

The comparison of Health-Related Quality of Life (HRQL) in patients with GERD, peptic ulcer disease and ulcerative colitis

*Mokrowiecka A*¹, Jurek K¹, Pińkowski D², Malecka-Panas E¹*

¹ Department of Digestive Tract Diseases, Medical University of Łódź, Poland

² Department of Diabetology, Medical University of Łódź, Poland

Abstract

Purpose: The aim of the study was to compare HRQL in patients with three common gastroenterological chronic conditions: gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD) and ulcerative colitis (UC), as well as to assess the correlation between HRQL scores and the disease activity in patients with ulcerative colitis.

Material and methods: The study group comprised of 45 patients with GERD, 35 – with PUD and 30 – with UC. Among patients with UC, 7 were in remission, 13 – in mild active and 10 – with severe phase of the disease, according to Rachmilewitz. HRQL was assessed using 8 domains of Polish version of 36-Item Short Form Survey (SF-36).

Results: The highest mean HRQL scores in all groups were obtained in physical and social functioning SF-36 domains. Among patients with GERD and PUD the worst HRQL results were noted in bodily pain subscale; in patients with UC – in general health perception subscale.

UC patients with remission showed significantly higher HRQL scores compared with those with mild active and severe phase of the disease; especially in social functioning, mental health and vitality ($p < 0.001$). Patients with severe UC clinical course had mean HRQL scores statistically lower than those with mild active disease only in vitality and social functioning domains. Mean SF-36 bodily pain parameters were significantly lower in GERD and PUD compared with UC.

Conclusions: All the evaluated diseases have a significant negative impact on patients' HRQL parameters, which needs to be considered in those diseases management. The severity of UC clinical course contributes to impaired HRQL.

Key words: Health-Related Quality of Life, GERD, peptic ulcer disease, ulcerative colitis.

Introduction

The primary goal of treatment for patients with chronic conditions is to maximize their function in everyday life and to achieve the highest level of well-being [1]. Measures of a disease activity and duration, that are based on the laboratory or endoscopic variables, do not always correlate with well-being, particularly in gastroesophageal reflux disease (GERD) but also in other chronic gastrointestinal (GI) diseases. The whole picture of a patient includes limitations in the work and social activities, home and married life, coping, stressful events. Physicians need precise measures of these outcomes that are also practical for use in the everyday practice [1-3]. The clinical assessment could be focused on Health-Related Quality of Life (HRQL), which describes the psychological and physical functioning and the subjective experience of a person in relation to their health. The point is that when patient is ill almost all aspects of life become health related [4-6].

GI disorders like GERD, peptic ulcer disease (PUD) and ulcerative colitis (UC) are common in general population. Although these diseases are not connected with high mortality rates, they lead to many psychosocial, emotional and economical consequences. On the other hand many stressful events influence on the clinical course of these diseases (e.g. on the relapse of inflammatory bowel disease) [4-8].

Gastrointestinal disorders have a great influence not only on HRQL of diseased persons, but also on their relatives and families. With the onset in young age, they interfere with a very active period of human life. Having long outcome with debilitating duration and possibility of complications (including cancer), these diseases severely affect all aspects of HRQL. Treatment of these conditions requires long-term medical follow-up, frequent invasive endoscopic examinations and continuous drugs' intake [9,10]. Although HRQL was assessed in many chronic

* CORRESPONDING AUTHOR:

Department of Digestive Tract Diseases, Medical University of Łódź
ul. Kopcińskiego 22; 90-153 Łódź, Poland
Tel: +48 42 6776664; fax: +48 42 6786480
e-mail: annazlo@poczta.wp.pl (Anna Mokrowiecka)

GI disorders, the differences in HRQL in patients with these diseases were not extensively evaluated yet. In addition, the determinants of HRQL in inflammatory bowel disease are not completely understood.

The aim of the study was to compare the HRQL scores in patients with gastroesophageal reflux disease, peptic ulcer disease and ulcerative colitis as well as to assess whether HRQL is associated with UC severity.

Material and methods

Subjects: A total of 110 subjects, (37 men and 73 women), were evaluated.

