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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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HEALTH-RELATED QUALITY OF LIFE AND ASSOCIATED FACTORS AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A CROSS-SECTIONAL STUDY

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Abstract.

Background: Chronic obstructive pulmonary disease (COPD) substantially affects health-related quality of life (HRQoL). This study assessed HRQoL and associated factors among patients with COPD in Eastern Kazakhstan using the St. George's Respiratory Questionnaire (SGRQ).

The aim of this study: To assess HRQoL among patients with COPD receiving outpatient care in Eastern Kazakhstan using the St. George's Respiratory Questionnaire and to examine the associations of age, sex, smoking status, and disease duration with total SGRQ scores.

Materials and Methods: A cross-sectional study included 270 adults with an established diagnosis of COPD documented in their medical records and receiving outpatient care. SGRQ Symptoms, Activity, Impacts, and Total scores were assessed. Associations with age, sex, smoking status, and disease duration were examined using nonparametric tests and a general linear model (GLM), with Bonferroni-adjusted pairwise comparisons.

Results: The mean total SGRQ score was 52.07 ± 19.52. The highest domain score was observed for Impacts (59.27 ± 23.96), followed by Symptoms (53.99 ± 14.97) and Activity (38.96 ± 20.23). Unadjusted comparisons showed no significant differences in total SGRQ scores by sex, age group, or smoking status. In the adjusted GLM, disease duration ($p = 0.015$) and sex ($p = 0.039$) were significantly associated with total SGRQ scores, whereas age and smoking status were not. Patients with COPD duration >10 years had significantly higher adjusted scores than those with <5 years ($p = 0.032$) and 5–10 years ($p = 0.037$).

Conclusions: Patients with COPD demonstrated substantial impairment in HRQoL, particularly in the psychosocial domain. Longer disease duration was associated with poorer HRQoL, supporting comprehensive patient-centered assessment and management.

Key words. COPD, health-related quality of life, SGRQ, disease duration, psychosocial burden.

Introduction.

Chronic obstructive pulmonary disease (COPD) is a heterogeneous lung condition characterized by chronic respiratory symptoms, including dyspnea, cough, sputum production, and/or exacerbations, resulting from abnormalities of the airways and/or alveoli that cause persistent, often progressive airflow obstruction [1]. COPD remains a major global public health problem associated with substantial morbidity, disability, healthcare utilization, and mortality. According to the World Health Organization, COPD was the third leading cause of death worldwide in 2023, accounting for approximately 3.4 million deaths [2]. In addition to its clinical consequences, COPD imposes a considerable economic and social burden on patients, families, healthcare systems, and society [3].

The burden of COPD extends beyond respiratory symptoms. Patients may experience reduced exercise tolerance, progressive functional limitation, fatigue, sleep disturbances, anxiety, depression, and impaired social functioning [4]. These manifestations can substantially affect health-related quality of life (HRQoL), which reflects patients' perceptions of the effects of disease on their physical, psychological, and social functioning [5]. In COPD, poorer HRQoL has been associated with greater symptom burden, dyspnea, reduced exercise capacity, psychological distress, exacerbations, and other indicators of disease burden [6,7]. Consequently, assessment of HRQoL provides clinically relevant information that complements conventional physiological and clinical measures.

Several generic and disease-specific instruments are available for assessing HRQoL in chronic respiratory diseases. Among them, the St. George's Respiratory Questionnaire (SGRQ) is one of the most widely used disease-specific instruments for patients with chronic airflow limitation [8]. The SGRQ assesses three domains—Symptoms, Activity, and Impacts—and provides an overall score ranging from 0 to 100, with higher scores indicating greater impairment in health status [8,9]. The instrument has demonstrated good reliability, validity, and responsiveness and has been successfully adapted for use in different linguistic and cultural settings [9,10].

