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Quality of Life of Post-Gastrectomy Patients: A Study in Indonesia's National Central Hospital

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Cover Page Footnote

For those acknowledged.



Quality of Life of Post-Gastrectomy Patients: A Study in Indonesia's National Central Hospital

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Abstract

Introduction. Several studies suggest gastrectomy is associated with deterioration in a patient's quality of life (QOL). This study is conducted to assess the impact of distal (DG), proximal (PG), or total (TG) gastrectomy and the cause of disease on a patient's QOL.

Method. This retrospective study was conducted in dr. Cipto Mangunkusumo Hospital with collected data from the medical records throughout July-September 2020. Inclusion criteria were patients after proximal, distal, or total gastrectomy for a tumor or any non-tumor indications. They were assessed using the World Health Organization Quality of Life Questionnaire Abbreviated Version (WHOQOL-BREF). Collected data were further analyzed using statistical univariate and bivariate analysis.

Results. Sixty-six patients with a mean age of 47.12 ± 14.5 years were enrolled in the study. We found significant differences between the proximal, distal, and whole groups with the environmental domain and the total WHOQOL-BREF values. The median scores for the environmental domain were 63 (50-88), 69 (50-88), 56 (50-75), and the mean WHOQOL-BREF total scores for proximal, distal, and total gastrectomy patients were 64.42 ± 9.34 , 67.19 ± 9.44 , 59.12 ± 8.04 for the proximal, distal, and total groups, respectively. Subjects with an etiology of malignancy had a lower median WHOQOL-BREF score in most domains. However, there was no significant difference in WHOQOL-BREF scores between non-tumor and tumor subjects.

Conclusion. This study found decreasing patients' QOL after total gastrectomy compared with distal and proximal in the environmental domain and the total WHOQOL-BREF value. There was no difference in post-gastrectomy patients' QOL between tumor and non-tumor etiology in all WHOQOL-BREF domains.

Key words: gastrectomy; quality of life; WHOQOL-BREF

Introduction

Based on Global Cancer Observatory 2020, there were 3484 new cases of gastric cancer in Indonesia. The five year-prevalence of gastric cancer reaches 1.70 per 100,000 population. This situation led to an increasing number of gastrectomy.¹ Gastrectomy procedure is conducted to remove some parts of the gaster or as a whole; usually classified as proximal, distal, and total gastrectomy. The procedures were indicated primarily for malignancies such as adenocarcinoma, lymphoma, carcinoids, gastrointestinal stromal tumor (GIST), and leiomyosarcoma; other indications include intractable hemorrhagic gastritis, some peptic ulcers, recurrent end-stage gastroparesis, pyloromyotomy, and neurostimulator placement.²⁻⁴

After a gastrectomy procedure, patients may report loss of appetite, dysphagia, nausea, vomits, and feeling efficiently full – changes that affect their quality of life. Quality of life is defined as individual perception regarding their position in life in the context of their society's culture and norms, in which they relate to their goals, expectations, standards, and concerns. It is an inseparable part of the physical, mental, and social well-being health concept, which should be of one consideration before suggesting any surgical procedures for patients.⁵ A study conducted by Zhu et al.⁶ showed no significant difference in overall morbidity and mortality of patients after different types of gastrectomy. But in contrast to morbidity and mortality rate, Karanicolas et al.⁷ reported different rate of quality of life from patients after different types of gastrectomy, citing patients after proximal gastrectomy to

experience more reflux, nausea, vomit, and overall lower quality of life compared to patients after distal and total gastrectomy until 18-months postoperative. Another study by Qi et al.⁸ also mentioned lower physical domain of quality of life for total gastrectomy patients. We conducted this study to evaluate the effect of gastrectomy type procedure (proximal, distal, and total) and cause of the disease (tumor and non-tumor) in patient's quality of life in dr. Cipto Mangunkusumo General Hospital, Jakarta.

Method

We screened all post-gastrectomy patients from the medical registry at dr. Cipto Mangunkusumo General Hospital proceeded by our surgeon during 2015-2020 for enrollment in this retrospective study. Eligible patient criteria were all post-gastrectomy patients (distal, proximal, and total gastrectomy) with tumor and non-tumor indications. Sixty-six subjects met the eligibility criteria. We collected demographical characteristics from medical records, including ages, gender, and cancer stadium. Then, the patient was contacted and asked to fill out the questionnaire.