Subjects were divided into three groups according to the diagnosis:

- patients with gastroesophageal reflux disease (GERD) (n=45; 14 men and 31 women; mean age 52.5 ± 17.6);
- patients with peptic ulcer disease (PUD) (n=35; 13 men and 22 women; mean age 47.3 ± 14.3);
- patients with ulcerative colitis (UC) (n=30; 10 men and 20 women; mean age 43.5 ± 15.0).

Diagnosis: Well established diagnosis of GERD, PUD and UC was based on clinical, laboratory, endoscopic and histopathological measures. GERD was recognized at endoscopy when erosive changes were present. In cases of NERD (30%) – omeprazole-test were performed. Patients with peptic ulcer disease, confirmed by endoscopy with urease test for *Helicobacter pylori*, were in inactive stage of disease and were treated with HP eradication previously. UC was diagnosed at colonoscopy and was confirmed by biopsy with the histopathological examination.

Disease activity: Disease activity in GERD patients were classified with Los Angeles criteria. 20 patients (44%) presented grade A pro LA; 13 (29%) – B pro LA and 6 patients (13%) – C and D pro LA. All patients with PUD have finished treatment and no active disease was revealed in the moment of the study. Disease activity in group of UC patients was assessed by Rachmilewitz' Clinical Activity Index – CAI [11,12]. Remission was considered when the score was maximum 2 points; mild disease 3-8 points and severe disease 9-14 points. Seven of UC patients (23%) were in remission state, 13 (43%) – in mild disease and 10 (34%) – on severe phase of disease.

Treatment: All GERD and PUD patients were treated with antisecretory drugs: proton pump inhibitors (69% and 74%, respectively) or H2R antagonists (33% and 17%). *H. pylori* eradication was performed in 70% of PUD patients. UC patients were treated with sulphasalazine in 17%, sulphasalazine plus steroids – in 27%, mesalazine in 30%, mesalazine plus steroids – in 20% cases.

The demographic data collected were gender, age, marital status, years of education and type of the employment. The medical history included medication, disease duration and severity as well as its extent were taken. Presence of coexisting medical problems and disease complications were noted.

Control group consisted of 40 healthy volunteers (22 men and 18 women; mean age 35.9 ± 9.6).

Informed consent was obtained from all subjects evaluated and the study was approved by local ethics committee.

HRQL assessment

Health-Related Quality of Life was assessed using The Short Form 36 (SF-36) Questionnaire.

The SF-36 is a self-administered generic HRQL measure derived from the Medical Outcomes Study. This questionnaire consists of 36 items covering eight health status domains: physical functioning (PF), role limitation attributable to physical problems – role-physical (RP), bodily pain (BP), general health perception (GH), vitality (VT), social functioning (SF), mental health (MF) and role limitation attributable to emotional problems – role-emotional (RE).

Each domain is scored from 0 to 100, with a higher score indicating better HRQL.

SF-36 evaluates three major health attributes: health status, well-being and overall health status. This method is practical for clinicians and patients, being brief, convenient and providing easy comparison between different populations of patients and healthy subjects. It has been thoroughly tested for validity, reproducibility and responsiveness [13-15]. We used the Polish version of SF-36 [16,17].

Statistical methods

Results were assessed using Statistical Package Online by Quality Metric's responsible for SF-36 distribution and data interpretation.

The differences between the means of analysed parameters in different groups of patients were assessed with the Student's t-test. In order to calculate a significant differentiation in many groups, one-way analysis of variance was performed according to F. Snedecor test. The distribution differences were assessed with the use of non-parametric tests i.e. chi-squared test and Fisher's exact test.

Analysis was made using STATISTICA 5.0 software package, serial number no SP125579705G51.

Results

Demographic data of population studied is shown in *Tab. 1*.

Clinical characteristics of patients:

- Among group of patients with GERD the most frequent symptom (n=34, 75% patients) was heartburn. There were also flatulence (n=32, 71%), upper abdominal pain (n=30, 66%), early satiety (n=28, 63%) and chest pain (n=27, 62%). In some cases extraesophageal symptoms – globus, hoarseness, productive cough were observed. Duration of the disease was variable: 31% patients (n=14) presented one-year reflux history, but the most often the disease was lasted more than ten years (n=26, 58%). We observed comorbidity of reflux and hiatal hernia in 33% cases (n=16). Barrett's oesophagus was detected in 2 patients (4%).