HRQoL in COPD is influenced by a complex interaction of clinical, functional, psychological, and demographic factors. Evidence indicates that dyspnea, depression, anxiety, and exercise tolerance are among the factors most strongly associated with disease-specific health status, while associations have also been reported for smoking, comorbidities, and measures of disease severity [7]. Sex-related differences in HRQoL have been observed in some COPD populations, with women reporting greater impairment in certain studies [11]. The contribution of age may vary according to accompanying clinical and functional characteristics [12]. Smoking may also be associated with poorer HRQoL, although current smoking status alone does not adequately reflect cumulative lifetime tobacco exposure [13].

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Disease duration may be relevant because prolonged exposure to the clinical and functional consequences of COPD may contribute to an increasing burden over time. These findings emphasize the importance of examining factors associated with HRQoL within specific populations and healthcare contexts.

Evidence on COPD in Kazakhstan remains comparatively limited. The international CORE study demonstrated a substantial discrepancy between previously diagnosed and spirometry-defined COPD in Kazakhstan, with prevalence estimates of 13.8 and 66.7 per 1000 population, respectively, indicating considerable potential underdiagnosis [14]. However, available evidence from Kazakhstan has focused primarily on COPD prevalence and risk factors, whereas patient-reported disease burden and factors associated with HRQoL have been less extensively characterized. Assessment of HRQoL in this setting may therefore provide information that is not captured by epidemiological or physiological indicators alone and may contribute to more patient-centered COPD management.

Materials and Methods.

Study Design and Setting:

A cross-sectional study was conducted among adult patients with chronic obstructive pulmonary disease (COPD) receiving outpatient care in healthcare facilities in Eastern Kazakhstan. The study was conducted between August and December 2025.

The study aimed to assess health-related quality of life (HRQoL) among patients with COPD and to examine its associations with selected sociodemographic and clinical characteristics. HRQoL was assessed using the St. George's Respiratory Questionnaire (SGRQ).

Study Population and Sample Size:

The study population consisted of adult patients with an established diagnosis of COPD documented in their medical records who were receiving outpatient care at the participating healthcare facilities.

A minimum target sample size of 267 participants was established during the planning stage of the study. A total of 270 patients who met the eligibility criteria were ultimately enrolled and included in the analysis.

Participants were recruited using a convenience sampling approach. Patients attending the participating outpatient healthcare facilities during the study period were assessed for eligibility and invited to participate if they met the predefined inclusion criteria.

Eligibility Criteria:

The inclusion criteria were: age 18 years or older; an established diagnosis of COPD documented in the patient's medical record; receipt of outpatient care at one of the participating healthcare facilities during the study period; ability to understand and independently complete the questionnaire; and provision of written informed consent to participate in the study.

Patients were excluded if they had severe cognitive impairment that could interfere with questionnaire completion, an acute or critical condition at the time of recruitment, inability to complete the questionnaire independently, or inability or unwillingness to provide written informed consent.

For subsequent analyses, participants were categorized according to age, sex, smoking status, and duration of COPD. Age was categorized as 18–24, 25–34, 35–44, 45–54, 55–64, and ≥65 years. Smoking status was classified as never smoker, former smoker, or current smoker. COPD duration was categorized as <5 years, 5–10 years, and >10 years.

Study Instrument:

Health-related quality of life was assessed using the St. George's Respiratory Questionnaire (SGRQ), a disease-specific patient-reported outcome instrument developed by Jones et al. to assess health status and the impact of chronic respiratory disease on patients' daily functioning [8].

Official permission to use the SGRQ in this study was obtained from the questionnaire developer prior to data collection. The questionnaire was administered and scored in accordance with the developer's instructions.

The SGRQ comprises three domains: Symptoms, which assesses the frequency and severity of respiratory symptoms; Activity, which assesses limitations in physical activities caused by or resulting in breathlessness; and Impacts, which evaluates the broader psychosocial effects of respiratory disease on everyday life and social functioning.

Domain-specific scores and an overall Total score are calculated on a scale from 0 to 100, with higher scores indicating poorer health status and greater impairment in HRQoL [8]. A difference of approximately four points in the SGRQ score has traditionally been considered the minimum clinically important difference [9].