The patient's quality of life was assessed using the World Health Organization Quality of Life Questionnaire Abbreviated Version (WHOQOL-BREF). We measured four domain's WHOQOL-BREF (physical, psychological, social relationships, and environmental domain) for gastrectomy type, etiology, sex, and malignancy stages

variables. The cutoff of the questionnaire is <60 for the low quality of life and ≥60 for the good quality of life.⁹

Prospective evaluation of the data was conducted using statistical analysis; we carried out a univariate analysis to determine the demographic characteristic of samples, and bivariate analysis tests were conducted using Chi-square/Fisher exact test and One-way ANOVA/Kruskal-Wallis test (according to data type and distribution normality). This study was approved by the Committee Ethic, Faculty of Medicine, Universitas Indonesia.

Results

There were 66 patients included as our subjects in this study, with a mean age of 47.12±14.5 years old. The subjects were grouped based on the type of gastrectomy: either proximal, distal, or total gastrectomy. Table 1 describes the subject characteristics, and the Chi-square test showed a significant difference (p <0.05) between groups for the etiology and the variable of malignancy stages.

Table 1. Subject Characteristics

Variable	All patients (n=66)	Post-proximal gastrectomy (n=22)	Post-distal gastrectomy (n=31)	Post-total gastrectomy (n=13)	P
Age (mean ± SD), years	47.12 ± 14.5	51.68 ± 12.51	45.00 ± 15.10	44.46 ± 15.22	0.19
Occupation [n (%)]					0.55
Unemployed	37 (56.1%)	11 (16.67)	17 (25.76)	9 (13.64)	
Private employee	28 (42.4%)	10 (15.15)	14 (21.21)	4 (6.06)	
Public employee	1 (1.5%)	1 (1.52)	0 (0)	0 (0)	
Educational background [n (%)]					0.64
Unknown	4 (6.1%)	2 (3.03)	1 (1.52)	1 (1.52)	
Elementary school	2 (3%)	1 (1.52)	0 (0)	1 (1.52)	
Junior high school	5 (7.6%)	3 (4.55)	1 (1.52)	1 (1.52)	
Senior high school	37 (56.1%)	12 (18.18)	19 (28.79)	6 (9.09)	
Undergraduate	18 (27.3%)	4 (6.06)	10 (15.15)	4 (6.06)	
Gender [n (%)]					0.20
Female	27 (40.9%)	6 (9.09)	16 (24.24)	5 (7.58)	
Male	39 (59.1%)	16 (24.24)	15 (22.73)	8 (12.12)	
Procedure indication [n (%)]					0.00
Tumor	44 (66.7%)	21 (31.82)	15 (22.73)	8 (12.12)	
Non-tumor	22 (33.3%)	1 (1.52)	16 (24.24)	5 (7.58)	
Stages* [n (%)]					0.04
I	10 (22.7%)	7 (10.61)	2 (3.03)	1 (1.52)	
II	9 (20.5%)	4 (6.06)	3 (4.55)	2 (3.03)	
III	12 (27.3%)	5 (7.58)	5 (7.58)	2 (3.03)	
IV	13 (29.5%)	5 (7.58)	5 (7.58)	3 (4.55)	

