

Original Research Paper

Title: A study to assess the effect of an IB (information bundle) on Physiological parameters among patients undergoing upper GI endoscopy

ABSTRACT:

Background: Upper gastrointestinal (GI) endoscopy is a common diagnostic procedure that plays central role in the practice of gastroenterology. It remains the first line of diagnostic modality for evaluation of Gastrointestinal (GI) disorders. It is a safe, commonly used investigation for the evaluation of wide range of upper GI lesions. Any type of surgery or an invasive procedure can cause stress to an individual. Whenever, exposed to such procedures, stress would definitely occur. Stress is expressed through altered physiological functions such as changes in blood pressure, pulse rate, respiratory rate. Information Bundle helps to minimize stress and stabilize physiological parameters during procedure among endoscopy patients. **Aim** of this study is to evaluate the effect of information bundle on physiological parameters among upper Gastrointestinal endoscopy patients. **Method:** Two group pretest posttest research design was used. Sample was selected through convenient purposive sampling technique and total number of samples were equally divided in experimental and control group. **Results and discussion:** The majority of the patients were from age group 39 years and above. The post intervention mean scores showed an improvement in the physiological parameters in experimental group and

calculated 't' values were statistically significant at 0.05 level of significance($p < 0.05$). **Conclusion:** The Information Bundle was found effective in stabilizing the physiological parameters of patients during endoscopy.

Key Words – IB (Information bundle), Upper GI, Endoscopy, Patient, Physiological parameters.

INTRODUCTION

The word "endoscopy" is derived from the Greek by combining the prefix "endo" that means "within" and the verb "skopein", means "to view or observe". But "skopein" means not merely to look at something, but rather to view with an intention or to monitor something.¹

The insertion of an endoscope is a long, thin tube directly into the human body for the observation of an internal organs or tissues. It can also be used to perform other tasks, including medical and surgical procedures. This is a minimally-invasive procedure, and the endoscope can be inserted into the openings such as the mouth or the anus.²

The most important component which affects the execution and quality of endoscopy procedure that is patient's compliance. One of the commonest factors which influence the patient's compliance is stress. High levels of stress before the procedure may cause alteration in physiological parameters, which result in delay or postpone the endoscopy procedure.³

Upper GI Endoscopy is a broadly used procedure for the diagnosis and treatment of the disorders of upper gastro-intestinal tract. Even though this is considered to be a safe and well-tolerated procedure, the major problems have been noted in endoscopy patients without sedation such as anxiety discomfort and slow down the recovery.⁴

Surgery is one of the most stressful experiences which may occur in anybody's life. When human life is threatened, whether it is actual or a potential hazard, stress would occur. This stress is featured in physical and mental functions of an individual. Psychological response may be manifested in the form of anxiety, besides; physical reactions may be in the form of alterations in body physiological functions.⁵

The patients in the operating room generally observed with anxiety. The perioperative recovery is affected by the patient's anxiety, lack of confidence, the nature of the surgery and the anesthesia, post-operative discomfort and pain, disability, and the changes in the physiological parameters. It was found that the pre-operative anxiety is associated with high levels of anxiety, increase pain, changes in the physiological parameters and prolonged hospitalization. Anxiety can have a negative impact on the induction of the anesthesia, and recovery, as well as the low patient satisfaction with the perioperative interventions.⁶

The anxiety is an emotion which is presented by feeling of unease and helplessness almost always found in people post-surgery. It is known to be caused by high blood pressure, heart rate and breathing, which will lead to the dilated pupils, loss of appetite and other physiological changes. Stress has been proven to lead to rise in the cortisol level, which suppresses the immune system.⁷

An experimental study was conducted to assess the effect of pre procedural education on physiological parameters among patients with GI endoscopy. The study reveals that, mostly patients had no previous knowledge regarding endoscopy procedure. There was significant difference between the Post mean scores of physiological parameters. Pre endoscopy education had significant changes in physiological parameters (blood pressure, pulse, respiration and Spo2) of patients undergoing GI endoscopy.⁸

The term endoscopy procedure itself creates stress in patient's mind which may lead to alterations in physiological parameters. The researcher has observed fear and anxiety among patients before and after endoscopy procedure. Pharmacological measures are been used to alleviate pain and stabilize physiological parameters among patients during pre and post-operative period but medications can cause many side effects as compared to non-pharmacological management.

