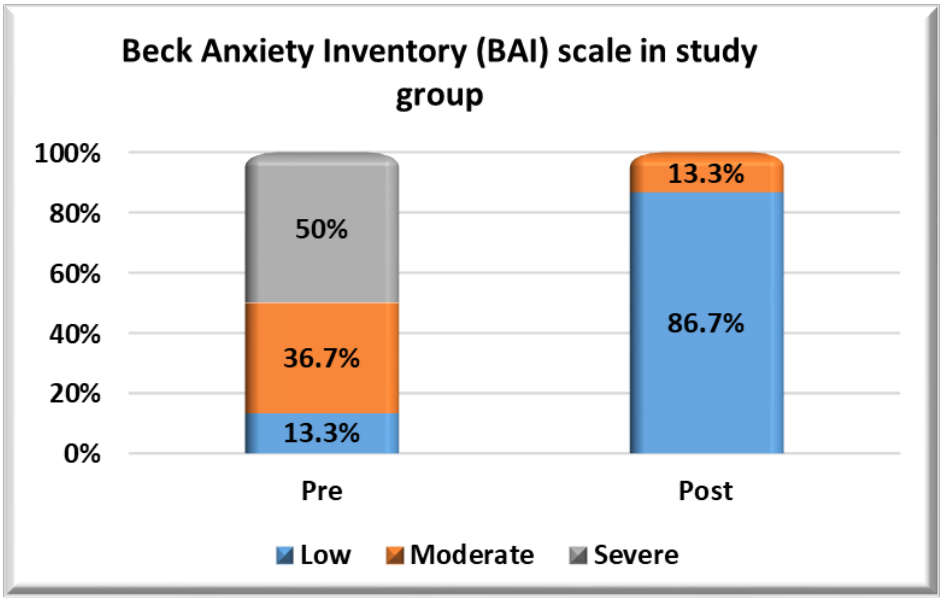

Table (2): Mean score of the SF36 Quality of life scale pre-intervention among both groups (N=60).

Pre- intervention	Study group (n=30)	Control group (n=30)	U-test	p-value
	Mean ±SD	Mean ±SD		
Physical health				
General health	21.5±9.1	20.9±7.8	-0.27	0.78
Physical functioning (PF)	24.8±25.8	37.3±26.4	-1.8	0.07
Role- physical (RF)	16.7±37.9	20±40.7	-0.31	0.74
Bodily pain (BP)	18.7±18.7	21.7±13.3	-1.1	0.25
Mental health				
Vitality (VT)	18.2±12.2	17.2±12.01	-0.31	0.75
Social functioning (SF)	25.4±19.6	23.7±11.9	-0.12	0.90
Role- emotional (RE)	17.8±37.9	16.7±37.9	0.11	0.19
Mental health (MH)	26.4±16.9	20.9±11.8	-1.2	0.22
Total scores				
Total Physical health	20.4±16.5	25.01±14.4	-0.16	**0.25**
Total Mental health	21.9±14.9	19.6±13.1	0.64	0.57
Total quality of life score	21.2±14.1	22.3±10.8	-0.36	0.72

Table (3): Comparison of the Quality of life (QOL) scale post-intervention in both groups (N: 60).

post- intervention	Study group (n=30)	Control group (n=30)	T-test	p-value
	Mean ±SD	Mean ±SD		
Physical health				
General health	61.5±14.2	54.02±14.01	0.68	**0.04***
Physical functioning (PF)	72.3±19.7	62±19.7	4.2	**0.01***
Role- physical (RF)	80±40.7	59.7±50.4	1.9	0.09
Bodily pain (BP)	75.6±15.2	60.4±17.6	0.51	**0.001***
Mental health				
Vitality (VT)	69.1±20.3	58.6±18.6	0.89	**0.04***
Social functioning (SF)	72.08±17.9	66.3±16.1	-0.49	0.19
Role- emotional (RE)	75±43.1	63.3±49.01	0.98	0.33
Mental health (MH)	72.5±19.8	65.8±17.1	1.4	0.17
Total scores				
Total Physical health	73.1±16.7	60.8±16.9	2.8	**0.006***
Total Mental health	72.2±20.6	67.02±18.7	1.01	0.31
Total quality of life score	72.7±17.2	63.8±14.6	2.1	**0.03***

Table (4): Correlation between quality of life and Beck Anxiety Inventory scale among studied subjects pre and post intervention (N: 60).

Variables	QOL score			
	Pre		Post	
	r	p-value	r	p-value
Age	-0.12	0.37	-0.15	0.25
BAI score pre	0.04	0.73	0.08	0.53
BAI score post	-0.05	0.66	**-0.34**	**0.008***

Discussion:

Upper gastrointestinal endoscopy is the gold standard medical procedure for diagnosing disorders of the esophagus, stomach and upper duodenum, enabling direct examination of mucosal surfaces, imaging, video recording, diagnostic biopsies of unclear lesions and treatment approaches. It was evident that patients who are scheduled for endoscopic procedures suffer from anxiety due to a lack of information about the procedure or worse outcomes as fear of diagnosis or mortality **(Helba et al., 2024).**

Endoscopy patient education is a cornerstone of effective healthcare, which can help patients improve their awareness, manage their treatment and avoid unexpected consequences and hospital re-admissions while preserving or improving their quality of life **Elgmal et al., (2025).**

The study's findings regarding the sociodemographic characteristics of the subjects showed that the mean age of the patients in the study and control groups was (40.8±17.6, 38.3±14.9) respectively. This finding is supported by **Abdelrazek et al., (2024)** who stated that the mean age was 41.77±15.74 years.

