

Methodology Article

Effect of Early Preparation on Anxiety Level Among Patients Undergoing Upper Gastrointestinal Endoscopy

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Abstract: This study aimed to determine the effect of early preparation on anxiety level among patients undergoing upper gastrointestinal endoscopy. A quasi-experimental research design was utilized to achieve the aim of the study. The study was conducted in endoscopy unit of Menoufia University hospital, Egypt. A purposive sample of 300 adult patients who undergoing upper gastrointestinal endoscopy was undertaken. The data gathering instruments were Bio sociodemographic and knowledge assessment form, Beck anxiety inventory scale. There was statistically significant improvement in knowledge related to preparation for upper gastrointestinal endoscopy and reduction in anxiety level in study group more than their control ($P < 0.001$). The study concluded that, knowledge preparation for upper gastrointestinal endoscopy has shown a beneficial improvement of knowledge related to the procedure and reduction of anxiety level among patients. The study recommended that knowledge preparation for upper gastrointestinal endoscopy should form an important concern for patients before performing the procedure that lead to reducing anxiety level.

Keywords: Early Preparation, Upper Gastrointestinal Endoscopy, Anxiety Level

1. Introduction

Upper gastrointestinal endoscopy is a procedure that provide good view of the mucosal surfaces of upper gastrointestinal tract. It is a commonly and trustworthy procedure that used for diagnosis and management of gastrointestinal problem. Although it is the one of most beneficial diagnostic test, it can lead to anxiety which is a state of fear and concern arising from a disease or a procedure [1].

Several Studies revealed that patients underdoing invasive procedures as gastrointestinal endoscopy have high level of anxiety and stress which increase pain intensity [2]. Higher levels of anxiety lead to physiologic fluctuations as increased blood pressure and pulse. Also anxiety prior to endoscopy can increase the requirement for sedation, analgesics and increased length of time during procedure in addition to increase cost [3] and [4].

Factors that contribute to a patient's anxiety before upper gastrointestinal (GI) endoscopy procedure are fear of damage and choking, distress and unexpected diagnoses. Also

inadequate information about procedure may lead to be more difficult, painful and increase of length of time [5] and [6].

A nurse has the opportunity to spend a long time with patient, provide emotional support to patient and family and increase awareness about endoscopy that lead to prevent and decrease anxiety. Providing information is an effective method in reducing a patient's anxiety and worry by informed patients about procedure to alleviate patients' anxiety, facilitate patient agreement, increase satisfaction, aid the patient feel better and better understand the procedure increase patients' outcome, increase the feeling of trust, and prevent complication by reducing uses of sedation and improving tolerance during the procedure [7] and [8]. Also a nurse should be able to provide competent and effective nursing care, assess patients' anxiety level and responsible for providing necessary and appropriate information to the patients prior to the procedure so as to lessen the patients' anxiety level [4].

1.1. Significance of the Study

Patient undergoing upper gastrointestinal endoscopy had significantly higher anxiety levels, so that preparing patients physiological and psychological through providing accurate and adequate knowledge reduce patient apprehension, improve patient comfort and increase patients' tolerance during endoscopy.

1.2. Aim of Study

This study aimed to determine the effect of early preparation on anxiety level among Patients among undergoing upper gastrointestinal endoscopy.

-Early Preparation: Means knowledge preparation about upper gastrointestinal endoscopy.

1.3. Research Hypotheses

A- The study group will exhibit improvement in knowledge related to preparation for upper gastrointestinal endoscopy than control group.

B- Reduction of anxiety level in study group than control group after receiving information about upper gastrointestinal endoscopy.

2. Subjects and Methods

2.1. Design

A quasi experimental research design with pre-posttest was utilized to fulfill the aim of this study.