Language Version of the SGRQ:

The official Russian-language version of the SGRQ was used as the primary study instrument. The SGRQ is an internationally established disease-specific measure, and previous studies have demonstrated its reliability, validity, responsiveness, and applicability following appropriate linguistic and cultural adaptation [8–10].

To facilitate participation by Kazakh-speaking patients, the questionnaire was additionally translated into Kazakh by the research team. The translated version was reviewed by bilingual healthcare professionals for linguistic clarity, comprehensibility, and conceptual correspondence with the source questionnaire before its use in the study.

Participants were allowed to complete either the Russian- or Kazakh-language version according to their language preference.

No additional psychometric validation of the official Russian-language version was performed within the present study. A formal psychometric validation of the Kazakh-language translation was not conducted. This should therefore be considered when interpreting the findings obtained using the translated version.

Data Collection:

Data were collected between August and December 2025 during scheduled outpatient visits at the participating healthcare facilities.

Potentially eligible patients were informed about the purpose and procedures of the study, the voluntary nature of participation, confidentiality of the collected information, and their right to withdraw from the study without consequences.

Written informed consent was obtained from all participants before questionnaire administration.

Participants completed the SGRQ during their outpatient visit. The research team provided procedural clarification when necessary but did not influence participants' responses. Completed questionnaires were checked for completeness before data entry.

In addition to the SGRQ, sociodemographic and clinical information was collected, including age, sex, smoking status, and duration of COPD.

The Symptoms, Activity, Impacts, and Total SGRQ scores were calculated according to the standardized scoring procedure recommended for the instrument and expressed on a scale from 0 to 100.

Statistical Analysis:

Statistical analysis was performed using IBM SPSS Statistics, version 26.0.

Categorical variables were summarized as frequencies and percentages (n, %). Continuous variables were summarized using means and standard deviations (Mean ± SD), with minimum and maximum values reported where appropriate. The distribution of continuous variables was assessed using the Shapiro–Wilk test. Because the Total SGRQ score and several domain scores showed departures from normality, nonparametric statistical methods were used for the corresponding unadjusted analyses.

Spearman's rank correlation coefficient (r_s) was used to assess associations between the Symptoms, Activity, Impacts, and Total SGRQ scores.

Differences in Total SGRQ scores according to sex were assessed using the Mann–Whitney U test. The Kruskal–Wallis test was used to compare Total SGRQ scores across age groups, smoking-status categories, and COPD-duration categories.

To assess the independent associations between the examined sociodemographic and clinical characteristics and HRQoL, a general linear model (GLM) was additionally fitted with the Total SGRQ score as the dependent variable and age, sex, smoking status, and COPD duration as predictors. Adjusted estimated marginal means were examined, and Bonferroni-adjusted pairwise comparisons were performed where appropriate. Effect sizes were reported as partial eta squared (partial η^2).

All statistical tests were two-sided, and a p-value < 0.05 was considered statistically significant.

Ethical Considerations:

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the Local Ethics Committee of Semey Medical University (Protocol No. 2, dated 5 December 2024). The ethics documentation specifically concerns the doctoral research project on improving the organization of medical care for patients with COPD.

Participation was voluntary, and written informed consent was obtained from all participants before enrollment. Participants were informed about the purpose and procedures of the study, confidentiality of the collected information, and their right to withdraw from the study at any time without consequences.

All data used for statistical analysis were anonymized, and personal identifiers were not included in the analytical database.

Results.

Participant Characteristics:

A total of 270 adult patients with an established diagnosis of chronic obstructive pulmonary disease (COPD) documented in their medical records were included in the study. The demographic and clinical characteristics of the study population are summarized in Table 1. The study population consisted predominantly of men, current smokers, and patients aged 55–64 years. Most participants had a disease duration of 5–10 years.