*For patients with malignancy indication; SD: standard deviation

Quality of life based on gastrectomy type and other independent variables

Table 4.2 Gastrectomy type and WHOQOL-BREF score

	WHOQOL-BREF Domains								Total*	
	Physical*		Psychological†		Social Relationships†		Environmental†			
	Mean ± SD	p	Median	p	Median	p	Median	p	Mean ± SD	p
Gastrectomy type										
Proximal	64.32±11.48		56 (44-94)		69 (50-94)		63 (50-88)		64.42±9.34	
Distal	66.35±12.38	0.098	63 (50-94)	0.101	69 (50-94)	0.105	69 (50-88)	0.030	67.19±9.44	0.034
Total	57.85±10.57		63 (38-69)		56 (50-75)		56 (50-75)		59.12±8.04	
Etiology										
Non-tumor	65.32±14.03		63 (38-94)		69 (50-81)		63 (50-88)		65.23±11.03	
Tumor	63.34±10.98	0.532	63 (44-94)	0.640	69 (50-94)	0.705	63 (50-88)	0.868	64.40±8.79	0.743
Gender										
Female	65.15±13.46		69 (50-94)		69 (50-94)		69 (50-88)		66.69±10.00	
Male	63.20±11.00	0.522	56 (38-94)	0.007	69 (50-94)	0.108	63 (50-88)	0.521	63.29±9.03	0.155
Stages										
I	66.2±13.51		66 (44-75)		69 (50-75)		63 (50-81)		65.10±8.88	
II	62.00±8.62		63 (56-75)		69 (56-81)		69 (56-81)		65.89±7.67	
III	64.25±11.43	0.828	63 (50-94)	0.593	69 (56-94)	0.428	63 (50-88)	0.765	65.48±10.93	0.840
IV	61.23±10.58		56 (50-69)		56 (50-75)		63 (50-81)		61.85±7.65	

* Parametric test (One-way ANOVA/T-test); † non-parametric test (Kruskal-Wallis/Mann Whitney)

Quality of life was measured using WHOQOL-BREF into its four domains and the total score. Table 2 describes the mean and median of each domain's WHOQOL-BREF scores for gastrectomy type, etiology, gender, and malignancy stages variables. Through parametric and non-

parametric tests, we found a significant difference between gastrectomy groups on the environmental domain (p = 0.030) and the total score (p = 0.034). We also found a significant difference between sex variables in the psychological domain (p = 0.007).

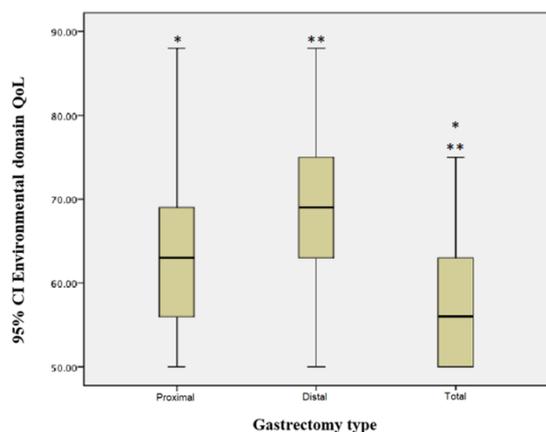


Figure 1. Environmental domain score according to gastrectomy type. Note: * and ** showing a significant difference between total gastrectomy compared to both proximal (p = 0.049) and distal (p = 0.012) groups on the environmental domain in Mann-Whitney post-hoc test.

We conducted Mann-Whitney post-hoc test to compare each gastrectomy group on the environmental domain and found a significant difference between total with both distal (p = 0.012) and proximal (p = 0.049) gastrectomy groups. At the same time, there is no difference between distal and proximal gastrectomy groups (Figure 1). We conducted Bonferroni post-hoc test between gastrectomy type groups for the total score and found a significant difference (p = 0.029) only between distal and total gastrectomy groups (figure 2).

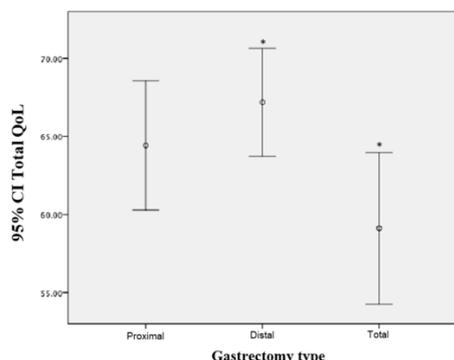


Figure 2. Total WHOQOL-BREF score according to gastrectomy type. Note: * Showing a significant difference between the total gastrectomy group compared to the distal group (p = 0.029) in Bonferroni post-hoc test.