2.2. Setting

This study was conducted in endoscopy unit of Menoufia University hospital, Egypt

2.3. Subjects

A purposive sample of 300 adult patients who were undergoing upper gastrointestinal endoscopy was selected based on the following Equation: Sample size $n = \frac{DEFF * Np(1-p)}{[(d^2/Z^2(1-\alpha/2 * (N-1) + p * (1-p))]}$

- Total patients population size of 1270 who attended the endoscopy unit of Menoufia University hospital, Egypt, during year 2015, (from medical records) i.e (N)= 1270
- Hypothesized % frequency of endoscopy in the population (p): 30%+/-5
- Confidence limits as % of 100(absolute +/- %)(d): 5%
- Design effect (for cluster surveys-DEFF):
- Sample Size (n) for 95% Confidence Levels was 296 which were approximate to 300 patients.

All patients who had the inclusion criteria were selected:

- Age between 20 – 60 years old.
- Undergoing upper gastrointestinal endoscopy for the first time.
- Able to cooperate and communicate to participate in the study.

Exclusion criteria: end stage liver cirrhosis.

The study sample was randomly assigned alternatively into two equal groups 150 patient for each (study and control). The study group (I) received a structured education about preparation for upper gastrointestinal endoscopy in addition to routine hospital preparation. Control group (II) received only routine hospital preparation. The researcher deal with the control group first to prevent result contamination.

2.4. Tools of the Study

Based on the review of the related literature, two tools were utilized by the researcher as the following:

2.4.1. Tool (I): Structure Interview Schedule

Bio sociodemographic and knowledge assessment form: It was developed by the researcher after reviewing the related literature and consisted of two parts:

Part one: sociodemographic data including patient's age, sex, level of education, marital status, residence and income.

Part two: Questions to assess patient's knowledge about upper gastrointestinal endoscopy as definition, causes, questions related to preparation related to fasting before endoscopy, taking medication and position for endoscopy.....etc. This part consisted of eleven questions.

Scoring system: part two consisted of eleven questions; each question rating from 0-2. zero indicates incorrect answer, 1 indicates incomplete correct answer and 2 indicates completely correct. All scores were summed and the total scores were from (0-22). The scoring system was categorized as follow:

- Good knowledge (16.5 to 22) 75% to 100%.
- Fair knowledge (from 13.2 to less than 16.5) 60% to less than 75%
- Poor knowledge(less than 13.2) less than 60%.

Validity and reliability of the tool: The tools for data collection were tested for content validity by a panel of experts in medical surgical nursing specialties to ascertain relevance and completeness. Required modifications were carried out accordingly for tool I. The tools used in this study were tested for its reliability using test-retest reliability and proved to be strongly reliable at 0.90 for tool one, part II.

2.4.2. Tool (II): Beck Anxiety Inventory Scale

It was developed by Beck et al., 1988 [9] and was utilized by the researcher to measure the subject's level of anxiety. It consists of 21 items; each item is rated on a 4-point scale ranging from (0-3). zero indicated not at all, 1 indicated mildly but it didn't bother me much, 2 indicated moderately-it wasn't pleasant at times, and 3 indicated severely-it bothered me a lot.

The total score is calculated by finding the sum of the 21 items.

- Low level of anxiety (0 – 21)
- Moderate level of anxiety (22 – 35)
- Severe level of anxiety (36 and above)

Validity and reliability of the tool 2: Internal consistency for the scale = (Cronbach's $\alpha = 0.92$). Test – retest reliability (1 week) for the scale = 0.75.

2.5. Pilot Study

A pilot study was carried out on 10 % of patients representing the study sample to test the feasibility and clarity of the used tools; modifications were done based on the results. The sample included in the pilot study was excluded from the final study sample.