Therefore, Researcher planned to prepare and implement Information Bundle (written material, oral information and visual aids) in this study to stabilize physiological parameters during the procedure among endoscopy patients.

MATERIAL AND METHODS

Purpose of the study

Aim: Aim of the study is to assess the effect of an Information Bundle on Physiological parameters among patients undergoing upper GI endoscopy”

Hypothesis:

H₁: There will be significant difference in physiological parameters before and after upper GI endoscopy among patients who receives information Bundle.

Objectives:

1. To assess physiological parameters among control and experimental group before endoscopy.
2. To determine the effect of an information bundle on physiological parameters, among experimental group during endoscopy.
3. To find out an association between the physiological parameters with selected demographic variables.

Study design: Two group pretest posttest design was used.

Target population: Patients undergoing upper GI endoscopy in selected Hospital

Sample: Upper GI endoscopy patients fulfilling inclusion criteria

Sample size: Total 150 patients undergoing upper GI endoscopy in rural hospital of Maharashtra.

Inclusion & Exclusion criteria

The following were the inclusive and exclusive criteria for the selection of the samples.

Inclusion Criteria

- Patients undergoing upper GI endoscopy in selected rural hospital in Maharashtra.

- Both male and female patients above 18 – 85 years of age.
- Undergoing planned endoscopy investigation for the first time.
- Patients who are available during data collection period.
- Patients who know to read and write or understand English, Marathi, and Hindi.

Exclusion Criteria

- Patients who are critically ill.
- Patients who are not willing to participate.
- Emergency upper GI endoscopy.
- Repeat endoscopy

Process of Data collection:

Procedure:

1. Official permission from concern authority.
2. Validation of tool.
3. Identified target population.
4. Samples were selected on the basis of inclusion criteria.
5. Confidentiality was assured.
6. Written consent was obtained by participants.
7. Pilot study was undertaken.
8. Main study was conducted in selected hospital.

Instruments: It consist of 3 parts;

Part I: Demographic questionnaire

Part II: Physiological Parameters (BP, pulse, respiration & SpO2)

Part III: Information Bundle (IB)

Information Bundle (IB)

Content: IB consists of information and presented in the following order:

Introduction to upper GI endoscopy, Purpose a of upper GI endoscopy procedure, Possible risk of procedure, Pre procedure phase, Intra procedure phase, Post procedure phase, Warning signs.

Implementation of Information Bundle: Informational Bundle comprised of written materials, oral information and visual aids. Investigator has explained the Information Bundle with the use of power point presentation and visual images to show the setup of endoscopy room to remove fear and anxiety about unknown place and procedure. Face to face explanation provided by investigator to the patient to stabilize the physiological parameters and improve cooperation of patient during procedure. The total duration was approximately 10 minutes.

Method of Training: Lecture cum explanation with Audio visual aids.

Instruments validity and reliability:

Validity of instruments: Tool was given for Validation to the expert academicians, clinicians, endoscopist, nurse specialist, Psychologist and researchers for their valuable remarks to make tool more efficient for effective administration.

Reliability of instruments:

Research studies reveals that automatic findings in measurement of BP in hospital setting cannot be completely trusted, especially in critical conditions, whereas manual method should be considered as a reference standard.

Diamond BP apparatus, IntexOxicare Pulse Oximeter were used as instrument to collected data.

Plan for Data Analysis

The data was analyzed in the following manner.

- a) Demographic data was analyzed using frequency and percentage and presented in the form of table and graphs.
- b) Data from the physiological parameter before and after administration of Information Bundle was analyzed using frequency, percentage Wilcoxon Sum Rank Test and 't' test.
- c) Association between findings and demographic variables was estimated using chi square test.

DATA ANALYSIS

Description of findings:

Section I: Distribution of patients undergoing upper Gastro Intestinal Endoscopy based on demographic variables of experimental group and control group.

