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HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH GASTRIC CANCER: CASE-CONTROL STUDY

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Summary

Cancer has a great impact on the quality of life in terms of physical, mental, and social functions and affects the quality of life of patients. The aim of the study was to compare health-related quality of life (HRQL) in patients with gastric cancer to that of the general population and to analyze the impact of gastric cancer on quality of life by all subscale components. The matched pair case-control study was performed. The Case group of 50 patients with gastrointestinal cancer was compared with the control group of 50 study participants without cancer, to whom the EORTC QLQ-C30 questionnaire was similarly applied. The results showed a decrease of HRQL in many aspects for patients with cancer compared to those without cancer. According to functional scales, role and emotional functioning were found lower in patients with cancer by more than 20 points, qualified as major clinical interest change (p < .001). According to the symptoms scale, only in the occurrence of pain do we observe major HRQL decline in patients with cancer (p < .001). Financial difficulties were also identified for a major decrease in HRQL in cancer patients (p <.001). It is concluded that patients with cancer report a lower HRQL predominantly related to the social and psychological aspects than to the cancer disease somatic conditions. In clinical care, it should be considered that the majority of cancer patients are quite concerned about their emotional and role functioning. Efforts to reduce these worries should be made in decision-making with clinicians while making care more patient-centered in order to improve their HRQL.

Keywords: *quality of life, health, gastric cancer*

Rezumat

Calitatea vieții la pacienții cu cancer gastric: studiu caz-control

Cancerul are un impact mare asupra calității vieții în ceea ce privește funcțiile fizice, mentale și sociale și afectează calitatea vieții pacienților. Scopul studiului a fost de a compara calitatea vieții în termeni de sănătate la pacienții cu cancer gastric cu cea a populației generale și de a analiza impactul cancerului gastric asupra calității vieții pe componentele acesteia. S-a efectuat studiul caz-control în pereche. Grupul de caz de 50 de pacienți cu cancer gastric a fost comparat cu grupul de control de 50 de participanți fără cancer, cărora li s-a aplicat în mod similar chestionarul EORTC QLQ-C30. Rezultatele au arătat o scădere a calității vieții pe mai multe aspecte pentru pacienții cu cancer în comparație cu cei fără cancer. Conform scalelor funcționale, rolul și funcționarea emoțională au fost găsite mai scăzute la pacienții cu cancer cu peste 20 de puncte, calificate drept modificare majoră sub aspectul semnificației clinice (p < 0,001). Conform scalei simptomelor, doar la apariția durerii am observat o scădere majoră a calității vieții la pacienții cu cancer (p < 0,001). La fel, dificultățile financiare au fost identificate pentru o scădere majoră a calității vieții la pacienții cu cancer (p <0,001). Se conchide că pacienții cu cancer semnalează o calitate a vieții mai scăzută centrată în principal pe aspecte sociale și psihologice decât simptomele propriu-zice ale bolii canceroase. În abordarea clinică, ar trebui luat în considerare faptul, că majoritatea pacienților cu cancer sunt destul de preocupați de funcționalitatea lor emoțională și de capacitatea îndeplinirii rolurilor sociale. Eforturile de reducere a acestor griji ar trebui făcute în luarea deciziilor de către clinicieni, asigurând o îngrijire mai centrată pe pacient în vederea îmbunătățirii calității vieții lor.

