Gastroesophageal Reflux Disease: Effect of Nursing Guidelines on Patients Compliance to Dietary Regimen

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Abstract:
Background and Objective: *Gastroesophageal reflux disease is one of the most common gastrointestinal tract disorder in the world. Aim of the study was to evaluate the effect of nursing guidelines on patients compliance to dietary regimen.*
Methods: Research design: Quasi-experimental design. Random sample of sixty adult patients diagnosed with GERD at Tropical Medicine and Gastroenterology Department, Assiut university hospitals. Patients randomized into study group (30) & control group (30) aged from (18 - 65) year. Tools: (I) Patients assessment sheet (II) GERD- Health Related Quality of Life Questionnaire (GERD-HRQL). (III) Short Food frequency questionnaire.
Results: *There were highly statistically significant difference between pre and post application of nursing guidelines on patients compliance to dietary regimen for study group.*
Conclusions: Nursing guidelines had a significant effect on patients compliance to dietary regimen and on improving disease symptoms.
Recommendation: *Establishment of teaching program as an integral part of the therapeutic treatment for patients with gastroesophageal reflux disease.*
Key words: *Gastroesophageal reflux disease, Nursing guidelines, Compliance to dietary regimen.*

I.   Introduction

Gastroesophageal reflux disease (GERD) is the most prevalent gastrointestinal disease. It occurs when stomach acid refluxes into the lower esophagus through the lower esophageal sphincter (LES). The LES is a band of muscles that act as a protective barrier against reflux material by contracting and relaxing. If this barrier is relaxed at inappropriate times reflux occurs leading to the symptoms of GERD result in troublesome symptoms and complications. [1]

GERD Symptoms include heartburn and regurgitation, dysphagia, chest pain and other manifestations such as nausea, chronic cough and asthma. [2] Typical clinical symptoms of GERD are heartburn, regurgitation and epigastric pain can affect sleep, diet and daily activities which impact on quality of life for patients. [3] The severity of the disease can be controlled with treatment. Life style modifications i.e. balanced and healthy diet and avoidance to oily, spicy and salty diet, not lying immediately after meal and exercise can help to treat GERD. [4,5]

Dietary modifications is important first-line therapy for patients with GERD. The recommendations of National Institutes of Health and the American College of Gastroenterology for patients with GERD reduce their intakes of fat, coffee, tea, chocolate, alcohol, citrus and tomato products and large meals and implement other lifestyle modification such as stopping smoking and weight reduction. [6]

Significance of the study:

Gastroesophageal reflux disease is a common gastrointestinal disease has a risk of morbidity and mortality from potential complications. The most common manifestations include regurgitation and heartburn are negatively impact quality of life. [7] The researchers emphasizes the importance of nursing guidelines to enhance patients compliance to dietary regimen and improve the disease symptoms for patients with GERD.

Aim of this study:
To evaluate the effect of nursing guidelines on patients compliance to dietary regimen.

Research hypothesis:
Gastroesophageal reflux disease symptoms will be improve after application of nursing guidelines and patients compliance to dietary regimen.

II. Patients And Methods

Research design:
Quasi-experimental research design

Setting:
The study was conducted at Tropical Medicine and Gastroenterology Department, Assiut University Hospitals.

Patients:
Random sample of 60 patients were enrolled in the study. Patients randomized into study group (30) & control group (30) .The randomization was performed by including the patients admitted on Saturdays, Mondays and Tuesdays is the study group and the patients admitted during the rest of the week days is the control group.

Inclusion criteria: both male and female adult patients diagnosed with GERD, their age ranged from 18 to 65 years, willing to participate in the study.

Exclusion criteria:
Infectious disease of the gastrointestinal tract, peptic ulcer, gastric cancer, sever digestive disorders and pregnancy.

Tools:
Tool I: Patients assessment sheet: this tool was developed by researchers It included two parts:
Part 1: Demographic data such as age, sex, marital status, educational level and occupation.
Part 2: Patients assessment regarding compliance to dietary regimen. it was designed by researchers after reviewing current national and international literature. Through assess patients compliance to healthy dietary intake and dietary habits Responses yes/no were scored as yes (1) or no (0). More than 60% means good compliance and less than 60% means poor compliance.

