

How Does Pre-Procedure Training Affect Adaptation and Anxiety Levels in Adolescents Undergoing Esophagogastroduodenoscopy?

Özofagogastroduodenoskopi Uygulanan Adölesanlarda İşlem Öncesi Eğitim Uyum ve Kaygı Düzeylerini Nasıl Etkiler?

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Citation/Atf: Dumandağ F, Köse S, Doğan G. How Does pre-procedure training affect adaptation and anxiety levels in adolescents undergoing esophagogastroduodenoscopy? Çocuk Dergisi - Journal of Child 2021;21(1):1-6. <https://doi.org/10.26650/jchild.2021.792285>

ABSTRACT

Objective: This quasi-experimental randomised control study was conducted with the aim of determining the effect of pre-procedural training on adaptation and anxiety levels of adolescents undergoing esophagogastroduodenoscopy.

Methods: The study was carried out with 60 adolescents aged 14-17 undergoing their first esophagogastroduodenoscopy between September 2018 and February 2019. The adolescents were divided into 2 groups by using a randomisation control list, which had been prepared with the microsoft excel program. Before the procedure, the group that was trained about esophagogastroduodenoscopy constituted the patient group and the untrained group was the control group. A demographic data form and the State-Trait Anxiety Inventory were completed before the procedure and a patient compliance assessment form was filled out after the procedure.

Results: The mean age of the participants was 15,40±1,14 years (min: 14; max: 17), 66,7% (n=40) were female, and 61,7% (n=37) were high school students. It was determined that 46,6% (n=28) of the adolescents had anxiety before endoscopy and this was mostly due to lack of information. The state anxiety levels of the control group were significantly higher. It was determined that the adolescents in the patient group adapted to the procedure better than the adolescents in the control group, and the state anxiety point averages of adolescents who adapted well to the procedure were lower. There was no statistically significant difference between the groups when trait anxiety levels were evaluated.

Conclusion: Training before esophagogastroduodenoscopy is effective in reducing anxiety and facilitating adolescents' compliance with the procedure.

Keywords: Education, endoscopy, anxiety, adolescent, compliance

Öz

Amaç: Bu araştırma üst gastrointestinal sistem endoskopisi yapılacak ergenlere işlem öncesi verilen eğitimin, işleme uyumu ve anksiyete düzeyi üzerine etkisini belirlemek amacıyla yarı deneysel randomize kontrollü olarak gerçekleştirildi.

Yöntem: Araştırma verileri, Eylül 2018-Şubat 2019 tarihleri arasında ilk kez gastroskopi işlemi yapılacak, 14-17 yaş aralığında 60 ergenle gerçekleştirildi. Ergenler, microsoft excel programı ile hazırlanan bir randomizasyon kontrol listesi kullanılarak 2 gruba ayrıldı. İşlem öncesi özofagogastroduodenoskopi konusunda eğitim alan grup hasta grubunu ve eğitim verilmeyen grup ise kontrol grubunu oluşturdu. İşlemden önce 'Demografik veri formu' 'Durumluk Sürekli Kaygı Envanteri' formları, işlemden sonra 'Hasta Uygunluk Değerlendirme Formu' dolduruldu.

Bulgular: Araştırmaya katılanların yaş ortalamasının 15,40±1,14 yıl olduğu (min:14; maks:17), %66,7'sinin (n=40) kadın olduğu, %61,7'sinin (n=37) lise öğrencisi olduğu saptandı. Araştırmaya katılan ergenlerin %46,6'sı (n=28) endoskopi işlemi öncesi anksiyete yaşadıkları ve anksiyete sebebinin ise en çok bilgi eksikliği nedeniyle olduğu belirlendi. Kontrol grubunun durumluk kaygı düzeyleri, hasta grubundan istatistiksel olarak anlamlı düzeyde yüksek saptandı. Hasta grubundaki ergenlerin kontrol grubundaki ergenlere göre işleme daha iyi uyum sağladıkları ve işleme iyi uyum sağlayan ergenlerin durumluk kaygı puan ortalamalarının daha düşük olduğu belirlendi. Sürekli kaygı düzeyleri değerlendirildiğinde gruplar arasında istatistiksel olarak anlamlı bir farklılık saptanmadı.