Distribution of SGRQ Scores:

Descriptive statistics for the St. George's Respiratory Questionnaire (SGRQ) domain scores are presented in Table 2. Overall, the SGRQ findings indicated impairment in health-related quality of life, with the highest mean score observed in the Impacts domain, followed by the Symptoms and Activity domains.

The Shapiro–Wilk test demonstrated that the Activity, Impacts, and Total SGRQ scores significantly deviated from a normal distribution (all $p < 0.001$), whereas the Symptoms domain showed no significant deviation from normality ($p = 0.335$). Therefore, nonparametric statistical methods were used for subsequent unadjusted comparisons and correlation analyses.

Correlation Analysis:

Spearman correlation coefficients among the SGRQ domains and the total score are presented in Table 3. Significant positive correlations were observed among all questionnaire domains (all $p < 0.001$). Correlation coefficients among the individual domains ranged from 0.539 to 0.743, indicating moderate to strong associations.

As expected, the total SGRQ score was highly correlated with each individual domain because it is derived from these components. Among the inter-domain correlations, the strongest association was observed between the Activity and Impacts domains ($r_s = 0.743$).

Unadjusted Comparisons of Total SGRQ Scores:

Unadjusted comparisons of total SGRQ scores according to participant characteristics are presented in Table 4. No statistically significant difference was observed between male and female participants (Mann–Whitney $U = 5047.5$, $p = 0.168$). Similarly, total SGRQ scores did not differ significantly across age groups (Kruskal–Wallis $H = 1.732$, $df = 4$, $p = 0.785$) or smoking-status groups ($H = 0.335$, $df = 2$, $p = 0.846$).

Adjusted Analysis of Factors Associated with Total SGRQ Score:

To examine adjusted associations between participant characteristics and HRQoL, a general linear model was constructed with the total SGRQ score as the dependent variable and sex, age group, smoking status, and disease duration as fixed factors.

After simultaneous adjustment for all factors included in the model, disease duration was significantly associated with the total SGRQ score ($F = 4.255$, $p = 0.015$, partial $\eta^2 = 0.032$). Sex was also significantly associated with the total SGRQ score ($F = 4.293$, $p = 0.039$, partial $\eta^2 = 0.016$). In contrast, age group ($F = 0.761$, $p = 0.552$, partial $\eta^2 = 0.012$) and smoking status

Table 1. *Demographic and Clinical Characteristics of the Study Population.*

Characteristic	**n (%)**
Age group	
18–24 years	5 (1.9)
25–34 years	0 (0.0)
35–44 years	14 (5.2)
45–54 years	38 (14.1)
55–64 years	180 (66.7)
≥65 years	33 (12.2)
Sex	
Male	217 (80.4)
Female	53 (19.6)
Smoking status	
Never smoker	31 (11.5)
Former smoker	84 (31.1)
Current smoker	155 (57.4)
Disease duration	
<5 years	42 (15.6)
5–10 years	181 (67.0)
>10 years	47 (17.4)

Table 2. *Descriptive Statistics of SGRQ Domain Scores.*

Domain	**Mean ± SD**	**Min**	**Max**
Symptoms	53.99 ± 14.97	15.00	89.17
Activity	38.96 ± 20.23	3.13	81.25
Impacts	59.27 ± 23.96	2.47	97.53
Total	52.07 ± 19.52	5.29	89.15

Table 3. *Spearman Correlation Coefficients Among SGRQ Domains.*

Variable	**Symptoms**	**Activity**	**Impacts**	**Total**
Symptoms	1.000	0.646*	0.539*	0.683*
Activity	0.646*	1.000	0.743*	0.888*
Impacts	0.539*	0.743*	1.000	0.955*
Total	0.683*	0.888*	0.955*	1.000

Table 4. *Unadjusted Comparisons of Total SGRQ Scores by Participant Characteristics.*