In relation to gender and marital status, current study illustrated that women represented more than half of the patients in both the study and control groups (63.3%, 60%) respectively and less than two thirds of them were married. This result is corroborated by **Mohamed et al., (2022)** who stated that female gender took the highest percentage in the study among studied patients. Also, this finding is consistent with **Yadav et al., (2023)** who mentioned that almost two thirds of the study subjects were married.

Concerning educational level, the current study found that the study group was nearly half illiterate, while the control group was less than half illiterate. This finding has been verified by **Sabry & Abouda (2021)** who reported that less than half of the studied patients who undergoing upper GI endoscopy were illiterate.

However, those findings were contradicted with **Dubois et al., (2020)** who reported that less than half of the studied patient had high educational level.

As regard residence, the current study's findings showed that both patient groups lived in rural areas. This outcome is corroborated by **Emam et al., (2024)** who reported that less than three quarters of study subjects were rural.

Regarding monthly income, the findings of the study showed that the most patients of the study and control groups was insufficient (83.3%, 76.7%) respectively. This result is supported by **Anwar et al., (2018)** who mentioned significantly fewer than two-thirds of the patients in the study considered their income as being low.

Concerning medical diagnosis, it is found that, more than half of the study group and less than half of the control groups not diagnosed and have the endoscopic examination for

diagnosis (56.7%, 46.7%) respectively, and the findings of the study show that H pylori and gastritis in the study group and control group were (23.3%, 30%) respectively.

Also **(Sewilam et al., 2024)** who reported that medical history of greatest number of patients under study had diagnosed with helicobacter pylori infection that impaired patients' quality of Life, and **(Adjei & Adjei, 2025)** who found that the prevalence of H. pylori infection to be 81.7%, and gastritis 31.8% in the subjects of the study. The low socioeconomic status and inadequate sanitation and hygiene habits of the research area's residents could be the causes. The gastrointestinal tract infection caused by H. pylori is one of the most common infections in the world. It is the main cause of chronic gastritis and a major risk factor for both peptic ulcer disease and stomach cancer.

As regard associated disease, the result of the present study revealed that majority of study group and less than three quarters of control group have no associated disease. This finding is supported by **Behrouzian et al., (2017)** who stated that less than two thirds and less than three quarters of patients in the study group and control group have no history of any disease respectively.

As regards level of anxiety among study group, the findings of this study disclosed that more than third of the study group had moderate anxiety before pre procedure education program. This finding is in the same line with **Alam and Elashri, (2020)** who demonstrated that all studied subjects had severe anxiety before nursing intervention.

Concerning post intervention Anxiety level, the current study demonstrated that, there was statistically significant improvement in anxiety level with higher percentage of mild degree among study group after pre procedure education with p=0.001.

The current study cleared that, there was a statistically significant lower score of anxiety in the study group when compared to the control group after implementation of pre procedure education. This finding is supported by **Elgmal et al., (2025)** who stated that there was a highly statistically significant reduction in the study group compared to control group post intervention.

In the same line with **Shradha & ManoRanjini, (2022)** who stated that compared to the control group of patients who had GI endoscopy, pre-procedural education was successful in reducing the anxiety levels of patients in the study group.

Education interventions were linked to a decrease in anxiety levels after they were implemented because they helped patients better understanding how to reduce their fear of the unknown. By providing them with information about the procedure, the goal of the examination, and potential risks, these interventions may have reduced anxiety levels and prevented the patient's overall psychological condition.

Regarding pre- intervention Quality of Life score, the results of the current study demonstrated that there is no statistically significant difference between study group and control group as regards total quality of life level before the intervention, as both groups show poor quality of life level. The finding is in accordance with **Jang et al., (2022)** who reported that QOL integrates physical, emotional, and spiritual wellbeing and anxiety is a factor that deteriorate QOL. Patients with functional gastrointestinal disorders (FGIDs) were a significantly lower QOL than the general population.

Regarding post intervention Quality of Life score, the present study revealed improvement in total QOL parameters of both groups post intervention. There was a statistically significant difference between the mean scores of total QOL of both groups post intervention (p= 0.03).

Paralleling the findings of **Helba et al. (2024),** who said that the nursing instructions lead to improvement of knowledge and clinical outcomes for patient undergoing upper endoscopy procedure.

Regarding correlation between quality of life and level of anxiety among studied subjects, this study finding illustrates that there is a statistically significant negative correlation between anxiety score and quality of life score post intervention which indicated increase in anxiety score will be associated with decrease in quality of life score. This finding is supported by **Tepox, (2024)** who reported that high levels of pre-procedural anxiety during diagnostic endoscopies cause sedation problems and elevated autonomic arousal in patients, which may result in cardiorespiratory adverse events and troublesome cannulation because of sedation intolerance. In turn, this cannulation difficulty may raise the risk of bleeding, or perforation.

Conclusion:

Based on the findings of the current study, it can be concluded that the pre procedure education is very important concern and effective for alleviating anxiety and improving quality of life for patient undergoing upper gastrointestinal endoscopy.

Recommendations: The following suggestions are made in light of the current study's findings:

Recommendation for patients:

- Implementation of education program about UGI endoscopic procedure plan for patients and families.
- Educational Program should be implemented as a routine nursing care for patients undergoing upper endoscopy procedure

Recommendation for further research:

- Replication of the study using a bigger probability sample from various regions in order to get findings that are more broadly applicable.
- Provide posters and simple Arabic booklet about GI endoscopy procedure should be available for patient.
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