2.6. Data Collection

- 1) Data collection for this study was carried out from April 2016 to November, 2016. Once permission was granted to conduct the study, the researchers were initiated collection.
- 2) Ethical Consideration: Permission to conduct the study was obtained from the hospital authorities of Menoufia University Hospital. Prior to the initial interview, the researchers introduced themselves to patients who met the inclusion criteria; each potential patient was fully informed with the purpose and nature of the study, and then an informed consent was obtained from participants who accept to participate in the study. The researchers emphasized that participation in the study is entirely voluntary and withdrawal from the study would not affect the care provided; anonymity and confidentiality were assured through coding the data.
- 3) The study was conducted in four phases namely: assessment, planning, implementation and evaluation.
 - a) Assessment phase: Base line assessment of patient's sociodemographic data and knowledge about preparation for upper endoscopy was performed using tool (I). Also subjects of all groups were assessed for anxiety level using tool (II).
 - b) Planning phase: The researchers went through extensive literature review to prepare an educational knowledge about upper endoscopy preparation for patients who undergoing upper gastrointestinal endoscopy based on needs identified in assessment phase. Experts in nursing and medical fields in general and medical management were sought to ensure content comprehensiveness, clarity, relevancy and applicability.

Implementation phase: In this phase the knowledge about preparation for upper gastrointestinal endoscopy was provided for study group patients only and their relatives by an oral instruction as a method of teaching supported with booklet was used to introduce the information at endoscopy unit. The researchers interviewed with patients for two sessions, one session for pretest and give information to patients, the second session for posttest, each one take 30 to 40 minutes and had a maximum 6 patients and 6 accompanying persons if present. The researchers started to interview with patient and informed with the purpose of the study, then verbal and written instructions about upper gastrointestinal endoscopy preparation that include preparation, steps of the procedure and care after endoscopy was provided to the patient and available family members. The control group was exposed only to routine hospital preparation.

Evaluation phase: Each patient of the study and control group was evaluated two times; the first evaluation is in the assessment phase when the patient came for registration of endoscopy using tools I and II. The second evaluation was done on the day before doing endoscopy by pointing out the same tool. All subjects of both study and control groups were assessed for their knowledge about preparation for upper endoscopy and anxiety level.

2.7. Statistical Analysis

Data were collected, tabulated, statistically analyzed using an IBM personal computer with Statistical Package of Social Science (SPSS) version 20 where the following statistics were applied.

- 1) Descriptive statistics: in which quantitative data were presented in the form of mean (\bar{x}), standard deviation (SD), and qualitative data were presented in the form numbers and percentages.
- 2) Analytical statistics: used to find out the possible association between studied factors and the targeted disease. The used tests of significance included:
 - a) Chi-square test (χ^2): was used to study association between two qualitative variables.
 - b) Fisher's exact test: for 2 x 2 tables when expected cell count of more than 25% of cases were less than 5.
 - c) Student t-test: is a test of significance used for comparison between two groups having quantitative variables.
 - d) ANOVA (f) test: is a test of significance used for comparison between three or more groups having quantitative variables
 - e) P value of >0.05 non-significant, P value of <0.05 significant, P value of <0.001 highly significant.

3. Results

The study came up with the following results:

3.1. Sociodemographic Characteristics of Study and Control Groups

Table 1. presented subjects' characteristics of the studied groups. The study results revealed that the majority of study and control group were male (60% and 54.7% respectively), the mean age were (48.1 \pm 9.29) and (47.35 \pm 8.82). The majority (87.3% and 83.3%) were married and came from rural regions (53.3% and 58.7% respectively). In relation to educational level, the highest frequency (47.3% and 40% respectively) were illiterate, followed by (34.7% and 38.7% respectively) had secondary education. As regards family income, higher percentages (62.7% and 60%) had insufficient family income. There was no statistically significant difference between study and control group in relation to sociodemographic characteristics.

3.2. Knowledge Assessment of Study and Control Groups

Table 2. Knowledge assessment regarding endoscopy

among study and control group pre and post preparation. The majority of both study and control group (94.0% and 96.0% respectively) had poor knowledge, also there was no statistically significant difference between study and control group pre- preparation. While post preparation, more than half of the study group had good knowledge (58.6%),while the majority of control group had poor knowledge 75.4% post preparation. There was highly statistically significant difference between study and control group in relation to knowledge ($\chi^2 = 189.4$, $P < 0.001$).