Characteristic	**Group**	**n**	**Mean rank**	**Test statistic**	**p-value**
Sex	Male	217	132.26	U = 5047.5	0.168
	Female	53	148.76		
Age group	18–24 years	5	142.00	H = 1.732	0.785
	35–44 years	14	139.04		
	45–54 years	38	145.12		
	55–64 years	180	131.18		
	≥65 years	33	145.50		
Smoking status	Never smoker	31	142.95	H = 0.335	0.846
	Former smoker	84	135.42		
	Current smoker	155	134.05		

Table 5. *General Linear Model of Factors Associated with Total SGRQ Score.*

Factor	**df**	**F**	**p-value**	**Partial η²**
Sex	1	4.293	0.039	0.016
Age group	4	0.761	0.552	0.012
Smoking status	2	0.275	0.760	0.002
Disease duration	2	4.255	0.015	0.032

Table 6. *Adjusted Total SGRQ Scores and Bonferroni Pairwise Comparisons by Disease Duration.*

Disease duration	n	Adjusted mean (SE)	95% CI
<5 years	42	51.16 (3.38)	44.50–57.82
5–10 years	181	55.89 (3.09)	49.79–61.98
>10 years	47	63.97 (4.01)	56.08–71.85

Bonferroni-adjusted pairwise comparisons

Comparison	Mean difference	p-value
<5 vs. 5–10 years	−4.73	0.812
<5 vs. >10 years	−12.81	**0.032**
5–10 vs. >10 years	−8.08	**0.037**

(F = 0.275, p = 0.760, partial η^2 = 0.002) were not significantly associated with the total SGRQ score after adjustment (Table 5).

Adjusted Total SGRQ Scores by Disease Duration:

Because disease duration was significantly associated with total SGRQ scores in the adjusted analysis, estimated marginal means were examined across disease-duration categories. Adjusted total SGRQ scores increased with longer disease duration, from 51.16 (SE = 3.38; 95% CI: 44.50–57.82) among patients with disease duration <5 years to 55.89 (SE = 3.09; 95% CI: 49.79–61.98) among those with disease duration of 5–10 years and 63.97 (SE = 4.01; 95% CI: 56.08–71.85) among those with disease duration >10 years.

Bonferroni-adjusted pairwise comparisons showed that patients with disease duration >10 years had significantly higher adjusted total SGRQ scores than those with disease duration <5 years (mean difference = 12.81, p = 0.032) and those with disease duration of 5–10 years (mean difference = 8.08, p = 0.037). The difference between the <5-year and 5–10-year groups was not statistically significant (p = 0.812) (Table 6).

Discussion.

This study provides evidence on health-related quality of life among patients with COPD receiving outpatient care in Eastern Kazakhstan. Overall, participants demonstrated considerable impairment in HRQoL, with the highest SGRQ scores observed in the Impacts domain, followed by the Symptoms and Activity domains. In the adjusted analysis, disease duration and sex were significantly associated with the total SGRQ score, whereas age group and smoking status were not. Patients with COPD for more than 10 years had significantly higher adjusted total SGRQ scores than those with shorter disease duration. Sex, however, was not significantly associated with total SGRQ scores in the unadjusted analysis, indicating that the adjusted sex-related association should be interpreted cautiously.

The predominance of the Impacts domain suggests that the burden of COPD in this population extends beyond respiratory symptoms and physical limitations to broader psychosocial aspects of daily life. The SGRQ Impacts component captures disturbances related to social functioning and the psychological consequences of respiratory disease [8,9]. Previous evidence indicates that disease-specific HRQoL in COPD is influenced by multiple factors, including dyspnea, anxiety, depression, exercise tolerance, comorbidities, smoking, and disease severity [7]. In particular, dyspnea, depression, anxiety, and exercise tolerance have been reported to show stronger associations with disease-specific health status than spirometric measures alone [7]. Recent systematic-review evidence has also identified respiratory, psychological, sleep-related, and fatigue-related symptom clusters in COPD and demonstrated adverse associations between these symptom clusters and HRQoL [15]. Taken together, these findings support a multidimensional approach to COPD assessment that considers psychosocial well-being alongside respiratory symptoms and functional limitations.

