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Kucher Svitlana Viktorivna PhD, MD, Associate Professor of department of Internal Medicine Propedeutics and Phthisiology, I. Horbachevsky Ternopil National Medical University, https://orcid.org/0000-0003-1026-9567

Chernets Tetiana Yuriivna PhD, MD, Associate Professor of department of Internal Medicine Propedeutics and Phthisiology, I. Horbachevsky Ternopil National Medical University, https://orcid.org/0000-0001-7575-8391

Dzhyvak Volodymyr Georgiyovych PhD (Medicine), MD, Assistant Professor of department of Children's Diseases and Pediatric Surgery, I. Horbachevsky Ternopil National Medical University, https://orcid.org/0000-0002-4885-7586. 0660383714

Ruda Mariia Myronivna PhD, MD, Associate Professor of department of Internal Medicine Propedeutics and Phthisiology, I. Horbachevsky Ternopil National Medical University, https://orcid.org/0000-0002-5407-3315

Mudra Ulyana Olehivna PhD, MD, Assistant Professor of department of Internal Medicine Propedeutics and Phthisiology, I. Horbachevsky Ternopil National Medical University, https://orcid.org/0000-0001-8160-4962

ASSESSING THE QUALITY OF LIFE IN PATIENTS WITH GALLBLADDER DYSKINESIA

Abstract. Gallbladder dyskinesia is a condition where there is impaired bile flow through the biliary tract. It presents diagnostic and therapeutic challenges in clinical practice. The symptoms of biliary dyskinesia include pain in the right upper abdominal quadrant that escalates episodically to peak intensity. Other symptoms include bloating, nausea, vomiting, and unintentional weight loss. Additionally, patients may experience accompanying symptoms such as headaches, fatigue, chronic acid reflux, functional indigestion, irritable bowel syndrome (IBS), and psychological manifestations such as anxiety and depression. The diagnostic criteria for biliary dyskinesia include the presence of pain in the upper abdomen, mainly on the right side, which occurs in periodic attacks lasting at least 30 minutes and increases to a moderate or severe level. It is important to note that this pain cannot be relieved by vomiting, defecation, changing body position, or taking antacids.

The aim of this study was to comprehensively assess the impact of gallbladder dyskinesia on health-related quality of life (HRQoL) using the Short

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Form 36 Health Survey (SF-36). The study involved fifty patients diagnosed with gallbladder dyskinesia and a control group of twenty healthy individuals. The SF-36 questionnaire, which evaluates physical and mental well-being across eight scales, was administered to all participants. Statistical analysis indicated significant differences in quality of life domains between patients with gallbladder dyskinesia and healthy controls. Compared to their healthy controls, patients with gallbladder dyskinesia showed significantly lower scores in physical functioning, role limitations due to physical health problems, bodily pain, general perception of health, vitality, social functioning, role limitations due to emotional health problems, and mental health. These findings emphasise the substantial adverse effect of gallbladder dyskinesia on both physical and mental aspects of quality of life (QOL), underscoring the pressing need for precise diagnosis and personalised therapeutic interventions to enhance patient well-being. Further longitudinal studies are required to clarify the course of gallbladder dyskinesia and to establish the efficacy of various treatments in optimising QOL outcomes.

Keywords: dyskinesia, biliary tract, quality of life, SF-36, mental well-being, research.

Кучер Світлана Вікторівна кандидат медичний наук, доцент кафедри пропедевтики внутрішньої медицини та фтизіатрії, Тернопільський національний медичний університет ім. І. Я. Горбачевського МОЗ України, https://orcid.org/0000-0003-1026-9567

Чернець Тетяна Юріївна кандидат медичний наук, доцент кафедри пропедевтики внутрішньої медицини та фтизіатрії, Тернопільський національний медичний університет ім. І. Я. Горбачевського МОЗ України, https://orcid.org/0000-0001-7575-8391