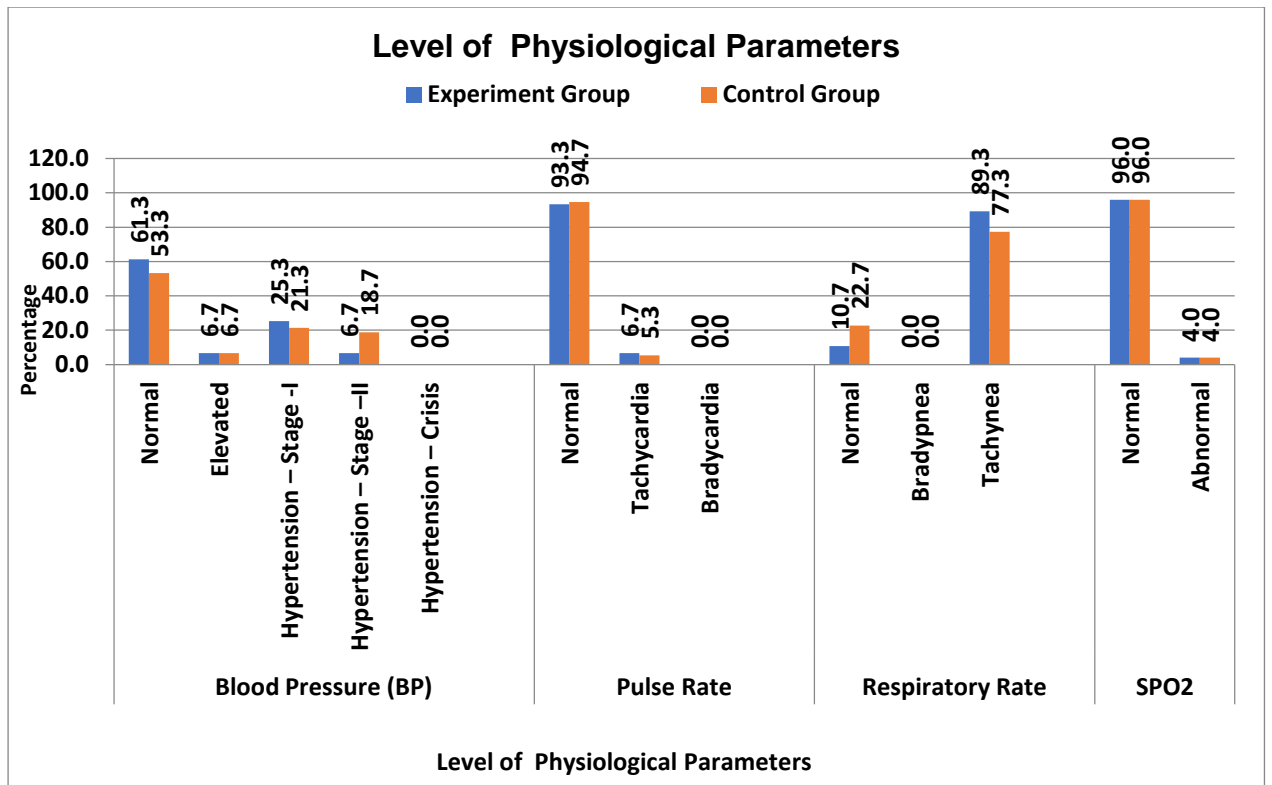
- ❖ Study reveals that Majority of the patients were from the age group of 25-31years in experimental and more than 39 years in control group.
- ❖ Total 57.3 % of patients in experimental group and 34.7 % of the patient in control group were male.
- ❖ Patients (45.3%) in experiment group and 36.0% patients in control group were having knowledge about the procedure.

Section II: physiological parameters in Experimental group and Control group.

The below **table no.1** represents, the total of 61.3% patients had normal blood pressure, 6.7% patients had elevated blood pressure, 25.3% patients had hypertension stage I, 6.7% patients were had hypertension stage II in experimental group whereas, 53.3 % of patients had normal blood pressure, 6.7% patients had elevated blood pressure, 21.3 % of patients had hypertension stage I and 18.7% of patients had hypertension stage II in control group. In experimental group 93.3 % patients and in control group 94.7 % patients were having normal pulse rate. Tachycardia was seen in 6.7% patients in experimental group and 5.3% in control group. The 89.3 % of patients in experimental group and 77.3 % of patients in control group were having tachypnea and 10.7%, 22% patients were having normal respiration rate in experimental and control group. In both group majority of the patients (96%) were having normal SPO2 whereas only 4% of patients had SPO2 less than 94%.