Tool II:
GERD- Health Related Quality of Life Questionnaire adopted from **(Velanovich et al., 2007)** [8] to assess GERD symptoms. Total Score Calculated by summing the individual scores to questions 1-15. Greatest possible score (worst symptoms) = 75. Lowest possible score (no symptoms) = 0 Heartburn Score: Calculated by summing the individual scores to questions 1-6. Worst heartburn symptoms = 30. No heartburn symptoms = 0. Regurgitation Score: Calculated by summing the individual scores to questions 10-15. Worst regurgitation symptoms = 30. No regurgitation symptoms = 0

Tool III:
Short Food frequency questionnaire (FFQ) adopted from **(Block et al., 2000)** [9] it used to assess dietary intake which includes 20 food items and focuses on fruit, vegetables, fibers rich foods, high fat, spicy and high-sugar foods, meat and meat products.

Nursing guidelines:
Designed by researchers after reviewing national and international literatures. It consists of two parts:
Part 1: guidelines about dietary intake include; avoid acid reflux inducing food such as Fatty foods, caffeine, chocolate, citrus juices, carbonated beverages, peppermint and spicy foods. Part 2: guidelines about Healthy dietary habits such as avoid late meals, eating three or more hours before bedtime, avoid large meals, Eating smaller more frequent meals, maintain upright posture during and after eating, avoid quickly eating, eat more slowly for 30 minutes per meal and avoid eating on the run. Sit down when eating. Nursing guidelines supported with picture for easy understand aimed to improving disease symptoms. Each patient was given a copy of teaching pamphlet.

Ethical considerations:
Permission was obtained to carry out the study from head of Tropical Medicine and Gastroenterology Department and approval from research ethical committee, Faculty of Nursing at Assiut University. Oral agreement for voluntary participation was obtained from patients. Anonymity and confidentiality were assured

through coding of the data. The patients had the right to refuse to participate in the study and can withdraw at any time.

Content validity:

It was done by 5 expertise from nursing and medicine staff who reviewed the tools and the teaching booklet for clarity, relevance, comprehensiveness, understanding, applicability and easiness for administration.

Pilot study:

It was conducted on 10% (6) patients for testing clarity, applicability, practicability and feasibility of the study tools. Modifications were done based on the results. Those patients who were involved in the pilot study were excluded from the final study sample.

Procedure:

At the first interview the researchers introduce themselves and explained the nature and purposes of the study to obtain cooperation from patients and health care personnel in Tropical Medicine and Gastroenterology Department. The researchers conducted the pretest on patients admission using tool (I, II, III). Control group were given treatment for GERD only while study group were given treatment for GERD in addition to nursing guidelines provided by the researchers in teaching pamphlet. The researchers was taking into consideration the use of simple words suitable to the patients. Nursing guidelines introduced to patients for study group through individualized session. Duration of session was 30- 45 minute. After session there was 5-10 minutes for discussion and feedback. The researcher used pictures and diagram to help them. The participants were assessed for compliance to dietary regimen and improvement of disease symptoms after one month. Data were assured confidentiality and anonymity.

Statistical analysis:

Statistical analysis for the collected data was done using frequency, percentage distribution, Independent sample T-test, and One-way-ANOVA test. P value < .05 was interpreted as a level of statistical significance for testing research hypothesis.

Results of the study:

Table 1 shows that the highest percentage of the studied group (study and control) their ages ranged between 35-50 years old and male (60.0% & 53.3%), married (66.7 % & 70%) respectively. Concerning the educational level of studied patients were illiterate (50.0% & 56.7%) respectively. In relation to patients' occupation, the highest percentage of the studied patients were work (76.7% & 70%) respectively.

Table 2 clarifies that, there were statistically significant differences between pre and post application of nursing guidelines regarding compliance to dietary regimen for study group.

Table 3 shows the highest percentage of studied sample had moderate symptoms pre application of nursing guidelines were (70%) in study group and (76.7%) in control group.

Table 4 shows the highest percentage in study group had no symptoms were (100%). There were highly statistically significant difference between the studied patients post application of nursing guidelines.
Figure 1 Illustrates positive correlation between total GERD symptoms and diet.
Figure 2 shows positive correlation between heartburn symptoms and diet.
Figure 3 shows positive correlation between regurgitation symptoms and diet.