Дживак Володимир Георгійович доктор філософії (медицина), асистент кафедри дитячих хвороб з дитячою хірургією, Тернопільський національний медичний університет ім. І. Я. Горбачевського МОЗ України, https://orcid.org/0000-0002-4885-7586. 0660383714

Руда Марія Миронівна кандидат медичний наук, доцент кафедри пропедевтики внутрішньої медицини та фтизіатрії, Тернопільський національний медичний університет ім. І. Я. Горбачевського МОЗ України, https://orcid.org/0000-0002-5407-3315

Мудра Уляна Олегівна кандидат медичний наук, асистент кафедри пропедевтики внутрішньої медицини та фтизіатрії, Тернопільський національний медичний університет ім. І. Я. Горбачевського МОЗ України, https://orcid.org/0000-0001-8160-4962

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ОЦІНКА ЯКОСТІ ЖИТТЯ У ПАЦІЄНТІВ ІЗ ДИСКІНЕЗІЄЮ ЖОВЧНОГО МІХУРА

Анотація. Дискінезія жовчного міхура - це стан, при якому порушується відтік жовчі через жовчовивідні шляхи. У клінічній практиці вона становить діагностичні та терапевтичні проблеми. Симптоми дискінезії жовчовивідних шляхів включають біль у правому верхньому квадранті живота, який епізодично посилюється до пікової інтенсивності. Інші симптоми включають здуття живота, нудоту, блювання та мимовільну втрату ваги. Крім того, пацієнти можуть відчувати супутні симптоми, такі як головний біль, втома, хронічний кислотний рефлюкс, функціональне порушення травлення, синдром подразненого кишечника (СПК), а також психологічні прояви, такі як тривога і депресія. Діагностичними критеріями дискінезії жовчовивідних шляхів є наявність болю у верхній частині живота, переважно з правого боку, який виникає періодичними нападами тривалістю не менше 30 хвилин і посилюється до помірного або сильного рівня. Важливо зазначити, що цей біль не знімається блюванням, дефекацією, зміною положення тіла або прийомом антацидів.

Метою цього дослідження було комплексно оцінити вплив дискінезії жовчного міхура на якість життя, пов'язану зі здоров'ям (ЯЖ), за допомогою опитувальника Short Form 36 Health Survey (SF-36). У дослідженні взяли участь п'ятдесят пацієнтів з діагнозом дискінезія жовчного міхура та контрольна група з двадцяти здорових осіб. Опитувальник SF-36, який оцінює фізичне та психічне благополуччя за вісьмома шкалами, був застосований до всіх учасників. Статистичний аналіз показав значні відмінності у сферах якості життя між пацієнтами з дискінезією жовчного міхура та здоровими особами. Порівняно зі здоровими особами, пацієнти з дискінезією жовчного міхура показали значно нижчі показники у таких сферах, як фізичне функціонування, рольові обмеження через проблеми з фізичним здоров'ям, тілесний біль, загальне сприйняття здоров'я, життєздатність, соціальне функціонування, рольові обмеження через проблеми з емоційним здоров'ям та психічне здоров'я. Ці дані підкреслюють значний негативний вплив дискінезії жовчного міхура як на фізичні, так і на психічні аспекти якості життя (ЯЖ), підкреслюючи нагальну потребу в точній діагностиці та персоналізованих терапевтичних втручаннях для покращення добробуту пацієнтів. Для уточнення перебігу дискінезії жовчного міхура та встановлення ефективності різних методів лікування в оптимізації результатів ЯЖ необхідні подальші лонгітудинальні дослідження.

Ключові слова: дискінезія, жовчевивідний тракт, якість життя, SF-36, ментальне благополуччя, дослідження.