Table 3. presented the relation between socio demographic characteristics and knowledge score post-preparation for study group: The finding revealed that there were statistically significant difference existed between sociodemographic characteristics and knowledge score for study group post preparation regarding to level of education and marital status ($\chi^2 = 73.24$ and 11) and ($P = 0.000$ and 0.027) respectively.

3.3. Anxiety Level of Study and Control Groups

Table 4. Presented the anxiety level pre and post preparation

Table 1. Distribution of patients of both study and control groups in relation to socio demographic characteristics (N=300).

Socio demographic Characteristics	Study (N=150)		Control (N=150)		χ^2 p value
	No.	%	No.	%	
Age / years ($\bar{X} \pm SD$)	48.11± 9.29		47.35± 8.82		t-test=0.773 p value 0.440 (NS)
Gender:					
Male	90	60.0	82	54.7	0.872
Female	60	40.0	68	45.3	0.350 (NS)
Residence:					
Urban	70	48.7	62	41.3	0.866
rural	80	53.3	88	58.7	0.352 (NS)
Level of education:					
Illiterate	71	47.3	60	40.0	
Read and write	12	8.0	15	10.0	3.870
Primary education	5	3.3	2	1.3	0.424 (NS)
Secondary education	52	34.7	58	38.7	
Higher education	10	6.7	15	10.0	
Marital state:					
Married	131	87.3	125	83.3	1.608
Widow	15	10.0	22	14.7	0.448 (NS)
Divorced	4	2.7	3	2.0	
Family income:					
sufficient	56	37.3	60	40.0	0.225
insufficient	94	62.7	90	60.0	0.635 (NS)

significance P value<0.05 (NS): non -significant

Table 2. Knowledge assessment regarding endoscopy among study and control group pre and post preparation (N=300).

Knowledge assessment	Study (N=150)		Control (N=150)		χ^2 p value
	No.	%	No.	%	
Pre-preparation					
Poor	141	94.0	144	96.0	0.632
Fair	9	6.0	6	4.0	0.427 (NS)
Total knowledge at pre- preparation	9.43 ±1.88		9.98±1.97		0.174 * 0.862 (NS)
Post-preparation					
Poor	4	2.7	113	75.4	
Fair	58	38.7	35	23.3	189.4 <0.001(HS)
Good	88	58.6	2	1.3	
Total knowledge at post – preparation	20.03±3.44		11.73±2.34		29.72 * <0.001(HS)

* t-test significance P value<0.05 NS: non-significant HS: highly significant

for study and control group: The majority of both study and control group (96.7% and 98.7% respectively) had severe level of anxiety. There was no statistically significant difference between study and control group pre- preparation. While post preparation, the majority of the study group had mild level of anxiety 80.0% and the majority of control group had severe level of anxiety 82.0%. There was highly statistically significant difference between study and control group in relation to anxiety score ($\chi^2 = 237.4$, $P < 0.001$).

Table 5. This table presented the relation between anxiety level and knowledge score regarding endoscopy post preparation among study and control group: The finding revealed that more than half of the study group who had good knowledge exhibit mild anxiety at post preparation, in contrast to control group more than two third of control group who had poor knowledge exhibit sever anxiety. There were highly statistically significant relation existed between anxiety level and knowledge score for study and control group post preparation as ($\chi^2 = 21.12$ and 73.40) and (P value <0.001).

Table 3. Relation between Socio demographic characteristics and knowledge score regarding endoscopy post preparation for study group.