Discussion

Our study analyzed different gastrectomy types and the quality of life in the physical, psychological, environmental, and social relationships domain using the WHOQOL-BREF score. To our knowledge, there hasn't been any study to use the scoring in assessing the post-gastrectomy quality of life. The physical domain relates to basic human needs and daily activities such as sleep, rest, and fulfill daily needs. Our findings that showed no significant difference between proximal, distal, and total gastrectomy were supported by a previous study from Shiraiishi et al.,¹⁰ which mentioned lower physical domain quality of life on total gastrectomy without significant difference between groups.

Other prior studies showed contradicting results from our study. Liano et al.¹¹ mentioned different physical domain quality of life between total and subtotal gastrectomy groups, while Hjermstad et al.¹² found higher diarrhea and loss of appetite on total gastrectomy. A meta-analysis conducted by Qi et al.⁸ also mentioned that total gastrectomy resulted in worse complications such as esophageal reflux, diarrhea, nausea, and vomits. But we noted that none used WHOQOL-BREF scoring, and Qi et al.⁸ study was targeted explicitly for malignancy populations.

The psychological domain is related to the frequency of negative feelings, ability to concentrate, acceptance of body image, and self-appreciation. Although not statistically significant, we found a higher median score for total and distal gastrectomy groups in this domain, supported by previous Liano et al.¹¹ and Spector et al.,¹³ who showed similar results. Another study by Namikawa et al.¹⁴ showed a lower psychological domain score for total gastrectomy groups – albeit another statistically non-significant finding.

On the social relationship's domain, we found a lower median score for the total gastrectomy group, like previous findings by Shan et al.,¹⁵ which found no significant difference in the domain despite the lower median score. Surgery has little impact on the social relationship domain because the patient can be recovered well. But it still affects housework and time-returned to their job.¹⁵ Contradicting results from Liano et al.¹¹ and Hjermstad et al.¹² also showed no statistically significant results. Our study found significant differences between gastrectomy groups for environmental domain and total quality of life score, but there haven't been any previous studies that used the same WHOQOL-BREF scorings and studied the environmental domain to be compared with our findings.

Etiology, other factors, and its relationship with quality of life

Gastrectomy type is not the only factor that may affect a patient's quality of life, so we analyzed other factors that may affect the patient's quality of life. For etiology of disease, we found a higher quality of life score for non-tumor patients, although not statistically significant, and there haven't been any previous studies yet to compare our findings. A possible explanation of our finding would be in malignancy causes; gastrectomy is not the only treatment, especially in advanced stages in which multimodal therapies were needed. These modalities may cause lower quality of life for malignancy patients.^{16,18}

In the context of malignancy, we found disease severity not to affect the quality of life for post-gastrectomy patients as we found an overall lower WHOQOL-BREF score for stage-IV malignancy patients but with no statistically significant difference. The malignancy stage influenced the selected type of gastrectomy. Patients after non-total gastrectomy experience fewer adverse consequences and have a better quality of life. It was affected by postprandial symptoms, malabsorption, weight loss, and many meals taken after gastrectomy. This finding was supported by Liano et al.,¹¹ although a nationwide study in Sweden mentioned advanced malignancy stages as a prognostic factor for the lower 6-months quality of life post-gastrectomy. We also found a significant difference between different sex in the psychological domain of quality of life, although previous studies by Bae et al.¹⁹ and Djarv et al.²⁰ showed no correlations between gender post-gastrectomy quality of life. Djarv et al. hypothesized that women might have a worse quality of life. But it needs a large population of sample to be proven. Previous studies suggest that men had better physical and role functions than women.¹⁹ However, the study encountering the limitation. The sample population was obtained from the medical registry at dr. Cipto Mangunkusumo General Hospital from 2015-2020. Therefore, this study could not meet the calculated minimum sample due to eligible criteria. But we included more samples compared to other previous similar studies.^{11,12}

Conclusion

We found a significant difference between the total gastrectomy group with distal and proximal gastrectomy groups for environmental domain and total WHOQOL-BREF scores. At the same time, there was no significant difference between etiology groups for all domains and total WHOQOL-BREF score. Further studies for all domains of WHOQOL-BREF scoring, with more significant samples, multicentered, and using prospective design are needed to evaluate the trend change in the quality of life of post-gastrectomy patients.

Disclosure

Authors declare no conflict of interest

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