Statement of the problem. The liver, as the largest internal organ, serves as the centre of metabolic activity, actively participating in the processing of proteins,

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carbohydrates, fats, hormones and vitamins, as well as in the detoxification of numerous endogenous and exogenous substances [1]. Initially recognised for its exocrine-secretory role and the importance of bile in digestion, the liver is now recognised as a central metabolic reservoir that organises the supply of essential substances such as glucose, glycogen and various metabolic by-products, including lactic acid [2,3]. In protein metabolism, the liver performs the complex tasks of breaking down amino acids, synthesising urea to neutralise ammonia, and synthesising the most important plasma proteins. In addition, it regulates the metabolism of fats with the help of bile, the formation of ketone bodies and the synthesis of cholesterol, a precursor to steroid hormones. Functioning as a formidable barrier, the liver diligently detoxifies harmful compounds from a variety of sources, including food and intestinal microflora, using complex enzymatic processes involving oxidation, reduction and conjugation [4]. This detoxification also extends to drugs circulating in the bloodstream. In addition, the liver finely regulates hormonal activity, promotes blood clotting through the synthesis of prothrombin components, and is involved in haematopoiesis during embryonic development [5]. Finally, the excretory function of the liver, which is closely related to bile formation, emphasises its role in the elimination of waste products: approximately 1-1.5 litres of bile is synthesised daily in the body, containing such important components as bilirubin, porphyrin compounds, thyroxine and cholesterol [6,7].

The gallbladder, scientifically known as the vesica biliaris, is a component of the digestive system characterised by a thin-walled structure [8,9]. As a bile reservoir, it receives bile from the liver through the common hepatic and bile ducts. During periods of contraction of the muscle that closes the common bile duct, the outflow of bile from the liver is hampered. Anatomically, the gallbladder has an elongated sac-like shape, measuring approximately 7-12 cm in length and 3-5 cm in width, with a capacity of 40 to 70 ml. Its structure consists of separate parts: an elongated rounded bottom directed towards the lower edge of the liver, a cylindrical body and a narrow neck that passes into the bile duct [10]. During digestion, bile is released from the gallbladder into the duodenum under pressure created by the contractions of the gallbladder. Surgeons distinguish four segments of the common bile duct, which extend from its beginning in the duodenal ligament to its end in the large papilla of the duodenum. Histologically, the gallbladder wall consists of mucosa, muscularis and adventitial layers. The mucosa has a single-layer columnar epithelium with goblet cells and basal cholangiocytes, which is supported by end secretory glands [11]. Smooth myocytes, forming a predominantly circular network, make up the muscular layer, with a prominent sphincter at the bladder neck. The adventitial layer, consisting of dense fibrous connective tissue rich in elastic fibres, envelops the gallbladder where it attaches to the liver and is covered by a serous membrane facing the abdominal cavity [12,13].

Biliary dyskinesia is a dysfunction of the biliary tract of the digestive system characterised by impaired bile flow through the tubular biliary tract. This condition

typically involves impaired coordination of gallbladder muscle peristalsis, especially in response to dietary stimulation, which prevents the proper excretion of liquid bile through the common bile duct into the duodenum [14]. As a result, ineffective peristaltic contraction is often manifested by postprandial pain in the right upper abdomen (cholecystodynia) with minimal additional symptoms. In cases where dyskinesia affects the flow of bile into the duodenum, potentially due to increased tone of the sphincter of Oddi, bile retention can lead to damage to the pancreas, resulting in abdominal pain concentrated in the upper left side [15,16]. In the broadest sense, biliary dyskinesia means a disturbance in the peristaltic coordination of the bile ducts and/or a decrease in the rate of emptying the bile ducts into the duodenum. Under normal conditions, bile originating from liver hepatocytes is stored and concentrated in the gallbladder before entering the biliary system. However, when the movement of bile out of the gallbladder is impaired or obstructed through the common bile duct, biliary dyskinesia occurs. The diagnosis of biliary dyskinesia usually involves hepatobiliary scintigraphy, also known as HIDA scanning, which assesses the functionality of the gallbladder and biliary system [17,18]. During this procedure, a radioactive tracer is injected intravenously, followed by imaging to monitor the accumulation of the tracer in the gallbladder. Subsequent ingestion of fatty foods causes the gallbladder to contract, which allows us to estimate the release of bile into the duodenum. An ejection fraction (EF) below 35% indicates biliary dyskinesia and may be a reason to consider cholecystectomy [19]. It is recognised that obesity has a multifaceted effect on metabolism. It can lead to the accumulation of fat in the organs and cause chronic inflammation. These effects can significantly affect the movement of the gallbladder, the so-called gallbladder motility. Stagnant bile can consequently become thicker and form a precipitate, which ultimately leads to the formation of gallstones [20]. While obesity is a well-recognised risk factor for gallstones, it is important to note that gallstones can also occur as a secondary consequence of a disorder of gallbladder movement known as biliary dyskinesia [21].