Cuvinte-cheie: *calitatea vieții, sănătate, cancer gastric*

Резюме

Качество жизни больных раком желудка: исследование случай-контроль

Рак оказывает большое влияние на качество жизни с точки зрения физических, психических и социальных функций и влияет на качество жизни пациентов. Целью исследования было сравнить качество жизни у больных раком желудка с населением в целом и проанализировать влияние рака желудка на качество жизни по ее компонентам. Исследование случай-контроль проводилось с подбором пар. Группу случаев из 50 пациентов с раком желудка сравнивали с контрольной группой из 50 участников исследования без рака, к которым аналогичным образом применялся опросник EORTC QLQ-C30. Результаты показали снижение качества жизни в нескольких аспектах для больных раком по сравнению с теми, у кого не было рака. По функциональным шкалам выявлено снижение ролевого и эмоционального функционирования у онкологических больных более чем на 20 баллов, что по клинической значимости квалифицируется как большое изменение (p <0,001). Согласно шкале симптомов, только присутствие боли обусловило значительное снижение качества жизни у онкологических больных (p <0,001). Также, финансовые трудности были отмечены при значительном снижении качества жизни онкологических больных (p <0,001). Сделан вывод, что онкологические больные сообщают о более низком качестве жизни, ориентированном в основном на социальные и психологические аспекты, чем на собственно симптомы рака. При клиническом подходе следует учитывать, что большинство онкологических больных весьма обеспокоены своей эмоциональной функциональностью и способностью выполнять социальные роли. Усилия по уменьшению этих опасений должны быть предприняты клиницистами при принятии решений, обеспечивая более ориентированную на пациента помощь ввиду улучшения качества их жизни.

Ключевые слова: *качество жизни, здоровье, рак желудка*

Introduction

Cancer is a common disease in many countries in the 21st century [1]. International Agency for Research on Cancer estimated worldwide 19.29 million new cases and 9.96 million cancer deaths in 2020. By 2040, the number of new cancer cases is expected to increase to 29.5 million per year, and the number of cancer-related deaths to 16.4 million. In general, the incidence of cancer is higher in the countries with the highest life expectancy, education and standard of living [2].

Cancer rank second in the overall structure of mortality, the standardized cancer rate of mortality in the Republic of Moldova are quite comparable to the similar values of the European standardized rate, especially in women. However, the structures of cancer mortality in the Republic of Moldova comparing to other European countries are different. In the Republic Moldova the level of mortality from cancer of the digestive system, especially gastric cancer and liver cancer, is very high, both in men and women (respectively, three and more than twice in both sexes), regardless of the easy general lowering trend observed in recent decades [3, 4].

Cancer has a great impact on quality of life in terms of physical, mental, and social functions and affect the quality of life of patients [5, 6].

Health-related quality of life (HRQL) is a complex concept that has different connotations depending on individual perception and understanding and required careful consideration when providing patient-centered care. According the HRQL approaches, people should feel physically well, socially connected and have optimal independence [7]. Quality of life is a criterion that can be measured by accessible and feasible methods in order to be widely used as an additional source of information about the health status of cancer patients based on patient-reported outcome measures [8, 9]. Health-related quality of life knowledge allows care providers to facilitate care that keeps cancer patients 'quality of life as a priority. Quality of life indicators provide the opportunity in daily clinical practice to obtain data on a variety of aspects in cancer patients' life: physical, psychological, social, and economic [10]. Their measurement in dynamics allows clinicians to objectively assess the effectiveness, toxicity of cancer treatment, to monitor the negative symptoms experienced by patients, and then to take corrective measures to improve the general condition based on changes in cancer patients HRQL scores [11]. The patient-centered approaches based on quality of life measuring are vital to achieve a treatment and healthcare program focused on the patient's needs, and not just based on the clinical stage of the cancer or other its specific problems in quantitative aspects [12]. The progress in cancer treatment prolong life and improve the quality of life of patients, some of treatments are highly effective but costly [13].

The conditions of gastric cancer as chronic disease quite often have long-term impacts on emotional, social and physical health of patients and determine the need to continuously ensure the improvement of quality of life centered on all its components.

The aim of the study was to compare HRQL in patients with gastric cancer to that of the general population and to analyze the impact of gastric cancer on quality of life by all subscale components.

Material and Methods

The present study is based on a case-control study design. Patients diagnosed with gastric cancer (case group, n=50) at the Institute of Oncology from the Republic of Moldova and participants from the general population (control group, n=50) were enrolled in a quality of life study. The groups were matched by age (p=0.992) and sex (p=1.000). The sample size (n=100) was based on statistical (StatCalc, EpinInfo) consideration, as follows: two-side confidence level (95%), study power (80%), ratio of controls to cases (1), Odds Ratio (OR=4).