Table1. Demographic characteristics of patients with GERD:

Items	Study Group		Control Group	
	No. (n=30)	%	No. (n=30)	%
Age				
• 18 – 35	5	16.7	9	30.0
• 35 – 50	18	60.0	16	53.3
• 50- 65	7	23.3	5	16.7
Gender				
• Male	18	60.0	16	53.3
• Female	12	40.0	14	46.7
Marital status				
• Single	9	30.0	7	23.3
• Married	20	66.7	21	70.0
• Divorced	1	3.3	2	6.7
Level of education				
• Illiterate	15	50.0	17	56.7
• Basic education	10	33.3	10	33.3

• University education	5	16.7	3	10.0
Occupation				
• Work	23	76.7	21	70.0
• Not work	7	23.3	9	30.0

Table 2. Percentage distribution of compliance to dietary regimen for studied sample:

Compliance to dietary regimen	Control group		Study group				P-value
			Pre		Post		
	No.	%	No.	%	No.	%	
- Good compliance	9	30.0	12	40.0	23	76.7	0.003**
- Poor compliance	21	70.0	18	60.0	7	23.3	

Table 3. Percentage distribution of heartburn and regurgitation symptoms for studied sample pre application of nursing guidelines:

Heartburn and regurgitation symptoms	Study group		Control group	
	No.	%	No.	%
- No symptoms	0	0.0	0	0.0
- Moderate symptoms	21	70	23	76.7
- Worst symptoms	9	30	7	23.3
Total	**30**	**100.0**	**30**	**100.0**

Table 4. Percentage distribution of heartburn and regurgitation symptoms for studied sample post application of nursing guidelines:

Heartburn and regurgitation symptoms	Study group		Control group		p-value
	No.	%	No.	%	
- No symptoms	30	100.0	13	43.3	
- Moderate symptoms	0	0.0	17	56.7	0.0001 ***
- Worst symptoms	0	0.0	0	0.0	
Total	**30**	**100.0**	**30**	**100.0**	**-**

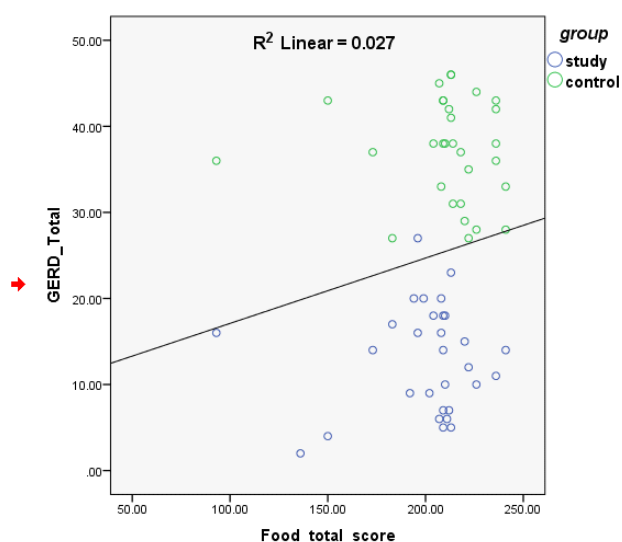**Figure 1.** Correlation between total GERD symptoms and diet