Biliary dyskinesia is characterised by a spectrum of symptoms, including pain in the right upper quadrant of the abdomen, episodic pain with a gradual increase to a peak, bloating, nausea, vomiting and unintentional weight loss. Additional symptoms may include headache, fatigue, chronic acid reflux, functional indigestion, irritable bowel syndrome (IBS), anxiety and depression. Diagnostic criteria for biliary dyskinesia include the presence of pain in the upper abdomen, mainly on the right side, which occurs in periodic episodes lasting at least 30 minutes and increases to a moderate or severe level. Pain is not relieved by vomiting, bowel movements, changing body position or taking antacids. Symptoms should persist regularly for at least three months [22]. Clinical examination of biliary dyskinesia usually includes laboratory tests to determine the level of pancreatic and liver enzymes, as well as abdominal ultrasound to check the integrity of the gallbladder and bile ducts for structural abnormalities such as gallstones or dilatation. Once

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normal results are obtained, gallbladder function is assessed with a HIDA scan supplemented with cholecystokinin to induce gallbladder contraction and assess bile ejection fraction. A decrease in ejection fraction (<40%) that is not explained by drug or hormonal therapy confirms the diagnosis of biliary dyskinesia [23.24].

Assessment of quality of life (QOL) in patients with gallbladder dyskinesia is important for understanding the impact of this condition on their physical and mental well-being [25]. The SF-36 questionnaire is a widely used tool for measuring QOL in various health conditions. The Short Form 36 Health Survey (SF-36) is a widely used tool for assessing HRQoL, which provides insight into various areas of physical and mental health [26]. By taking into account physical, emotional and social aspects of well-being, the SF-36 facilitates a comprehensive assessment of the impact of gallbladder dyskinesia on patients' lives. Clinicians can use this information to tailor interventions that meet the specific needs and priorities of patients with gallbladder dyskinesia, thereby optimising treatment outcomes and improving overall quality of life [27,28].

Analysis of the latest research and publications. The article James Toouli discusses biliary dyskinesia, a motility disorder affecting the gallbladder and the sphincter of Oddi [29]. Gallbladder dyskinesia, a subset of biliary dyskinesia, manifests as biliary-type pain without evidence of gallstones. Diagnosis is confirmed through gallbladder ejection fraction testing, with values below 40% indicating abnormality. Cholecystectomy is the recommended treatment, showing efficacy in alleviating symptoms in over 90% of cases. Sphincter of Oddi dysfunction, comprising biliary and pancreatic types, presents with biliary-type pain or recurrent pancreatitis, respectively. Diagnosis involves sphincter of Oddi manometry, with stenosis indicating abnormal motility. Sphincterotomy, performed in response to stenosis, offers long-term symptom relief in over 80% of patients. For pancreatic sphincter of Oddi dysfunction, division of both biliary and pancreatic duct sphincters is recommended after confirming manometric stenosis, resulting in symptom relief in a similar proportion of patients.