We enrolled patients regardless of cancer evaluation (locally advanced, metastatic, or recurrent cancer) and treatment history with the following eligibility criteria: aged 18 or above with gastrointestinal cancer. We excluded those who are not able to respond to the applied questionnaire. All enrolled subjects gave written informed consent before study inclusion.

The European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire (QLQ-C30) has been used as a tool for assessing the quality of life in patients with cancer [14]. The EORTC QLQ-C30 questionnaire is one of the most widely used cancer-specific HRQL questionnaires worldwide [15].

Applied QLQ-C30 questionnaire (version 3) contains 30 questions structured, as follows:

Global Health Status (QoL);

Functional Scales:

2.1. Physical functioning (5 items);

2.2. Role functioning (2 items);

2.3. Emotional functioning (4 items);

2.4. Cognitive functioning (2 items);

2.5. Social functioning (2 items);

Symptom scales:

3.1. Fatigue (3 items);

3.2. Nausea / vomiting (2 items);

3.3. Pain (2 items);

Individual items (Dyspnoea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties).

The scores on a range of 1 to 100 points were calculated according to the methodology provided by the EORTC QLQ-C30 Scoring Manual [16]. Higher scores on functional scales represent better functionality, while higher scores on symptom scales represent more severe symptomatology.

In addition to the EORTC QLQ-C30 instrument, we collected data on patients' demographic characteristics: age, sex, residence, and education level.

Case group of 50 patients with gastrointestinal cancer was compared with the control group of 50 study participants without cancer, to whom the EORTC QLQ-C30 questionnaire was similarly applied. Normality checking for numerical variable was assured by Kolmogorov-Smirnov test performing. When not normally distributed, the data were expressed as median along with interquartile range (IQR). Statistical analysis was carried out applying independent samples Mann – Whitney U-test or chi-square test where appropriate. Analysis was performed using SPSS software (version 22).

Results

In the control group, the median age of the subjects was 65 (IQR 58.8 to 67.3) years, while for the group of patients diagnosed with cancer the median age was 64.5 (IQR 58.8 to 68.0) years. The sex representativeness was similar in the control and case groups (p=1.000). Other baseline sociodemographic characteristics are shown in Table 1.

Table 1

Baseline characteristics of study participants by the comparing groups

	Case (n=50)	Control (n=50)
Age median (IQR)	64.5 (58.8 to 67.3)	65 (58.8 to 68.0)
Sex		
Male	27 (54%)	27 (54%)
Female	23 (46%)	23 (46%)
Residence		
Urban area	17 (34%)	21 (42%)
Rural area	33 (66%)	29 (58%)
Education level		
Middle school	16 (32%)	20 (40%)
High school	26 (52%)	24 (48%)
University	8 (16%)	6 (12%)

As recommended by others, differences of 5-10 points in health-related quality of life scores are considered to be important clinically, indicating a "little" change, while differences of 10-20 points indicate a "moderate" change, and greater than 20 – "very much" considering major change in quality of life [17].

See Table 2 for a presentation of score difference in health-related quality of life indicators was found ranged from non-significant to major change in patients with cancer compared to those without cancer.