Respiratory symptoms also represented an important component of impaired HRQoL in the present population. Dyspnea and impaired exercise tolerance are well-established contributors to poorer health status in COPD [7]. Although the Activity domain showed the lowest mean score among the three SGRQ domains in our study, activity limitation remained an important component of overall disease burden. Evidence from randomized trials indicates that pulmonary rehabilitation can improve exercise capacity, SGRQ scores, and dyspnea in patients with COPD [16]. Therefore, the comparatively lower Activity score should not be interpreted as indicating that physical functioning is clinically unimportant. Rather, respiratory, functional, and psychosocial dimensions should be considered together when evaluating the individual burden of COPD.

Disease duration showed the strongest association with HRQoL among the factors examined in the adjusted analysis. Patients with COPD for more than 10 years had significantly higher adjusted total SGRQ scores than those with disease duration of <5 years and 5–10 years. The adjusted mean total SGRQ score increased across disease-duration categories, reaching the highest value among patients with disease duration >10 years. This finding may reflect the cumulative burden of living with a chronic respiratory disease rather than a direct causal effect of disease duration itself. Longitudinal evidence indicates that individual dimensions of HRQoL may change differently over the course of COPD. In the Hokkaido COPD Cohort Study, the SGRQ Activity component generally deteriorated during five years of follow-up, with greater deterioration observed among patients with more rapid decline in lung function [17]. Continuous smoking was also associated with worsening of the Activity component, while exacerbation history was related to deterioration of the Symptoms component [17]. These findings suggest that changes in HRQoL over time are multifactorial and may reflect the combined effects of disease progression, functional decline, smoking exposure, and exacerbations. Regular reassessment of HRQoL may therefore be particularly important among patients with long-standing COPD.

Sex-related differences require more cautious interpretation. Total SGRQ scores did not differ significantly between men and women in the unadjusted analysis; however, sex was significantly associated with total SGRQ scores after simultaneous adjustment for age group, smoking status, and disease duration in the GLM. Previous studies have reported sex-related differences in COPD-related HRQoL. Katsura et al. found poorer SGRQ-assessed HRQoL among women with COPD despite matching men and women for age and degree of airflow limitation [11]. Other population-based evidence has also suggested that the relationship between COPD, smoking, and HRQoL may differ by sex [13]. Nevertheless, given the absence of a significant unadjusted sex difference in our study and the relatively small proportion of women in the sample, the adjusted association should be regarded as exploratory. Studies with more balanced sex representation and more detailed adjustment for COPD severity, dyspnea, exacerbations, and psychological comorbidity are needed to clarify this relationship.

Neither age group nor smoking status was significantly associated with total SGRQ scores in either the unadjusted comparisons or the adjusted GLM. The absence of an age-related association should be interpreted cautiously because the age distribution of our sample was markedly uneven, with most participants aged 55–64 years and relatively few participants in the youngest and oldest categories. Previous research suggests that the factors influencing HRQoL may differ across age groups even among patients with comparable levels of airflow obstruction [12]. Thus, chronological age alone may not adequately capture the clinical and functional characteristics contributing to impaired HRQoL.

Smoking status was also not significantly associated with total SGRQ scores in the present study. This differs from population-based evidence showing poorer HRQoL among current smokers with COPD compared with former smokers [13]. Importantly, current smoking status alone does not quantify cumulative lifetime exposure to tobacco. Because pack-year data and duration of smoking cessation were unavailable in the present study, more detailed relationships between tobacco exposure and HRQoL could not be examined. The absence of a significant association with smoking status should therefore not be interpreted as evidence that smoking is unrelated to COPD-related health burden.