Table no. 1- Level of physiological parameters among patients undergoing upper GI endoscopy in experimental group and control group (Pre-Test)

Parameters	Level		Experiment Group		Control Group	
	SBP	DBP	F	%	F	%
Blood Pressure (BP)						
Normal	<120	<80	46	61.3	40	53.3
Elevated	120 – 129	<80	5	6.7	5	6.7
Hypertension – Stage -I	130 – 139	80 – 89	19	25.3	16	21.3
Hypertension – Stage –II	140 – 180	90 – 120	5	6.7	14	18.7
Hypertension – Crisis	>180	>120	0	0.0	0	0.0
Pulse Rate						
Normal	60 – 100		70	93.3	71	94.7
Tachycardia	>100		5	6.7	4	5.3
Bradycardia	<60		0	0.0	0	0.0
Respiratory Rate						
Normal	12 – 20 breaths/min		8	10.7	17	22.7
Bradypnea	< 12 breaths/min		0	0.0	0	0.0
Tachypnea	>20 breaths/min		67	89.3	58	77.3
SPO2						
Normal	94 – 100		72	96.0	72	96.0
Abnormal	<94		3	4.0	3	4.0

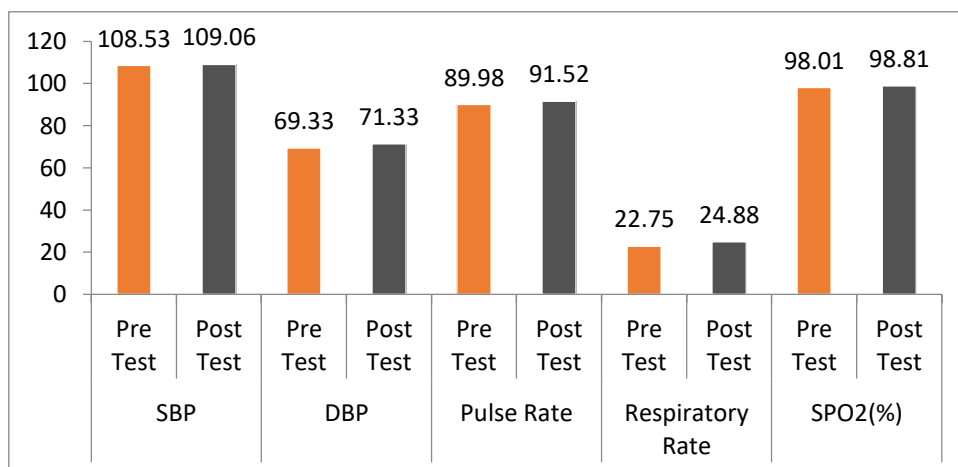


Graph 1: Level of physiological parameters among patients undergoing upper GI endoscopy in experimental group and control group (Pre-Test)

The below **table no. 2** reveals the mean physiological parameters scores of experimental group, in pretest blood pressure was 108.53/69.33 whereas in posttest it was 109.06/71.33. In pretest pulse rate was 89.98 whereas in posttest it was 91.52. Respiratory rate in pretest was 22.75 whereas it was in posttest 24.88. In pretest SPO2 level was 98.01 whereas in posttest, it was 98.81. Also, table represents SD scores of physiological parameters; in pretest blood pressure was 13.92/9.35 whereas in posttest it was 13.47/9.63. In pretest pulse rate was 7.58 whereas in posttest it was 6.78. Respiratory rate in pretest was 1.67 whereas it was in posttest 12.60. In pretest SPO2 level was 2.09 whereas in posttest, it was 0.54.