- In group of patients with PUD the most prevalent GI symptoms were: dull epigastric pain – occurring in 80% cases (n=28), flatulence (n=24, 68%), heartburn (n=21, 60%), nausea (n=20, 57%) and vomiting (n=15, 43%). Duration of the disease was: in 7 patients (20%) – one year, in 17 (49%) – up to 10 years and in 11 (31%) – more than 20 years. *Helicobacter pylori* infection was detected in 25 (70%) patients. There were

Table 1. Demographic features of the study population

	GERD*	PUD**	UC***	Control
Total (n)	45	35	30	40
Gender				
Male	14 (31%)	13 (37%)	10 (33%)	15 (36%)
Female	31 (69%)	22 (63%)	20 (67%)	25 (64%)
Age (yr)	21-75	17-72	18-75	19-73
Mean age \pm SD	52.5 \pm 17.5	47.3 \pm 14.2	43.5 \pm 15.0	45.5 \pm 16.0
Marital status (%)				
Single	27	37	33	30
Married	53	51	54	51
Widowed	18	6	3	10
Divorced	2	6	10	9
Education (%)				
Grade school	11	11	20	15
Technical	18	20	17	20
High school	55	49	50	50
University	16	20	13	15
Employment (%)				
Employed	33	29	53	35
Unemployed	13	20	7	12
Retired	52	45	33	47
Student	2	6	7	6

* GERD – gastroesophageal reflux disease; ** PUD – peptic ulcer disease; *** UC – ulcerative colitis

2 cases of PUD complications, as gastroduodenal bleeding and pyloric perforation.

Among 30 patients with ulcerative colitis (UC), 7 (23%) were in remission state, 13 (43%) – presented mild disease and 10 (34%) – severe disease, according to Rachmilewitz' Clinical Activity Index. In 43% (n=13) rectum and sigmoid colon was involved. In 30% cases (n=9) macroscopic pathological changes were observed in rectum, sigmoid as well as distal

part of descending colon. Pancolitis was found in 27% patients (n=8). There were 12 cases of extraintestinal symptoms of UC: ankylosing spondylitis – in 1, distal arthritis – in 7, iritis and conjunctivitis – in 4 patients.

GERD – HRQL results

Mean SF-36 subscale scores were lower in patients with GERD than in control group with high statistical significance: $p < 0.01$; $p < 0.001$ (Fig. 1). In the GERD group the best mean scores (62.5 \pm 27.9) were obtained in physical functioning domain (PF).

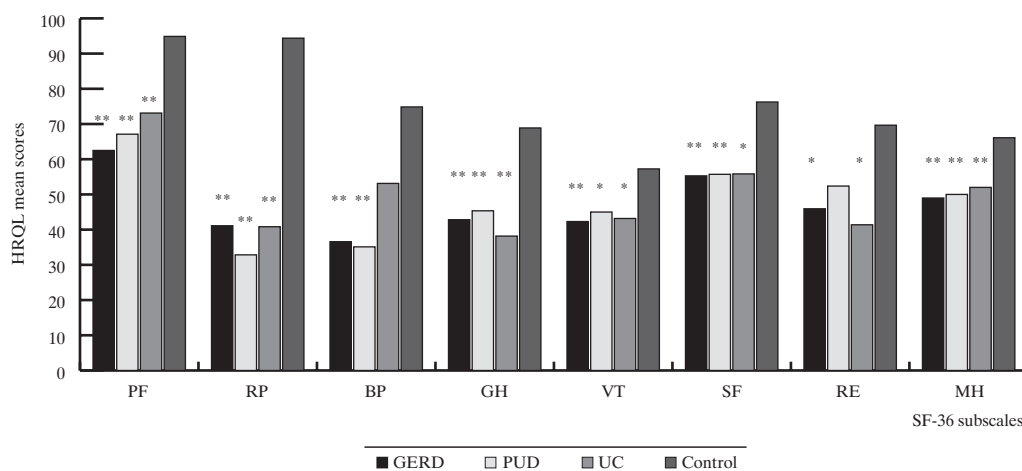
The second best results subscale (55.3 \pm 26.8 scores) concerned social functioning (SF). Much worse mean HRQL results were shown in mental health (MH) (48.9 \pm 21.3 scores) and role-emotional (RE) subscale (45.4 \pm 45.7). Very low and similar mean HRQL scores were presented in vitality (VT) and general health perception (GH): 42.3 \pm 19.5 and 42.8 \pm 20.1 respectively. Mean score of role-physical (RP) was quite similar (41.1 \pm 41.3). The lowest mean scores were observed in bodily pain domain (BP) – 36.6 \pm 20.9.