The present findings have implications for clinical practice. The impairment observed across SGRQ domains, particularly in the Impacts domain, supports assessment of HRQoL as part of comprehensive COPD management rather than reliance exclusively on physiological indicators. Pulmonary rehabilitation represents an important non-pharmacological component of COPD management. A systematic review and meta-analysis of 39 randomized trials involving 2,397 participants demonstrated significant improvements in exercise capacity, SGRQ scores, and dyspnea following pulmonary rehabilitation [16]. Pulmonary rehabilitation may also provide psychological benefits: a separate systematic review and meta-analysis demonstrated clinically relevant improvements in both anxiety and depression symptoms among patients with COPD [18]. Given the prominent Impacts scores observed in our population, attention to psychological and social functioning may therefore be warranted alongside management of respiratory symptoms and activity limitations. In Kazakhstan, incorporation of structured HRQoL assessment into outpatient COPD care may help identify aspects of disease burden that are not fully captured by conventional clinical measures and may support more individualized management, particularly for patients with long-standing disease.

Strengths and Limitations of the Study.

This study has several strengths. It provides patient-reported data on HRQoL among individuals with COPD in Eastern Kazakhstan, a setting in which disease-specific quality-of-life evidence remains limited. The use of the SGRQ allowed assessment of multiple dimensions of disease burden, including symptoms, activity limitations, and psychosocial impacts. In addition, the study combined nonparametric group comparisons with an adjusted general linear model, allowing associations between HRQoL and selected demographic and clinical characteristics to be examined while accounting for the other factors included in the model.

Several limitations should also be considered. First, the cross-sectional design precludes conclusions regarding causal or temporal relationships between disease duration, demographic characteristics, and HRQoL. Second, convenience sampling may have introduced selection bias and limits the generalizability of the findings to the broader population of patients with COPD in Kazakhstan. Third, important clinical indicators of COPD severity, including FEV_1, GOLD grade, exacerbation frequency, oxygen therapy, and relevant comorbidities, were not available. Consequently, it was not possible to determine the extent to which differences in physiological disease severity contributed to variation in SGRQ scores. Information on anxiety, depression, and other mental health conditions was also unavailable, which is particularly relevant given the prominent impairment observed in the SGRQ Impacts domain. Socioeconomic characteristics such as educational level, employment status, household income, and other indicators of socioeconomic position were not collected and therefore could not be incorporated into the analyses.

The age distribution was uneven, with most participants aged 55–64 years, only 33 participants aged ≥65 years, and no participants aged 25–34 years. This limited the ability to detect age-related differences and warrants caution when interpreting the absence of an association between age and HRQoL. Similarly, the predominance of men may have affected the precision of sex-specific estimates. Smoking was assessed according to current smoking status, but cumulative tobacco exposure, such as pack-years, was unavailable. Finally, although the SGRQ was administered in Kazakh and Russian to facilitate participant comprehension, a formally psychometrically validated Kazakh-language version was not available for this study. This may have introduced measurement variability and should be considered when interpreting the findings. Future studies should include larger and more representative samples, validated language versions of the instrument, and detailed spirometric, clinical, psychological, and socioeconomic variables to provide a more comprehensive assessment of factors associated with HRQoL among patients with COPD in Kazakhstan.

Conclusion.

This study demonstrates that health-related quality of life is impaired across multiple dimensions among patients with COPD receiving outpatient care in Kazakhstan, with the greatest burden observed in the SGRQ Impacts domain. In the adjusted analysis, longer disease duration was associated with poorer HRQoL, with patients who had COPD for more than 10 years showing significantly higher total SGRQ scores than those with shorter disease duration. Sex was also associated with total SGRQ scores after adjustment; however, this finding should be interpreted cautiously because no significant sex difference was observed in the unadjusted analysis and women were underrepresented in the study population. Age group and smoking status were not significantly associated with total SGRQ scores. These findings support the integration of patient-reported HRQoL assessment into comprehensive COPD care, with particular attention to psychosocial and functional burden and to patients with long-standing disease. Larger prospective studies incorporating spirometric measures, COPD severity, exacerbation history, psychological status, cumulative tobacco exposure, and socioeconomic characteristics are needed to further clarify the factors associated with HRQoL among patients with COPD in Kazakhstan.

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