Sonuç: Hastalara işlem öncesi verilen eğitim, kaygı düzeyini azaltmada ve hastaların işleme uyumunu kolaylaştırmada etkili olmaktadır.

Anahtar Kelimeler: Eğitim, endoskopi, anksiyete, ergen, uyum

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Submitted/Başvuru: 08.09.2020 • **Revision Requested/Revizyon Talebi:** 04.02.2021 • **Last Revision Received/Son Revizyon:** 04.01.2021 • **Accepted/Kabul:** 22.02.2021



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INTRODUCTION

Endoscopic examination is a method used in the diagnosis and treatment of gastrointestinal system (GIS) diseases (1, 2). One of the most important factors affecting patient compliance during endoscopic procedures is the level of anxiety experienced by the patient before the procedure. Anxiety is an emotion that makes a person feel danger, fear, and anxiety. Invasive processes such as colonoscopy and gastroscopy cause anxiety in individuals by creating psychological or physiological changes like anger, stress, increase of blood pressure, tachycardia, fear, and excitement (3-5). Decreasing anxiety is important for making the right diagnosis, providing convenience for endoscopists, facilitating easier adaptability, and preventing potential complications (6-8).

Regardless of the reason for which they come to the hospital, individuals experience stress, fear, and anxiety for many reasons such as being foreign to the environment, the medical terms used by healthcare professionals, the obligation to communicate with individuals they do not know, and the diagnosis and treatment procedures applied. This situation is also experienced by hospitalised children, not differently from adults (9-11).

Children experience stress, fear, and anxiety in situations such as illness and hospitalisation. Children's distinctive reactions to illness processes according to the childhood period create differences in treatment processes, as well (12,13). Children are more vulnerable to anxiety than adults because they are unable to meet their own healthcare needs and do not have sufficient physical and cognitive development (14). In addition, there are studies reporting that patients' anxiety levels are increased before interventional procedures (15,16).

Nurses can decrease the anxiety levels of adolescents and help the adaptation of adolescents and their families to forthcoming operations by playing an instructor role and supplying them with information.

In this study, it was aimed to evaluate the effect of pre-procedural training on the adaptation process and the anxiety levels of adolescents undergoing esophagogastroduodenoscopy.

METHODS

Study Design and Subjects

The research was conducted as a randomised controlled trial in the paediatric gastroenterology department of a training and research hospital. One hundred four patients were referred to the gastroenterology polyclinic to undergo endoscopy within the timeframe of the research period. Forty-four patients were excluded who were not in the age range of 14-17 years. Therefore, the research was performed with 60 adolescents, who included 30 patients and 30 control subjects by randomization method. The inclusion criteria for the adolescents who were evaluated were no chronic illnesses, no previous endoscopic procedures, good communication skills, and agreeing to participate in the research.

Ethical Consideration

Ethics committee approval was received from the local ethics committee for the study with decision number 2108/19-10 dated 27.08.2018. Written informed consent was obtained from both the adolescents and their parents who agreed to participate in the study. The study was conducted in accordance with the guidelines of the Declaration of Helsinki.

Study Tools

The research data were obtained with a Patient Identification Form, a Patient Compliance Assessment Form, and the State-Trait Anxiety Inventory.

Patient Identification Form: This form consists of 22 questions that examine the sociodemographic information and endoscopy qualifications of the adolescents, prepared by the researchers after a literature review.

Patient Compliance Assessment Form: The adaptation levels of the patients were evaluated by the endoscopist within 3 categories as good, medium, and bad by 9 criteria (difficulty of positioning, compliance with instructions, sweating-reddening, crying, pale skin, increase of heart rate, increase of respiratory rate, tachycardia, and changes in blood pressure). For each one of these criteria seen (Yes = 1), 1 point was given, and for criteria not seen (No = 0), 0 points were given. The score interval ranges between 0 and 9, with scores of 0-3 meaning "good", scores of 4-6 meaning "medium", and scores of 7-9 meaning "bad". Higher scores thus demonstrate a poor level of adaptation to the operation.