Figure 2. Correlation between heartburn symptoms and diet**:**
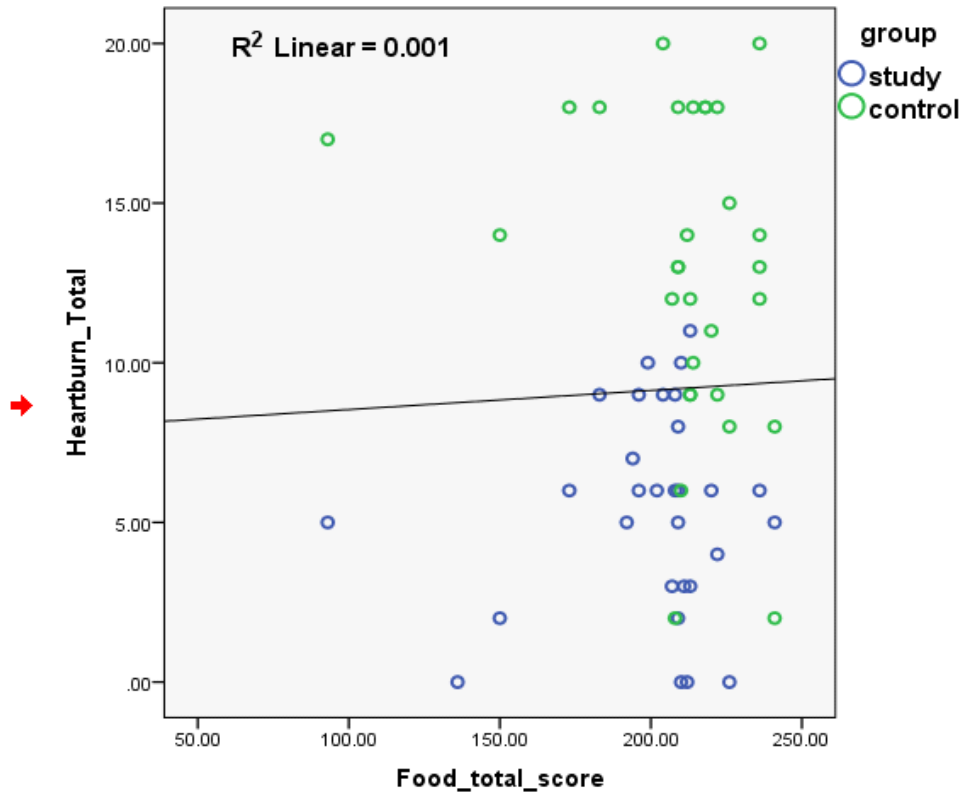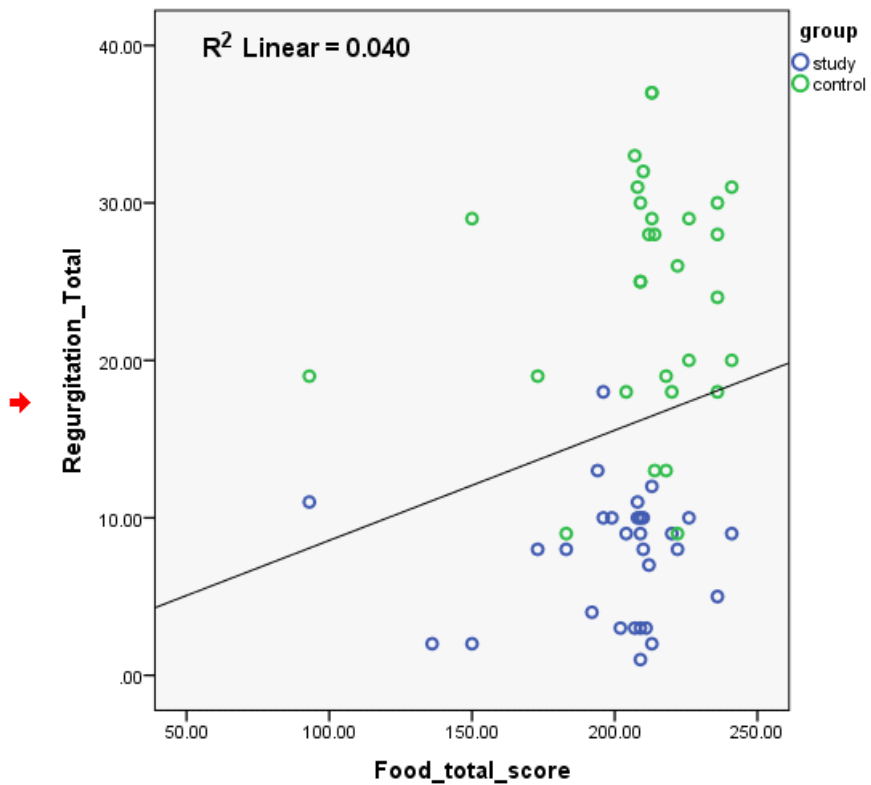

Figure 3. Correlation between regurgitation symptoms and diet

III. Discussion

GERD is gastrointestinal disorder that impact quality of life and leads to serious complications. [10] Regarding demographic data the current study revealed that; the majority of patients ages were 35- 50 years and male. This finding consists with Bor (2015) and Mone et al. (2015) [11,12] who stated that gastroesophageal reflux has high prevalence in the adult population related to certain foods, eating habits. Also Park et al. (2015) [13] added that GERD occurs in adults and older people. Both men and women can have GERD. Choe et al. (2017) [14] disagreed with current study and stated that, females were predominant among possible GERD patients with food related symptoms.