PUD – HRQL results

In almost all SF-36 subscales HRQL of patients with peptic ulcer disease was worse than in control group ($p < 0.01$; $p < 0.001$). Only within role-emotional (RE) domain the statistically significant differences were not observed (Fig. 1).

In PUD the best mean scores were obtained in physical functioning subscale (PF) – mean score 67.1 \pm 19.7. Remaining SF-36 subscales showed much worse results: social functioning (SF) – 55.7 \pm 6.8; role-emotional (RE) – 52.4 \pm 45.2 and mental health (MH) – 50.0 \pm 18.9. The general health perception, vitality and bodily pain mean scores were even lower: 45.3 \pm 22.4; 45.0 \pm 21.0 and 35.1 \pm 20.9 respectively. The worse HRQL was obtained in the role-physical domain, where mean score was: 32.8 \pm 39.9.

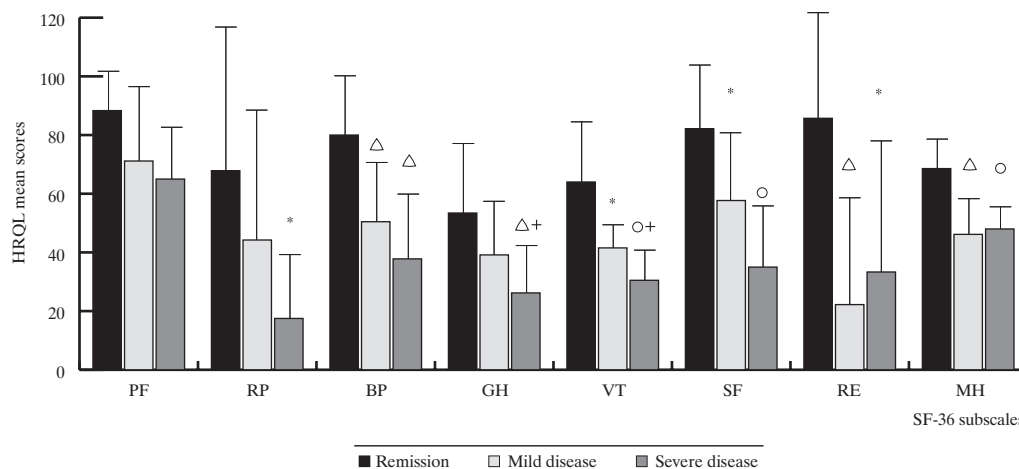
Figure 1. Comparison of HRQL mean scores in patients with gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD), ulcerative colitis (UC) and healthy control



* $p < 0.01$ compared to control; ** $p < 0.001$ compared to control

PF – physical functioning; RP – role-physical; BP – bodily pain; GH – general health perception; VT – vitality; SF – social functioning; RE – role-emotional; MH – mental health

Figure 2. Correlation of HRQL mean scores and ulcerative colitis (UC) activity



* p<0.05 compared to remission phase; Δ p<0.01 compared to remission phase; + p<0.05 compared to mild disease; O p<0.001 compared to remission phase

PF – physical functioning; RP – role-physical; BP – bodily pain; GH – general health perception; VT – vitality; SF – social functioning; RE – role-emotional; MH – mental health

UC – HRQL results

HRQL results were lower in the patients with UC than in control group in all domains studied (p<0.01, p<0.001) (Fig. 1).

The best HRQL results were obtained in physical functioning domain (PF) – mean score 73.1±21.8. In the remaining subscales, mean scores appeared significantly lower: social functioning (SF) – 55.8±27.6; mental health (MH) – 53.1±25.2; vitality (VT) – 43.2±18.8. Very similar results and low mean scores were observed in the role-emotional and role-physical subscales (41.4±45.1 and 40.8±41.8 respectively). In these group the lowest HRQL was noted in general health perception domain – mean 38.2±20.2.