Socio demographic Characteristics	Study group (N=150)						χ^2	p value
	Poor (n=4)		Fair (n=58)		Good (n=88)			
	No	(%)	No	(%)	No	(%)		
Age / years ($\bar{X} \pm SD$)	50.50±10.96		46.12±9.36		49.31±9.04		2.24*	0.11 (NS)
Gender:								
Male	1	25.0	37	63.8	52	59.1	2.42	0.298 (NS)
Female	3	75.0	21	36.2	36	40.9		
Residence:								
Urban	3	75.0	30	51.7	37	42.0	2.64	0.267 (NS)
rural	1	25.0	28	48.3	51	58.0		
Level of education:								
Illiterate	4	100.0	50	86.2	17	19.3		
Read and write	0	0.00	1	1.7	11	12.5	73.24	<0.001 (HS)
Primary education	0	0.00	3	5.2	2	2.3		
Secondary education	0	0.00	4	6.9	48	54.5		
Higher education	0	0.00	0	0.00	10	11.4		
Marital state:								
Married	3	75.0	56	96.9	72	81.8	11.00	0.027 (S)
Widow	1	25.0	0	0.00	14	15.9		
Divorced	0	0.00	2	3.4	2	2.3		
Income:								
- sufficient	2	50.0	42	72.4	50	56.8	3.92	0.141
- insufficient	2	50.0	16	27.6	38	43.2		(NS)

*ANOVA test significance P value<0.05 NS: non-significant S: significant HS: highly significant

Table 4. Anxiety level regarding endoscopy among study and control group pre and post preparation (N=300).

Total anxiety score	Study (N=150)		Control (N=150)		χ^2 p value
	No.	%	No.	%	
Pre- preparation					
Moderate	5	3.3	2	1.3	0.448* 0.224(NS)
Severe	145	96.7	148	98.7	
Total anxiety(X \pm SD)	43.33 \pm 4.44		42.74 \pm 4.06		1.207** 0.228(NS)
Post- preparation					
Mild	120	80.0	0	0.00	237.1 <0.001(HS)
Moderate	28	18.7	27	18.0	
Severe	2	1.3	123	82.0	
Total anxiety (X \pm SD)	21.26 \pm 3.87		39.72 \pm 4.82		36.61** <0.001(HS)

*Fisher's exact test **t-test NS: non-significant HS: highly significant Significance P value<0.05

Table 5. Relation between anxiety level and knowledge score regarding endoscopy post preparation for study and control group.

Knowledge score	Anxiety level (N=150)						χ^2	P value
	Mild		moderate		Sever			
	No	(%)	No	(%)	No	(%)		
Study group:								
Poor	3	2.5	0	0.00	1	50.0	21.12	<0.001 (HS)
Fair	43	35.8	15	53.6	0	0.00		
Good	74	61.7	13	46.4	1	50.0		
Control group:								
Poor	0	0.00	3	11.1	110	89.4	73.40	<0.001 (HS)
Fair	0	0.00	23	85.2	12	9.8		
Good	0	0.00	1	3.7	1	0.8		

HS: highly significant

4. Discussion

Invasive diagnostic tests such as endoscopy are a stressful procedure that leads to increase patient's anxiety level. The best intervention to reduce anxiety is to inform patient with adequate knowledge about the procedure, so this study aimed to determine the effect of early preparation on anxiety level among patients undergoing upper gastrointestinal endoscopy.

The result of this study verifying the hypotheses and showed that there was significant improvement of knowledge and reduction of anxiety level among patients undergoing upper gastrointestinal endoscopy.

Regarding sociodemographic characteristic of studied groups.

The current study findings showed that more than half of study and control group were males (60% and 54.7%) respectively. This finding was consistent with Seda et al. (2011) [10] they found that the majority of study sample were male. The present study also, revealed that the mean age of all groups was (48.11 \pm 9.29) and (47.5 \pm 8.82). This finding was in line with Lee et al. (2012) [11] who reported that the gastrointestinal tract disturbances specially gastric disorder are occurs with the greatest frequency in people between the age group 41-49. Also El said (2016) [12] reported that the more third of the subjects their age was ranged from 41-50 years, their mean age was (42.75 \pm 13.65) years, and more than half were male.

This could be explained that this age represent working age population which exposed to unhealthy life style such as stress, fast food, smoking, and increased consumption of caffeine and

misuse of medications as analgesics that effect on gastrointestinal tract.