Table 2

Health-related quality of life (HRQL) subscale score difference in patients with cancer compared to those without cancer

HRQL indicators	Case	Control	p-value*
Global health status (QoL)	65,4999966	80,5399966	< .001
Functional scales			
Physical functioning (PF)	73,0199976	86,4333312	< .001
Role functioning (RF)	70,9999962	94,5333326	< .001
Emotional functioning (EF)	63,9999968	88,6666632	< .001
Cognitive functioning (CF)	93,9999988	96,3333326	.125
Social functioning (SF)	81,9999976	95,8888884	< .001
Symptom scales / items			
Fatigue (FA)	35,2222184	25,2222198	.003
Nausea and vomiting (NV)	15,3333314	3,9999994	< .001
Pain (PA)	29,3333296	7,9999976	< .001
Dyspnoea (DY)	7,9999992	8,6666658	.686
Insomnia (SL)	27,1111084	21,3333312	.105
Appetite loss (AP)	21,9999978	7,3333326	< .001
Constipation (CO)	10,6666658	3,3333330	.018
Diarrhea (DI)	21,3333312	5,3333328	< .001
Financial difficulties (FI)	66,6666634	27,9999974	< .001

[*] *Independent samples Mann-Whitney U Test*

The results showed a decrease of HRQL in many aspects for patients with cancer compared to those without cancer. According to functional scales, role functioning (RF) and emotional functioning (EF) were found lower in patients with cancer by more than 20 points, being qualified as major clinical interest change ($p < .001$). Withal, the score difference for physical functioning (PF) and social functioning (SF) were registered in interval for "moderate" clinical importance change ($p < .001$).

According to symptoms scale, we observed in patients with cancer increased score by 21 points in the occurrence of pain (PA) and increasing by 10-16 points in the occurrence of fatigue (p=0.003), nausea and vomiting, appetite loss, and diarrhea ($p < .001$).

Criteria such as cognitive functioning (p=.125), dyspnea (p=.686), and insomnia (p=.105) were not found changed significant statistically.

At the same time, cancer patients were found "very much" affected by financial difficulties (FI), with a difference of 39 points in health-related quality of life scores ($p < .001$).

The observed difference between scores was more than 10 points above the general population for global Health-related quality of life (QoL) status in patients with cancer.

When looking at all aspects registered with "very much" change qualified as major HRQL decline, the financial difficulties were found with the most HRQL score difference followed by emotional functioning, role functioning and pain. The highest level of problems was more reported by patients for the social and psychological aspects than for the cancer disease symptoms aspects according the decline measurement of HRQL based on EORTC QLQ-C30 score difference (Figure 1).