The article by David A. Simon et al. discusses the challenges of diagnosing and treating biliary dyskinesia in children compared to adults [30]. Although biliary dyskinesia in children is increasingly common and often leads to cholecystectomy, there is a lack of standardised diagnostic criteria and consensus on optimal treatment approaches. The aim of this review is to evaluate the effectiveness of cholecystectomy in children with biliary dyskinesia and the usefulness of cholecystography in predicting outcomes. Previous studies on the outcomes of treatment of biliary dyskinesia in children have been retrospective and heterogeneous in terms of patient selection, which makes it difficult to draw definitive conclusions. Short-term follow-up data show varying degrees of symptom relief, but long-term results remain uncertain. In addition, the measurement of gallbladder ejection fraction by cholecystography cannot reliably predict surgical outcomes using conventional cut-off values. The lack of consensus on symptom

profiles and the limited prognostic value of cholecystography highlight the need for well-designed prospective studies to better understand the utility of cholecystectomy for paediatric biliary dyskinesia. Achieving greater uniformity in patient selection criteria, including symptom profiles and cholecystography findings, is crucial to improving the management of this condition in children.

The study Klaus Bielefeld aimed to investigate the factors influencing hospitalizations and cholecystectomies for biliary dyskinesia (BD) by analyzing regional variations in admission rates and surgical procedures [31]. Utilizing data from the State Inpatient Databases of the Agency for Healthcare Research and Quality, the study assessed annual hospitalizations and cholecystectomy rates for biliary diseases, including BD, cholecystolithiasis, and cholecystitis, based on diagnosis codes. The research found significant regional disparities in annual admissions for BD across different states in the United States, with variability of almost sevenfold. In contrast, hospitalizations for gallstone disease and its complications exhibited less variability, differing only twofold between states. A substantial proportion of BD admissions resulted in cholecystectomies, as did the majority of admissions for gallstone disease. Factors such as high overall hospitalization rates, admission rates for gallstone disease, and the availability of physicians within a state were identified as predictors of higher admission rates for BD. Cholecystectomy rates for BD were observed to be higher in states with low population density and higher rates of cholecystectomy for gallstone disease. The study suggests that established medical practices play a significant role in the variability of admissions and surgical interventions for BD. Furthermore, it indicates that lower thresholds for surgical interventions contribute to the approach to this disorder. However, considering the typically benign nature of functional illnesses like BD, the study recommends raising the bar for surgical interventions and developing active conservative treatment options for affected patients.

This study Arvind I. Srinath et al. aimed to compare patient characteristics, outcomes, and resource utilization before and after surgery between children diagnosed with biliary dyskinesia (BD) and symptomatic cholecystolithiasis (LITH) [32]. Data from the electronic medical records of children diagnosed with BD or LITH at Children's Hospital of Pittsburgh between December 1, 2002, and November 30, 2012, were analyzed. The results showed that children with BD had lower BMI, longer symptom duration, and more dyspeptic symptoms compared to those with LITH. A significant percentage of BD patients underwent cholecystectomy despite having a normal gallbladder ejection fraction (GB-EF). After surgery, BD patients were more likely to visit gastroenterology clinics and have gastrointestinal-related hospitalizations, while emergency room visits decreased in both groups. Continued pain after surgery was independently predicted by the nature of biliary disease and was associated with higher resource utilization post-cholecystectomy. In conclusion, a substantial number of children diagnosed with BD did not meet adult diagnostic criteria. Compared to those with LITH, BD

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patients had more widespread symptoms and continued to utilize more clinical resources after surgery. The findings suggest that despite its typically benign prognosis, BD is often treated similarly to other acute gallbladder diseases, even though it shares characteristics with functional gastrointestinal disorders (FGIDs) and may benefit from similar treatment approaches.