The current study illustrated that there were statistically significant differences between pre and post application of the nursing guidelines regarding compliance to dietary regimen for study group. Similar with the current study, Yang et al. (2014) and Matsuki et al. (2013) [15,16] mentioned that certain eating habits, such as eating quickly and irregularly, eating big meals, eating between meals, or eating directly before sleeping may contribute to the appearance of GERD symptoms.

As regarding heartburn and regurgitation symptoms the present study showed that; the majority of both group (control and study) had moderate symptoms pre application of nursing guidelines. This finding are supported by Kao et al. (2013) and Song et al. (2011) [17,18] represented that In most patients with GERD, reflux of gastric juice causes heartburn and regurgitation. Also Castillo et al. (2015) [19] reported that inappropriate dietary habits increase prevalence of GERD and merits evaluation of a proper dietary intervention for GERD symptoms. Savarino et al. (2017) [20] in the same line with current study who revealed that, heartburn and acid regurgitation are the characteristic symptom of GERD. Also Katz et al. (2013) [21] stated that classical manifestations of GERD are heartburn and regurgitation.

Our study reflects that: the highest percentage in study group had no heartburn and regurgitation symptoms. There were highly statistically significant difference between the studied patients post application of nursing guidelines. In the same line Ebrahimi-Mameghani et al. (2017) [22] represented dietary teaching program for patients with GERD should be developed using pictures of foods. Also, Kubo et al. (2014) [23] supported the current study results as they stated that to promote health among patients with GERD, adherence to dietary guidelines play an important role in the management of GERD.

The present study represented that; there was positive correlation between total GERD symptoms and patients diet. Other studies by Kalkan and Dağli (2015) [24] reported similar results that diet is an important factor for development of GERD symptoms because various foods are associated with gastroesophageal reflux disease or to aggravate its symptoms.

The current study illustrates that positive correlation between heartburn, regurgitation symptoms and diet. Similar with the current study, Wu et al. (2013) [25] reported Nutrition lead to the development of GERD and Relation was found between the severity of typical symptoms and diet This suggested that dietary modification could be effective in reducing and managing GERD symptoms. Also supported by Dağlı and Kalkan (2017) [26] who reported that diet is an important factor for development of GERD symptoms and suggested that eating frequently and slowly small amounts of food.

IV. Conclusion

In the light of this study findings and research hypothesis, it can be concluded that nursing guidelines had a significant effect on patients compliance to dietary regimen and on improving disease symptoms.

Recommendation

1. Further researches on a larger sample to investigate the effect of nursing guidelines on patients compliance to dietary regimen.
2. Establishment for teaching program as an integral part of the therapeutic treatment at Tropical Medicine and Gastroenterology Department equipped with information booklet.

References

[1]. Lee YY, McColl KEL. Pathophysiology of gastroesophageal reflux disease. Best Pract Res Clin Gastroenterol 2013;27:339–51.
[2]. He J, Ma X, Zhao Y, Wang R, Yan X, Yan H, et al. A population-based survey of the epidemiology of symptom-defined gastroesophageal reflux disease: the systematic investigation of gastrointestinal diseases in China. BMC Gastroenterol 2010;10:94. 3.
[3]. Maleki I, Masoudzadeh A, Khalilian A, Daheshpour E. Quality of life in patients with gastroesophageal reflux disease in an Iranian population . Gastroenterol Hepatol Bed Bench 2013;6 (2):96 -100.
[4]. Park CH, Kim KO, Baek IH et al. Differences in the risk factors of relux esophagitis according to age in Korea. Dis Esophagus 2014; 27 (2): 116–21.
[5]. Shahid S, Kanwal N, Hameed F, Riaz M. Assessment of prescribing trends in GERD patients and patient compliance in various hospitals of Pakistan 2017
[6]. Kim S, DeRoo LA, Sandler DP. Eating patterns and nutritional characteristics associated with sleep duration. Public Health Nutr. 2011 .95–14:889