State-Trait Anxiety Inventory: The State-Trait Anxiety Inventory is a self-evaluation questionnaire developed by Spielberger et al. and validated by Öner and Le Compte (17). There are two separate scale forms consisting of a total of 40 items. Both scales have four answer options and the weight values of the options vary between 1 and 4. The State Anxiety Scale determines the fear that individuals feel about the stressful situations they are in. The Trait Anxiety Scale, on the other hand, determines the individual's tendency towards anxiety. The scales consist of 20 expressions each and the total scores obtained from each scale range from 20 to 80. Higher scores indicate a higher level of anxiety (17).

Education Program Provided to Adolescents

The adolescents forming the patient group were trained by the researcher in the patient room the day before the endoscopy procedure about what an endoscopy procedure is, for what purposes it is performed and how, how long it takes, the preparation before the procedure, and what should be taken into consideration after the procedure. Adolescents were given a guidebook reviewing the necessary literature and explaining the endoscopy procedure, which was prepared by referring to the opinions of experts. The scope validity of the patient information booklet was determined to be 91%.

Data Collection

Data were collected between September 2018 and February 2019. One day before the procedure, the Patient Identification

Form and the State-Trait Anxiety Inventory were administered to the adolescents in both the patient and control groups. Individual education was given to the adolescents in the patient group by the education nurse in this study, using the information booklet about the endoscopy procedure. On

RESULTS

Table 1 shows the distribution of sociodemographic characteristics of the adolescents included in the study (Table 1).

Table 1: Distribution and Comparison of Groups according to Socio-Demographic Characteristics (n=60).

Socio-demographic Characteristics		Patient (n=30)	Control (n=30)	t/Test	p
		n (%)	n (%)		
Age (years)	Min-Max	14-17	14-17	¹ 0.678	0.501
	Mean±SD	15.50±1.22	15.30±1.06		
Sex	Female	20 (66.7%)	20 (66.7%)	² 0.001	1.000
	Male	10 (33.3%)	10 (33.3%)		
Education level	Middle school	11 (36.7%)	12 (40%)	² 0.001	1.000
	Highschool	19 (63.3%)	18 (60%)		

the day of the endoscopy procedure, the State-Trait Anxiety Inventory was administered to the children in the patient and control groups before the procedure. Immediately after the esophagogastroduodenoscopy, the gastroenterologist (endoscopist) was asked to complete the Patient Compliance Assessment Form. The endoscopist evaluating the procedure was not provided with any information about which groups (patient vs. control) the patients were in.

Data Analysis

For the analysis of data obtained in the research, IBM SPSS Statistics 22 (IBM SPSS, Turkey) was used. The suitability of the variables to normal distribution was evaluated by the Shapiro-Wilk test, Q-Q graphs, and histograms. Descriptive statistical methods (mean, standard deviation, frequency, percentage) and the Mann-Whitney U test were used for the evaluation of quantitative data that did not show normal distribution. The Kruskal-Wallis test was used to evaluate the quantitative data between two groups. The continuity (Yates) corrected chi-square test, Fisher's full chi-square test, and Fisher's Freeman-Hamilton chi-square test were used to evaluate the qualitative data. Significance was evaluated at $p < 0.05$.

Table 2 shows the distribution of adolescents according to the factors causing anxiety related to endoscopy. Twenty-eight (46.6%) of 60 adolescents who participated in the study stated that they experienced anxiety before the endoscopy procedure (Table 2).

Table 2: Distribution and Comparison of Adolescents According to the Cause of Endoscopy Anxiety.

Causes of Anxiety (n=28)		n	(%)
Fear	Yes	11	39.29
	No	17	60.71
Lack of information	Yes	16	57.14
	No	12	42.86
Pain	Yes	3	10.71
	No	25	89.29

Table 3 shows the distribution of the mean anxiety scores according to the groups of adolescents. The state anxiety levels of the control group were significantly higher than those of the patient group ($p=0.002$). There was no statistically significant difference between the groups when trait anxiety levels were evaluated (Table 3).