Article Sarah Klein et al. discusses the challenges associated with diagnosing and managing biliary dyskinesia (BD) in pediatric patients [33]. BD is a common reason for cholecystectomy in this population, yet there is inconsistency in diagnostic criteria and treatment outcomes across the literature. The article presents a case study of an 18-year-old female patient who underwent robotic-assisted laparoscopic cholecystectomy after months of seeking a diagnosis. The patient's symptoms resolved post-surgery, highlighting the importance of accurate diagnosis and appropriate management. The lack of uniformity in diagnostic criteria complicates the diagnosis and management of BD in pediatric patients. Some rely on gallbladder emptying studies, while others focus on surgical outcomes. Additionally, some patients experience symptoms that do not align with their gallbladder emptying studies, further complicating diagnosis. The controversy extends to treatment, as cholecystectomy may not always resolve symptoms according to some studies. The article emphasizes the need for more research to establish consistent diagnostic criteria for BD in pediatric patients and to better understand the efficacy of cholecystectomy as a treatment. Developing uniform diagnostic criteria could lead to shorter time-to-diagnosis and improved quality of life for pediatric patients with BD.

The article Kiran V K Koelfat et al. discusses how critical illness disrupts the normal regulation of gastrointestinal hormones, leading to functional and metabolic issues [34]. Specifically, it focuses on fibroblast growth factor 19 (FGF19), a hormone produced in the ileum in response to bile salts after eating. The study aims to examine how ICU patients respond to nutrients compared to healthy individuals by analyzing their FGF19 levels. Patients and controls received a nutrient infusion for 120 minutes, with blood samples taken regularly to measure FGF19 and bile salt levels, as well as to assess gallbladder function via ultrasound. Results show that ICU patients have higher fasting bile salt levels but similar FGF19 levels compared to controls. However, ICU patients exhibit a blunted FGF19 response to nutrient infusion, particularly at later time points. This impaired response is associated with gallbladder dysfunction in critical illness. Furthermore, patients receiving norepinephrine also show disturbances in gallbladder function and FGF19 response. Overall, the study suggests that the impaired FGF19 response in ICU patients may contribute to liver metabolism issues and could potentially serve as a nutritional biomarker for monitoring critically ill patients.

The article Vineet S Gudsoorkar et al. examines the use of gallbladder ejection fraction (GBEF) as a tool for selecting patients with gallbladder dyskinesia who may benefit from cholecystectomy [35]. Gallbladder dyskinesia is a condition

characterized by biliary-type pain without detectable organic pathology. The study systematically reviews existing literature from 1980 to 2016 to assess the efficacy of cholecystectomy based on GBEF measurements. A total of 29 studies involving 2891 patients are analyzed. The findings suggest that patients with normal GBEF do not experience significant improvement following cholecystectomy, whereas those with low GBEF have a higher likelihood of symptomatic improvement post-surgery. However, when comparing outcomes between patients with low and normal GBEF who undergo cholecystectomy, there is little difference, indicating a possible placebo effect of surgery. Despite these findings, the article notes inconsistencies in the data and highlights the poor quality of many studies, which are often prone to bias and confounding factors. As a result, the authors conclude that the role of scintigraphy and cholecystectomy in diagnosing and managing gallbladder dyskinesia remains uncertain until more definitive research is conducted.

The aim of this article: The aim of the study was to assess the quality of life using the SF-36 questionnaire in patients with diagnosed and confirmed gallbladder dyskinesia.

Presentation of the main material. The study involved 50 adults who had been diagnosed and confirmed with gallbladder dyskinesia and had a relevant history and complaints. For comparison, 20 healthy individuals were also interviewed. All participants were familiarised with the test requirements and could refuse to take the test at any time. The research process met all ethical standards and requirements for research involving human subjects. All participants were informed about the purpose of the study, procedures and possible risks, and gave their written consent to participate. In addition, the confidentiality of all personal data collected in the study was ensured. The SF-36 standardised questionnaire was used to assess the quality of life, which includes a number of questions aimed at assessing various aspects of physical and mental health. Study participants filled out the questionnaire independently in a calm environment. The data from the SF-36 questionnaire were statistically processed to compare the results between the groups of patients with gallbladder dyskinesia and healthy controls. The study divided the participants into two groups: the first group consisted of people who had been diagnosed and confirmed with gallbladder dyskinesia, and the second group consisted of people who did not have this disease. The main complaints observed in the majority of patients with biliary dyskinesia:

- Pain in the right upper quadrant of the abdomen: This can be a dull or stabbing pain that usually occurs after consuming fatty or heavy foods.
- Dyspepsia: Symptoms such as a feeling of heaviness in the abdomen, dizziness, indigestion, constipation or diarrhoea can be seen in patients with biliary dyskinesia.
- Nephropathic pain: Pain that occurs in the spinal cord or shoulders may be caused by a reflex of biliary colic.