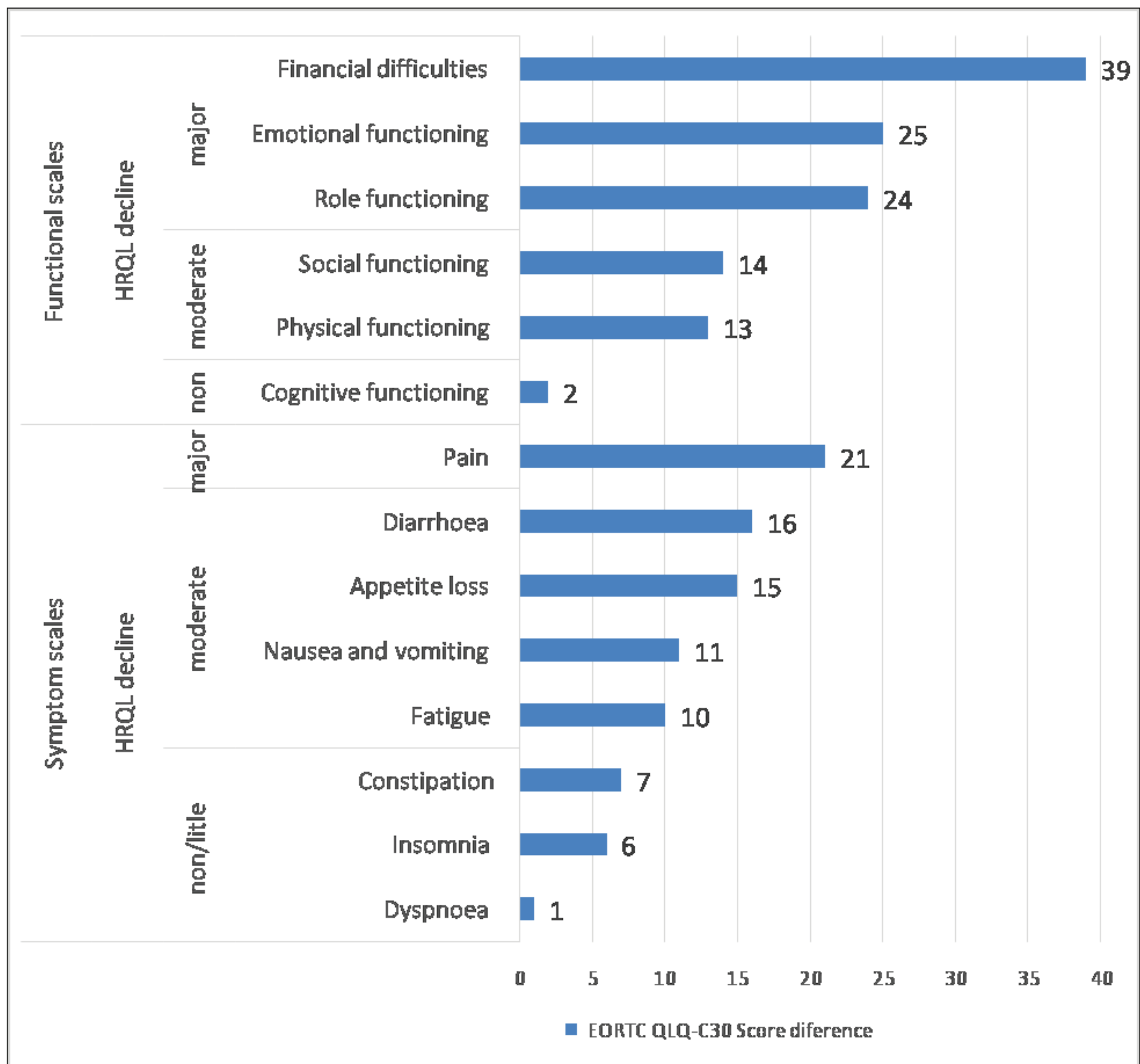

Figure 1. *Ranking of HRQL decline in cancer patients based on EORTC QLQ-C30 subscale score difference*

Discussion

The obtained results confirm statistically significantly lower HRQL in cancer patients compared to those of the general population. The higher impact on the components of quality of life produced by cancer was found for emotional aspects and financial issues.

In this study, clinical significance, in most cases, was found along with statistical significance which demonstrates that identified difference between patients with cancer and individuals without cancer are of clinical relevance. This suggests the possibility of improving the effects of cancer treatments by ensuring an appropriate level of all quality of life components, in particular those related to emotional aspects. The findings support previous results highlighting the importance of the psychosocial distress consideration in the HRQL improvement in cancer patients [18, 19], as well in the survival prognostic [20, 21]. Overall, many researchers suggested that baseline quality of life and future expectations of life seem to be key determinants of preference for quality of life versus length of life in cancer patients [22].

Financial issues reported by cancer patients in the present study is one of the important problems related to cancer treatments and their cost highlighted by many researchers in recent years [13, 23]. Taking into account the main HRQL decline related in particular to the financial issues, the evaluation of costs and benefits are important to be considered in future studies. In conditions with limited medical resources is important to evaluate not only the effectiveness of cancer treatments but also their cost-effectiveness [24–26].

Conclusions. Patients with cancer report a lower HRQL predominantly related to the social and psychological aspects than to the cancer disease somatic conditions. In clinical care, it should be considered that the majority of cancer patients are quite concerned about their emotional and role functioning. Efforts to reduce these worries should be made in decision-making with clinicians while making care more patient-centered in order to improve their HRQL.

Limitations of the Study

We recruited only inpatients with gastric cancer using convenience sampling, so not collecting a variety of data on health status that outpatients with gastric cancer could experience, which could be considered a study limitation.

Conflict of Interest

The authors declare that there is no conflict of interest.

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