Table no. 2: Mean score of physiological parameters among patients undergoing upper GI endoscopy
(experimental group)

Parameters	Test	Mean	SD
SBP	Pre Test	108.53	13.92
	Post Test	109.06	13.47
DBP	Pre Test	69.33	9.35
	Post Test	71.33	9.63
Pulse Rate	Pre Test	89.98	7.58
	Post Test	91.52	6.78
Respiratory Rate	Pre Test	22.75	1.67
	Post Test	24.88	12.60
SPO2(%)	Pre Test	98.01	2.09
	Post Test	98.81	0.54

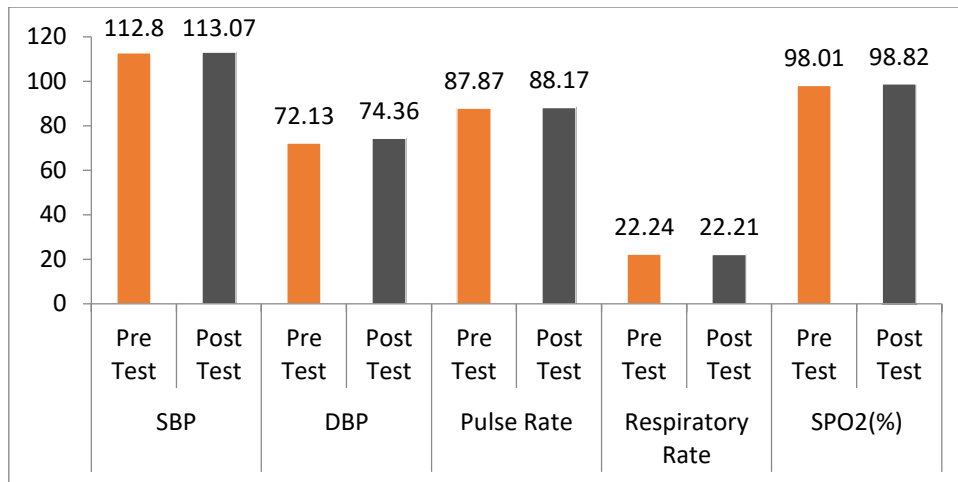


Graph 2: Mean score of physiological parameters among patients undergoing upper GI endoscopy
(experimental group)

The below **table no. 3** reveals the mean physiological parameters score of control group, in pretest blood pressure was 112.80/72.13 whereas in posttest it was 113.07/74.36. In pretest pulse rate was 87.87 whereas in posttest it was 88.17. Respiratory rate in pretest was 22.24 whereas it was in posttest 22.21. In pretest SPO2 level was 98.01 whereas in posttest, it was 98.82. SD scores, in pretest blood pressure was 15.47/12.01 whereas in posttest it was 12.18/8.02. In pretest pulse rate was 9.53 whereas in posttest it was 7.56. Respiratory rate in pretest was 1.64 whereas in posttest it was 1.49. In pretest SPO2 level was 1.84 whereas in posttest, it was 0.47.

Table 3: Mean score of physiological parameters among patients undergoing upper GI endoscopy
(control group)

Parameters	Test	Mean	SD
SBP	Pre Test	112.80	15.47
	Post Test	113.07	12.18
DBP	Pre Test	72.13	12.01
	Post Test	74.36	8.02
Pulse Rate	Pre Test	87.87	9.53
	Post Test	88.17	7.56
Respiratory Rate	Pre Test	22.24	1.64
	Post Test	22.21	1.49
SPO2 (%)	Pre Test	98.01	1.84
	Post Test	98.82	0.47



Graph 3: Mean score of physiological parameters among patients undergoing upper GI endoscopy (control group)

The below **table no. 4** shows that mean physiological parameters score, in pretest blood pressure was 108.53/69.33 whereas in posttest it was 109.06/71.33. In pretest pulse rate was 89.98 whereas in posttest pulse rate was 91.52. Respiratory rate in pretest was 22.75 whereas it was in posttest 24.88. In pretest SPO2 level was 98.01 whereas in posttest, it was 98.81. The post intervention means cores showed an improvement in the physiological parameters in experimental group and calculated ‘t’ values were statistically significant at 0.05 level of significance($p < 0.05$). This indicates that information bundle was effective in improving the physiological parameters of patients.