Table 3: Distribution and Comparison of Anxiety Point Averages and Procedure Compliance Levels According to the Groups of Adolescents.

Scale Points		Patient	Control	Test	p
State Anxiety	Min-Max	24-51	22-57	-3.078	0.002**
	Mean±SD	35.30±7.92	43.07±10.47		
	Median (Q3-Q1)	34 (27-41.25)	46.5 (34.25-52)		
Trait Anxiety	Min-Max	26-55	24-56	-1.044	0.297
	Mean±SD	41.90±7.03	43.33±8.18		
	Median (Q3-Q1)	41 (37.75-48.25)	44 (38.75-49.25)		
Procedure compliance levels	Good	26 (86.7%)	11(36.7%)	16.637	0.000
	Moderate	4 (13.3%)	14(46.7%)		
	Bad	0 (2.5%)	5 (16.7%)		

Table 4: Distribution and Comparison of the Process Compliance Levels and Anxiety Score Means of Groups (n=60).

	State Anxiety		Test	p	
	Patient (n=30)	Control (n=30)			
	Mean±SD (Median)	Mean±SD (Median)			
Compliance of Groups	Good	34.42±7.56 (34)	43.64±12.12 (48)	2.296	0.022*
	Moderate	41.00±8.91 (40)	42.00±10.38 (45)	0.372	0.710
	Bad	-	44.80±8.35 (47)	-	-
	χ^2	1.654	0.660		
	p	0.198	0.719		

Examining the distribution and comparison of procedure/process compliance levels of adolescents according to their groups, there was a statistically significant difference between the groups in terms of procedure/process compliance levels of the adolescents ($p < 0.0001$; Table 3).

When the process compliance levels of the groups were compared with the mean anxiety scores, it was found that there were no adolescents with bad/very bad adaptation in the patient group. When the process compliance and mean anxiety scores of the groups were compared, the state anxiety levels of the control group were found to be significantly higher than those of the patient group for patients with very good/good compliance ($p = 0.022$; Table 4).

DISCUSSION

Anxiety is a state of concern that occurs in any illness or hospital situation, as is the case in every life-threatening situation (7). As with all medical interventions, children may experience intense anxiety, fear, and uneasiness due to the lack of sufficient information about the procedure and their needs for the procedure not being met before an endoscopy. This complicates the tolerance of the children by making it difficult for them to adapt to the procedure and prevents the endoscopist from working comfortably, efficiently, and effectively. Endoscopy is one of the procedures that increase anxiety, similar to other medical procedures. There are studies showing that patient information reduces anxiety levels before these procedures (14,15,18,19).

In a study by Uğraş and Alan (20) to determine the evaluation of the results of upper gastrointestinal endoscopy in children, 58.3% of the children were reported to be female. In the study by Ceyhan et al. (19) with adult endoscopy patients, it was found that 60% of the patients were female. In our study, it was found that 66.7% of the enrolled adolescents were female (Table 1). These findings can be explained by the fact that gastrointestinal system diseases are more common in women than men and therefore endoscopy is performed more frequently for female patients.

Anxiety is the state of fear or anxiety that a person experiences from time to time in certain periods of life and when faced with any danger. One of the most important practices in reducing

patient anxiety is to inform patients about the procedures to be performed (21). When the anxiety scores of the groups were compared, it was found that the adolescents in the control group had higher anxiety scores than the patient group and the difference between them was statistically significant (Table 3). Lee et al. (21) showed that the training given to patients undergoing colonoscopy by trained nurses reduced anxiety before the procedure, and Kutlutürkan et al. (22) also stated that nurses informing endoscopy patients by using educational materials reduced the state anxiety level before the procedure.