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- Intensity of pain after eating: The pain may worsen after eating fatty, spicy or heavy foods.
- Nausea and vomiting: These symptoms can accompany pain and discomfort in the abdomen.
- Bitter taste in the mouth: It can be caused by bile reflux into the oesophagus.
- Discomfort under the shoulder blade: Pain or discomfort may occur in the upper back or under the left or right shoulder blade.

This separation allowed for a comparative analysis of quality of life between the two groups to assess the impact of gallbladder dyskinesia on general health and well-being compared to those without the condition. This approach allows us to draw conclusions about whether gallbladder dyskinesia affects quality of life and quality of life compared to the normal state.

The eight scales of the SF-36 are as follows [36] (Tabl. 1):

Table 1.

Terms and definitions of the SF-36 questionnaire

Physical Functioning (PF)	Assesses limitations in performing physical activities due to health problems.
Role-Physical (RP)	Evaluates limitations in role functioning due to physical health problems.
Bodily Pain (BP)	Measures the intensity of pain and its interference with normal activities
General Health (GH)	Reflects perceptions of overall health and well-being.
Vitality (VT)	Assesses energy levels, fatigue, and vitality.
Social Functioning (SF)	Measures the extent to which physical or emotional health problems interfere with normal social activities.
Role-Emotional (RE)	Evaluates limitations in role functioning due to emotional health problems.
Mental Health (MH)	Assesses psychological distress, including anxiety and depression, as well as overall emotional well-being.

The SF-36 questionnaire, or Short Form 36 Health Survey, is a widely used tool for assessing health-related quality of life. It measures various aspects of physical and mental well-being and is applicable across different populations and health conditions. The SF-36 consists of 36 items grouped into eight multi-item scales, which can be further aggregated into two summary measures: the Physical

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Component Summary (PCS) and the Mental Component Summary (MCS). These summary measures provide an overall assessment of an individual's physical and mental health status, respectively.

The SF-36 questionnaire self-administered and takes about 5 to 10 minutes to complete. It has been translated into numerous languages and validated in various cultural contexts, making it a versatile tool for research and clinical practice. The scores obtained from the SF-36 can provide valuable insights into an individual's health status, treatment outcomes, and overall quality of life.

The analysis of the SF-36 questionnaire data between the two groups, comprised of patients with confirmed gallbladder dyskinesia (Group 2) and healthy controls (Group 1), reveals notable disparities in various aspects of physical and mental well-being (Tabl. 2).

Table 2.

Comparison of SF-36 Questionnaire Indices Between Group 1 (Healthy Controls) and Group 2 (Patients with Gallbladder Dyskinesia)

Index according to the SF-36 questionnaire	Group 1 (M ± m), n=20	Group 2 (M ± m), n=50
Physical Functioning (PF)	72,34 ± 3,76	37,67 ± 3,69*
Role-Physical (RP)	68,23 ± 3,32	48,14 ± 3,43*
Bodily Pain (BP)	75,65 ± 3,17	36,11 ± 3,54*
General Health (GH)	68,12 ± 3,23	52,06 ± 3,83*
Vitality (VT)	70,18 ± 3,43	49,04 ± 3,78*
Social Functioning (SF)	75,65 ± 3,56	54,71 ± 3,56*
Role-Emotional (RE)	72,67 ± 3,23	51,12 ± 2,89*
Mental Health (MH)	73,97 ± 2,12	63,48 ± 3,12*
Physical Component Health (PH)	71,08 ± 3,37	43,49 ± 3,62*
Mental Component Health (MH)	73,11 ± 3,08	54,58 ± 3,33*
Note: * - significance between the values of Group 1 and Group 2 participants, $p<0.05$.		