Table 4: Significance of difference between physiological parameters among patients undergoing upper GI endoscopy (experimental group)

Parameters	Test	Mean	SD	Paired T Test	P-Value
SBP	Pre Test	108.5333	13.9200	0.434	0.666
	Post Test	109.0667	13.4740		
DBP	Pre Test	69.3333	9.3481	2.299	0.024

	Post Test	71.3333	9.6329		
Pulse Rate	Pre Test	89.9867	7.5757	2.732	0.008
	Post Test	91.5200	6.7751		
Respiratory Rate	Pre Test	22.7467	1.6692	1.491	0.140
	Post Test	24.8800	12.5988		
SPO2 (%)	Pre Test	98.0133	2.0956	3.385	0.001
	Post Test	98.8133	.5376		

The below **table no. 5** represents, the association between physiological parameter (SPO2) in experimental group (pretest) and selected demographic variables. There was significant association found between the gender and religion of patients undergoing upper GI endoscopy findings with selected demographic variables.

Table 5: Association between Physiological parameter (SPO2–Pre Test) with selected demographic variables: Experiment Group

Variables	SPO2		Chi square Test	P-value
	Normal	Abnormal		
Age Groups				
18-24	7	1	2.397	0.494
25-31	26	1		
32-38	19	1		
39 and above	20	0		
Gender				

Male	43	0	4.199*	0.040
Female	29	3		
Marital Status				
Unmarried	7	1	1.685	0.194
Married	65	2		
Divorce	0	0		
Widow	0	0		
Religion				
Hindu	60	1	4.742*	0.029
Muslim	12	2		
Christian	0	0		
Others	0	0		
Types of Family				
Nuclear	60	3	0.595	0.743
Joint	10	0		
Extended	2	0		
Residence				
Urban	62	2	0.870	0.351
Rural	10	1		

The below **table no. 6** shows, the association between physiological parameter (SPO2) in control group (pretest) and selected demographic variables. There was significant association found between the types of family with selected demographic variables.

Table 6: Association between Physiological parameter (SPO2- Pre Test) with selected demographic variables: Control Group

Variables	SPO2		Chi square Test	P-value	Significant at 0.05 level
	Normal	Abnormal			
Age Groups					
18-24	9	2	7.068	0.070	NS
25-31	13	0			
32-38	15	0			
39 and above	35	1			
Gender					
Male	24	2	1.413	0.235	NS
Female	48	1			
Marital Status					
Unmarried	57	1	4.764	0.092	NS
Married	12	2			
Divorce	3	0			
Widow	0	0			
Religion					

Hindu	57	2	0.501	0.779	NS
Muslim	13	1			
Christian	0	0			
Others	2	0			
Types of Family					
Nuclear	46	2	12.066*	0.002	S
Joint	25	0			
Extended	1	1			
Residence					
Urban	56	2	0.203	0.652	NS
Rural	16	1			

S=Significant, NS=Not Significant

DISCUSSION

- ❖ Majority of the patients were from the age group between 25-31 years in both the groups.
- ❖ Mostly patients were from rural area i.e., 64(85.3%) in experiment group and 58(77.3%) in control group.
- ❖ Majority of the patient had no previous knowledge about endoscopy procedure.
- ❖ The post intervention means scores showed an improvement in the physiological parameters in experimental group and calculated 't' values were statistically significant at 0.05 level of significance ($p < 0.05$). This indicates that information bundle was effective in stabilizing the physiological parameters of patients.
- ❖ In this study, in pretest and post significant difference was seen in physiological parameters such as diastolic blood pressure, pulse rate, SPO₂ in experimental group.

- ❖ Association between physiological parameters (respiratory rate and SPO2) with gender and religion was significant in experimental group.

The above findings are supported by a study conducted on determining changes in oxygen saturation, blood pressure and heart rate during various endoscopic procedures. Oxygen saturation, blood pressure, and heart rate were monitored during endoscopy using a pulse Oximeter and an automated blood pressure monitor. Study had shown that the mild to moderate hypoxia is found in 19 patients (47.5%). Severe hypoxia was detected in 5 patients (12.5%). The mean change in systolic blood pressure was not significant throughout the procedure when compared to the baseline.⁹

STRENGTH OF THE STUDY

- ❖ The Information Bundle on upper GI endoscopy is effective in normalizing physiological parameters.
- ❖ Information Bundle helps in uninterrupted smooth endoscopy.