[7]. Becher A, El-Serag H. Systematic review: the association between symptomatic response to proton pump inhibitors and health-related quality of life in patients with gastro-oesophageal reflux disease. Aliment. Pharmacol Ther. 2011;34:618-27.
[8]. Velanovich V. The development of the GERD-HRQL symptom severity instrument. Dis Esophagus 2007;20(2):130 -4
[9]. Block G, Gillespie C, Rosenbaum EH, et al. A rapid food screener to assess fat and fruit and vegetable intake. American Journal of Preventive Medicine. 2000;18(4):284-8.
[10]. de Bortoli N, Guidi G, Martinucci I et al. Voluntary and controlled weight loss can reduce symptoms and proton pump inhibitor use and dosage in patients with gastroesophageal reflux disease: a comparative study. Dis Esophagus 2016; 29 (2):197–204.
[11]. Bor S (2015): Worldwide Epidemiology of Gastroesophageal Disease World Digestive Health Day WDHD May 29, 2015 WGO HANDBOOK HEARTBURN: A GLOBAL PERSPECTIVE
[12]. Mone I, Kraja B, Bregu A et al. Adherence to a predominantly Mediterranean diet decreases the risk of gastroesophageal reflux disease: a cross-sectional study in a South Eastern European population. Dis Esophagus 2015 Jul . doi: 10.1111/dote.12384
[13]. Park CH, Kim KO, Baek IH et al. Differences in the risk factors of relux esophagitis according to age in Korea. Dis Esophagus 2014; 27 (2): 116–21.
[14]. Choe J, Joo M, Kim H, Lee B, Kim J, Yeon J , Park J, Byun K, and Bak, Y,. (2017): Foods Inducing Typical Gastroesophageal Reflux Disease Symptoms in Korea,   J Neurogastroenterol Motil, Vol. 23 No. 3 July, 2017.
[15]. Yang JH, Kang HS, Lee SY, et al. Recurrence of gastroesophageal reflux disease correlated with a short dinner-to-bedtime interval. J Gastroenterol Hepatol 2014;29:730-735.
[16]. Matsuki N, Fujita T, Watanabe N, et al. Lifestyle factors associated with gastroesophageal reflux disease in the Japanese population. J Gastroenterol 2013;48:340-349.
[17]. Kao SS, Chen WC, Hsu PI, The frequencies of gastroesophageal and extragastroesophageal symptoms in patients with mild erosive esophagitis, severe erosive esophagitis, and barrett's esophagus in Taiwan Gastroenterol Res Pract 2013;2013:480325
[18]. Song JH, Chung SJ, Lee JH, Kim YH, Chang DK, Son HJ. et al. Relationship between gastroesophageal reflux symptoms and dietary factors in Korea. J Neurogastroenterol Motil. 2011;17:54-60.
[19]. Castillo R, Otero W, Trespalacios, A, (2015): Evidence Based Review of the Impact of Treatments of Gastroesophageal Reflux D Rev Col Gastroenterol / 30 (4) 2015
[20]. Savarino E, de Bortoli N, De Cassan C, Della Coletta M, Bartolo O, Furnari M, Otton A, Marabotto E, Bodini G, Savarino V. The natural history of gastro-esophageal reflux disease: a comprehensive review, Diseases of the E sophagus (2017) 30 , 1–9.
[21]. Katz PO, Gerson LB, Vela MF. Guidelines for the diagnosis and management of gastroesophageal reflux disease. Am J Gastroenterol 2013;108:308-28.
[22]. Ebrahimi-Mameghani M, Sabour S, Khoshbaten M, Arefhosseini SR, Saghafi-Asl M. Total diet, individual meals, and their association with gastroesophageal reflux disease. Health Promot Perspect. 2017;7(3):155-162.
[23]. Kubo A, Block G, Charles P, Quesenberry J, Buffler P And Douglas A. Dietary guideline adherence for gastroesophageal reflux disease. BMC Gastroenterology 2014;14:144http://www.biomedcentral.com
[24]. Kalkan I and Dağli U. Role of Dietary Factors in Gastroesophageal Reflux Disease, World Digestive Health Day WDHD May 29, 2015 WGO HANDBOOK HEARTBURN: A GLOBAL PERSPECTIVE. www.worldgastroenterology.org
[25]. Wu P, Zhao XH, Ai ZS, et al. Dietary intake and risk for reflux esophagitis: a case-control study. Gastroenterol Res Pract 2013;2013:691026.
[26]. Dağlı U and Kalkan I. The role of lifestyle changes in gastroesophageal reflux diseases treatment, Turk J Gastroenterol 2017; 28(Suppl 1): S33-S37.