Analysing the results, we can say the following:

Physical Functioning (PF):

Group 1: The average PF score was 72.34 ± 3.76, indicating a high level of physical functioning in healthy controls.

Group 2: Patients with gallbladder dyskinesia had a significantly lower PF score of 37.67 ± 3.69, suggesting substantial limitations in physical activities likely due to abdominal discomfort and pain.

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Role-Physical (RP):

Group 1: The RP score was 68.23 ± 3.32, indicating moderate limitations in role functioning due to physical health problems in healthy controls.

Group 2: Patients with gallbladder dyskinesia exhibited more pronounced limitations in RP with a score of 48.14 ± 3.43, suggesting greater difficulties in fulfilling role obligations due to their physical condition.

Bodily Pain (BP):

Group 1: The BP score was 75.65 ± 3.17, signifying a moderate level of bodily pain among healthy controls.

Group 2: Patients with gallbladder dyskinesia reported significantly higher levels of pain with a score of 36.11 ± 3.54, indicating severe discomfort likely associated with gallbladder dyskinesia symptoms.

General Health (GH):

Group 1: The GH score was 68.12 ± 3.23, indicating a moderate perception of overall health and well-being among healthy controls.

Group 2: Patients with gallbladder dyskinesia reported a notably lower GH score of 52.06 ± 3.83, suggesting a diminished sense of general health compared to the healthy population.

Vitality (VT):

Group 1: The VT score was 70.18 ± 3.43, indicating a moderate level of energy and vitality in healthy controls.

Group 2: Patients with gallbladder dyskinesia reported significantly lower vitality levels with a score of 49.04 ± 3.78, reflecting decreased energy and vigor possibly due to the burden of their condition.

Social Functioning (SF):

Group 1: The SF score was 75.65 ± 3.56, suggesting a high level of social functioning among healthy controls.

Group 2: Patients with gallbladder dyskinesia exhibited significantly lower social functioning with a score of 54.71 ± 3.56, indicating considerable impairment in social activities and interactions.

Role-Emotional (RE):

Group 1: The RE score was 72.67 ± 3.23, indicating moderate limitations in role functioning due to emotional health problems in healthy controls.

Group 2: Patients with gallbladder dyskinesia reported more pronounced limitations in RE with a score of 51.12 ± 2.89, suggesting significant challenges in fulfilling emotional role obligations.

Mental Health (MH):

Group 1: The MH score was 73.97 ± 2.12, indicating a moderate level of psychological well-being among healthy controls.

Group 2: Patients with gallbladder dyskinesia exhibited a notably lower MH score of 63.48 ± 3.12, suggesting a substantial decrease in mental health compared to the healthy population.

In summary, patients with gallbladder dyskinesia experience significantly poorer quality of life, characterized by reduced physical and mental functioning, increased bodily pain, and impaired social and emotional well-being compared to healthy individuals. These disparities likely stem from the specific symptoms associated with gallbladder dyskinesia, such as abdominal pain, nausea, and discomfort, underscoring the need for targeted interventions to address their unique healthcare needs.

Conclusions. This study confirms the importance of timely diagnosis and treatment of gallbladder dyskinesia and emphasises the need to improve approaches to managing this disease in order to improve the quality of life of patients.

Prospects for further research

Prospects for further research in the field of gallbladder dyskinesia and its impact on quality of life using the SF-36 questionnaire are promising and could include conducting longitudinal studies to track changes in quality of life over time among patients with gallbladder dyskinesia. This would provide valuable insights into the progression of the disease and the effectiveness of different treatment approaches.

Conflict of interest

The authors declare no conflict of interest.

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Contribution of the authors

All authors made significant contributions to the original and revised versions of this paper.

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