LIMITATIONS OF THE PRESENT STUDY

- ❖ The study was limited to the patients of selected hospital.
- ❖ Age 18years and above.
- ❖ The Information Bundle was only given to the experimental group.

APPLICATION

Nursing Practice

- Training program for the nurses can be planned about psychological preparation of patients before endoscopy.
- The extended and expanded roles of professional nurses emphasize more on the preventive and promotive aspects of the health.
- Use of an information bundle in routine preparation for endoscopy.
- This can be provided during induction program.

- Use of IB in hospital or clinic setting will improve the compliance.
- It will help in quality patient outcome.

RECOMMENDATIONS

- ❖ Replication by using different research approach, tool and technique could be undertaken.
- ❖ A similar study can be done with large sample.
- ❖ A comparative study can be done with private and government settings to find significant difference.
- ❖ Combination of Information Bundle with other therapy may be given to the patient and effects may be studied.
- ❖ Studies can be done with the use of Information Bundle on other procedures like angiography etc.

CONCLUSION

- ❖ This study indicates that the Information Bundle was effective in stabilizing the physiological parameters of endoscopy patients.
- ❖ Nurses play an important role in the delivery of health services to patients in the endoscopy unit. Strengthening quality of nursing care will benefit implementation of nursing standards.
- ❖ Every Hospital must provide the information bundle to patients undergoing upper Gastro Intestinal Endoscopy before procedure.
- ❖ Nurses can be trained to implement pre procedure information bundle to patients routinely.
- ❖ Findings of this study can be utilized in planning various interventions for patients undergoing invasive procedures.

REFERENCES

1. Aduful H, Naaeder S, Darko R, Baako B, Clegg Lamptey J, Nkrumah K, et al. Upper gastrointestinal endoscopy at the korle bu teaching hospital, accra, ghana. Ghana Med J. 2017 Mar;41(1):12-16.

2. Caumo, et al. Risk Factors for Post-operative anxiety in adults. *Anesthesia*, 2011, 56, 720-728.
3. H Unal, J. Ozcurumez , S. Saritafi, M. Korkmaz, and H. Selcuk. Which factors affect anxiety level before upper gastrointestinal endoscopy? *Endoscopy*, 20(3), 2012: 67-71.
4. Loren, M. The Effectiveness of Music Therapy for the reduction of anxiety in women undergoing sterotatic breast biopsies. 2014.
5. S K Majumdar. A short history of gastrointestinal endoscopy. *Bull Indian Inst Hist Med Hyderabad*. 1993; 23(1): 67-86. <https://pubmed.ncbi.nlm.nih.gov/11639385/>
6. Sawatzky, J.A. & Naimark, B.J. Coronary Artery Bypass Graft Surgery. *Journal of Cardiovascular Nursing*, 24(3), 2011.198-206.
7. Shradha Malla. Effectiveness of Pre-procedural teaching on Physiological Parameters among Patients Undergoing GI Endoscopy. *Int J Recent Sci Res*. 2020. 11(10), pp.39961-39963.DOI: <http://dx.doi.org/10.24327/ijrsr.2020.1110.5598>
8. Tim Newman. Endoscopy: What to know. *Medical News Today*. 18.12.2017. <https://www.medicalnewstoday.com/articles/153737#types>
9. Yazawa K, Adachi W, Koide N, Watanabe H, Koike S, Hanazaki K. Changes in cardiopulmonary parameters during upper gastrointestinal endoscopy in patients with heart disease: towards safer endoscopy. *Endoscopy*.2000;32(4):287-293. Doi: 10.1055/s-2000-7377.
10. Long, Phipps & Cassmeyer. *Medical- Surgical Nursing*. 3rd Ed, Mosby, St.Louis, 1993:944.
11. Lewis, Collier & Heitkemper. *Medical- Surgical Nursing*. 4th Ed, Mosby, Philadeiphia, 1992:1088.
12. Luckmann & Sorensen. *Medical- Surgical Nursing: A psychophysiologic approach*. 4th Ed, W.B Saunders, Philadelphia: 1567-68.
13. Sadler. Endoscopy: Inside information. *Nursing Mirror*. 1982; 9: 28-30.