Nasiri et al. (23) and Hagiwara et al. (9) reported that informing the patients before all surgical and invasive procedures for diagnostic and therapeutic purposes relieves the patients' pain; decreases their fear, stress, and anxiety levels; and thus increases their compliance with the procedure. In the literature, there are many adult studies showing that informing the patients before the procedures to be applied reduces the anxiety levels of patients (10,15,24). Our research results are similar to the literature. According to these findings, it can be said that information is effective in reducing anxiety and can be given to adolescents in simple sentences without over-elaboration to improve adolescents' pre-procedure fears and anxiety and increase their compliance with the procedure.

The level of trait anxiety can be influenced by conditions such as personality traits and lifestyle, not only by the situation an individual is in (19). In our study, no significant difference was found between the levels of trait anxiety between the groups (Table 3). As the training given to the patient group was given for the specific procedure to be performed, it was expected that the adolescents would not have a difference in their trait anxiety levels. Other previous studies reported that pre-procedure training decreased state anxiety levels and did not make a difference in trait anxiety levels (19,23,25). Our research results are similar to those studies.

As the age of children increases, their anxiety and fears are expected to decrease. It is important that nurses take the age of the children into account while providing information before medical procedures. When the relationship between anxiety and age is examined in the literature, there are studies showing that the rate of anxiety is higher with decreasing age (26,27). In a study examining the relationship between pre-procedure anxiety levels and conscious sedation practices for patients

undergoing esophagogastroduodenoscopy, it was found that the level of anxiety decreased as age increased (28). Hsueh et al. (29) also found that the anxiety of the patients before a colonoscopy procedure was reduced by using multimedia training materials during the procedure. These results are consistent with our research data.

Pre-procedure information has been shown to increase patients' compliance with the procedure (15). Johnson et al. (30) and Peterson (31) reported that training and telephone reminders given to patients prior to a colonoscopy procedure increased colon cleansing and compliance with the procedure. Volkan et al. (11) also reported that anxiety levels decreased in children and their parents who received explanations about the procedure before endoscopy, and the dose of medication required for operational sedation also decreased. In a study performed to determine the effect of education given to patients undergoing an endoscopy procedure on their perceptions of the procedure, their compliance with the procedure, and anxiety levels, a significant relationship was reported between patient information and compliance (15). In our study, good compliance of the informed patients was observed, similar to the literature.

Limitations

Excluding patients from the research who had chronic illnesses or psychiatric diseases was one of the factors that limited this research. We only evaluated a patient population that included adolescents. With new and larger studies in which different forms are used for children under the age of 14, it would be appropriate to evaluate the anxiety levels of younger children in terms of contributions to the literature.

CONCLUSION

Providing information in an appropriate language and special training booklets for adolescents undergoing endoscopy procedures is associated with reduced pre-procedural anxiety and compliance during the procedure.

Etik Komite Onayı: Etik komite onayı bu çalışma için, yerel etik komiteden alınmıştır. (28.08.2018/ No: 2108/19-10)

Bilgilendirilmiş Onam: Katılımcılardan bilgilendirilmiş onam alınmıştır.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Çalışma Konsepti/Tasarım- F.D., S.K., G.D.; Veri Toplama- F.D.,S.K.,G.D.; Veri Analizi/Yorumlama-F.D., G.D.; Yazı Taslağı- F.D.,S.K.,G.D.; İçeriğin Eleştirel İncelemesi- S.K.,G.D.; Son Onay ve Sorumluluk- F.D.,S.K.,G.D.

Çıkar Çatışması: Yazarlar çıkar çatışması beyan etmemişlerdir.

Finansal Destek: Yazarlar finansal destek beyan etmemişlerdir.

Ethics Committee Approval: Ethics committee approval was received for this study from the local ethics committee. (28.08.2018/ No: 2108/19-10)

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- F.D.,S.K.,G.D.; Data Acquisition- F.D.,S.K.,G.D.; Data Analysis/Interpretation- F.D., G.D.; Drafting Manuscript- F.D.,S.K.,G.D.; Critical Revision of Manuscript- S.K.,G.D.; Final Approval and Accountability- F.D., S.K.,G.D.

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

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