Furthermore, the correlation between HRQL scores and disease activity was assessed. The best quality of life was observed in patients in remission state.

In patients with the mild UC, the mental health, bodily pain, role emotional (p<0.01), social functioning and vitality (p<0,05) mean scores were significantly lower compared to the patients in remission. However, in other subscales (PF, RP, GH), quality of life in patients with mild disease was not significant different from in those in remission (Fig. 2).

A comparison of HRQL parameters of patients in remission and severe phase of the disease showed significantly lower values in the latter in all HRQL domains (p<0.001; p<0.001; p<0.005). Comparing HRQL parameters of patients in mild and severe phase of the disease, these differences were significant only in vitality and general health perception domains (p<0.05).

Surprisingly, in the role-emotional and mental health parameters, higher HRQL scores were seen in severe than in mild disease, however, those differences were not significant. In mental health domain the results of these two groups of patients were very similar – 48.0±8.8 vs 46.1±12.5.

Comparison of the HRQL results in all groups of patients

In all three groups the variables studied in SF-36 domains showed similar results (Fig. 1). Only in bodily pain domain in patients with GERD and PUD mean scores were significantly lower then in patients with UC (p<0.002).

Discussion

The generic type of SF-36 questionnaire enabled us to compare the health status of patients with various diagnosis, in different disease activity state and healthy control population. Among subjects studied there were no significant differences in gender and age. We noticed slightly higher percentage of women in all groups, which could be due to their concern about health status and more frequent medical visits. Patients with GERD had significantly lower quality of life scores than control group in all SF-36 domains. Our results confirm the data from previous studies of HRQL in GERD patients [18-21].

Revicki et al. [18] evaluated the association between GERD symptoms and quality of life in 516 patients from US population. Patients with GERD had significantly lower mean scores in all SF-36 subscales compared to healthy subjects. Similarly to our study, the best mean HRQL scores were seen in physical functioning domain. Inversely, the worst results were obtained in vitality, while in Polish GERD patients the worst scores were noted in bodily pain subscale. Perhaps, this is due to the differences in life standards expectations.

Revicki et al. [18] observed higher mean HRQL scores of patients with GERD in physical functioning and role-physical subscales which corresponds with our results. In addition they assessed the effect of 6 weeks GERD treatment with H2R antagonists or proton pump inhibitors on HRQL. Patients, who responded well to the treatment, had better HRQL scores in almost all SF-36 domains, especially in psychological items.

Results obtained by Lepage et al. [22] in French population were similar to study of Revicki. After 4 weeks of topical anti-inflammatory gel treatment, the treated patients revealed better improvement in all SF-36 domains compared with the placebo group. The HRQL in the treated group reached the level of the French reference population, while it remained impaired in the placebo group. This study gave more data to develop the relevancy of the SF-36 questionnaire to assess the impact of GERD without severe oesophagitis on HRQL.

HRQL assessment is useful particularly in those cases when no pathological changes are seen in traditional medical diagnostic techniques. In small proportion of increasingly recognized non-erosive reflux disease (NERD) no changes in upper GI endoscopy and normal acid exposure can be detected. Watson et al. [23] assessed HRQL of patients with NERD, described as a “sensitive oesophagus” and confirmed their lower quality of life scores compared to healthy population. Similarly to our study, the best results were seen in physical functioning domain, and even before treatment they were better than our PF results (72.9 vs 62.5 scores). Authors revealed significant differences between bodily pain and vitality parameters with omeprazole compared with placebo treatment.

Furthermore, there was no difference in quality of life between patients with GERD, NERD and Barrett’s oesophagus in Kulig et al. [24] study. These results confirmed that stages of mucosal damage have little influence on HRQL parameters. These HRQL results were lower than in general population and similar to that of patients after acute coronary events.

In our study HRQL results were also significantly worse in peptic ulcer disease than in control group in almost all SF-36 subscales. Only in role-emotional parameter those differences were not statistically significant.