As regard residence the result of the present study revealed that both groups of patient were having the same chance of upper GIT diseases occurrence in the rural and urban setting. This was supported by Kennedy et al., (2006) [13], 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 illiterate and more than one third had secondary education. This was supported by Mohamad et al. (2014) [14], and Winslow (2004) [15] they mentioned that the majority of the studied sample who undergoing upper gastrointestinal endoscopy were illiterate. In the same time these findings were supported by Quick, (2006) [16] who revealed that patient with low educational levels had negative affect on health. The researchers clarified that Illiterate People lived in rural area do not seek the hospital or clinics except in cases of necessity only and ignore any symptoms or any pain sufferers, so the medical problem became severe.

Regarding Knowledge assessment among study and control group pre and post preparation

The current study showed that most of studied sample in study and control group had poor knowledge related endoscopy pre knowledge preparation, while more than half of study group had a good knowledge than control group post preparation. this result is agreement with Das et al, 2014 [17] who mentioned that increase awareness about endoscopy in experimental group rather than control group post educational intervention. Also study by Thomas and Sugirtha.2013 [18] who illustrated that the mean knowledge score of patients undergoing Endoscopy had improved post teaching Program. The researchers explained that good preparation by providing adequate knowledge to patient before diagnostic test as endoscopy enhances patients' understanding and awareness about procedure

Relation between Socio demographic characteristics and knowledge score regarding endoscopy post preparation for study group:

The present study found that there was no significant relation between age, sex, residence and income regarding endoscopy post preparation. This result is consistent with Hiremath, 2016 [8] who didn't find any significant relationship between patient's age, gender and residence related to Upper Gastro endoscopy. The researchers clarified that participant who attendance educational program need to know more details about test which performed it (what is endoscopy, advantage, complication, preparation before endoscopy), so there was no difference between male and female at any age, also place residence

The current study found that significant relation between educational level and knowledge score. This result was

agreement with Mohammed, 2016 [6] who mentioned that there were statistical significantly between education level and knowledge. The researchers explained that the greater the level of education increased knowledge, because these people have the cognitive maturity and confidence in themselves to get the information that they have, through reading articles and discussion with others and also use the internet.

Regarding to level of anxiety

Although many patients said the disease is a test from God and everyone must accept the decree of Allah. The present study illustrated that most of studied sample (both study and control group) had severe level of anxiety before endoscopy, while the majority of participant in study group had mild severe level of anxiety post early preparation of knowledge regarding endoscopy than control group. In addition to mean anxiety level was decrease in study group rather than control group post preparation This result was in the same line with Kowsalya, et al, 2013 [19] & Jones, et al., 2004 [20] who stated that mean anxiety value was lower in experimental group than control group post intervention. The researcher explained that When the doctor is recommended that a diagnostic endoscopy should be performed to the patient this increases the patient's apprehension and anxiety that is due to lack of knowledge of the patient about endoscopy also awaiting the result of endoscopy, In addition to most of studied sample had illiterate and had low socioeconomic standard, lead to absence from work, so financial resource decreased, which lead to increase level of stress and anxiety, while patient in study group had low level of anxiety that is because early preparation through providing adequate knowledge and psychological support lead to increase awareness and decrease level of anxiety.

Relation between anxiety level and knowledge score regarding endoscopy post preparation among study and control group.

The current study mentioned that there was highly statistically significant negative relation between total knowledge and total anxiety post preparation this result was the same line with Maguire, et al., (2004) [21] they stated that combination of information and training prior to upper gastrointestinal endoscopy procedure is an effective means for reducing anxiety. This may be attributed that adequate information and increase awareness among patients pre procedure associated with reduce the anxiety level and as well as tolerance with procedure. Gorgulu, et al., (2010) [22] who suggested use of written material including detailed information to inform the patient before endoscopy was useful in lessening their anxiety level.

5. Conclusion and Recommendations

The overall findings in the present study revealed that pre-knowledge preparation before upper gastrointestinal endoscopy is a very important concern and had a beneficial effect for improving knowledge and reducing anxiety level that result from performing the procedure. This study is recommended that: Supervised health teaching program

should be carried out for all patients who are undergoing upper gastrointestinal endoscopy about preparatory knowledge that help in preparation of patient and reducing anxiety level.

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