Rampal et al. [25], used a specific method – Quality of Life in Duodenal Ulcer Patients (QLDUP) questionnaire, which was developed from SF-36 test by addition of 18 questions connected with anxiety, diet, smoking and ulcer pain. Authors showed some differences according to treatment regimen. Apart from therapeutic approach, quality of life reflects therapy acceptance and psychological adaptation to a life-long illness. There is a balance between feeling of therapeutic protection and discomfort due to a prolonged daily intake of drug. Patients could expect that better health is connected with no need for continuous treatment. Even so, maintenance treatment with nizatidine better improved QOL than intermittent therapy. The lowest score was seen in general health perception, what indicate that PUD patients are aware of chronicity of their condition.

Similarly, in our study the worst HRQL scores were obtained in general health perception, and also in the role-physical, bodily pain, and vitality parameters. The best results, however, still lower than in control group, were noted in physical and social functioning. Patient’s concerns about the disease chronicity, frequent recurrences, had great impact on quality of life.

Study by Wilhelmsen [26] included 74 patients with PUD treated with triple eradication therapy. It revealed a great improvement in the quality of life after one-year observation. Patients reported better general well-being and emotional state as well as improvement in sexual activity.

Inflammatory bowel disease (ulcerative colitis and Crohn’s

disease) is highly related to patient’s emotional status. Disease relapses are often caused, as considered by patients, by emotional stress [27-29].

In our study the majority of patients were professionally active, developing their careers, therefore the persistent, chronic and recurrent disease did affect their quality of life.

It was not surprising that we noted the significant HRQL impairment in this group of patients compared to the control in all SF-36 parameters. Our results are similar to other studies [10,30,31].

The best scores were obtained in physical and social functioning domains. The general health perception was assessed to be the lowest. There was a significant negative correlation between the HRQL score and the disease severity.

Pallis et al. [30] has also shown that patients with severe disease had significantly lower HRQL scores than patients in remission both in SF-36 and Inflammatory Bowel Disease Questionnaire measures.

Hjorstwang et al. [10] used another generic HRQL test: SIP – Sickness Impact Profile and questionnaire: RFIPC – Rating Form of IBD Patient Concerns. They revealed that the main UC patients concerns were: fear of surgical treatment with ileostomy, side – effects of therapy, incontinence and cancer. These concerns grow with subsequent disease relapses.

Casellas et al. [31,32] measured HRQL in ulcerative colitis using IBDQ. In this study the correlation between less numerous relapses during a year, longer disease duration, better education, male gender, few hospitalizations and better quality of life in IBD patients was shown. In another study by the same author, the negative impact of the disease severity on HRQL using IBDQ and Psychological General Well-Being Index (PGWBI) was confirmed. The best HRQL scores were noticed in social functioning area.

Han et al. [33] showed correlation between elements of physical/mental health measured by the SF-36 and disease-specific quality of life. There was strong relationship between patients’ symptoms and all domains of their HRQL, what indicate strategy for improving quality of life in reducing their symptoms.

In our previous study we assessed quality of IBD patients using the self-prepared questionnaire. We have observed the lower HRQL scores in patients with IBD compared to the control group. There was a significant positive correlation between HRQL score loss and the disease severity, particularly in emotional state and perception of physical efficiency. On the other hand in patients with severe disease higher HRQL scores in relations with family and in joy of life domain compared to mild clinical course was observed [34].

The present study provides us with some new data based on Polish population comparing the quality of life in GERD, PUD and UC. Analysis of all mean scores in the diseases studied has shown similar results. However, in bodily pain parameter GERD and peptic ulcer disease patients presented significant lower scores than those with ulcerative colitis. Revicki et al. [18] has also shown the decrease in bodily pain subscale in GERD patients compared to patients with severe depression or diabetes and hypertension. These data further support the thesis that reflux disease severely lowers the pain threshold of the patients.

In the future HRQL evaluations are most likely to be used more frequently, e.g. for more complete assessment of the medical or surgical treatment outcome. It is known that psychological factors, such as HRQL are important predictors of health care utilization. These long-lasting, recurrent diseases, requiring frequent medical consults have a large impact on health care. De Boer et al. [35] underlined that emotional functioning and disease burden experienced are very important in the health care use, therefore psychological interventions may lead to more appropriate allocation of resources and the decrease in costs.

We concluded that quality of life assessment provide a basis for more complete evaluation of the patient and essential supplement for the traditional treatment. The more effective chronic disease management should probably include behavioural and psychological intervention to improve general health state of patients.

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