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ASSESSMENT OF THE IMPACT OF SOCIO-DEMOGRAPHIC FACTORS ON QUALITY OF LIFE IN PATIENTS WITH COEXISTING ARTERIAL HYPERTENSION AND ABDOMINAL OBESITY

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Abstract. A comprehensive approach to the management of arterial hypertension and abdominal obesity should include both pharmacological therapy and psychosocial support. Educational programs aimed at informing patients about the severity of the disease and the necessity of adhering to all medical recommendations play a crucial role. Improving quality of life and enhancing patient adherence to treatment require comprehensive and individualized interventions

Objective: To assess the influence of socio-demographic and behavioral factors on health-related quality of life (HRQoL) in patients with coexisting arterial hypertension and abdominal obesity.

Material and Methods: A cross-sectional study included 101 patients (mean age 54.5 ± 1.02 years; 19 men, 82 women) registered at the Clinical-Diagnostic Center of Khoja Akhmet Yassawi International Kazakh-Turkish University. Inclusion criteria were adults aged ≥18 years with physician-diagnosed arterial hypertension (≥140/90 mmHg) and abdominal obesity (waist circumference ≥102 cm for men, ≥88 cm for women). Anthropometric measurements, blood pressure, and HRQoL were assessed using the SF-36 questionnaire. Data were analyzed using descriptive statistics, Mann–Whitney U, and Kruskal–Wallis tests in SPSS 29.0.

Results: Women had lower scores than men in Role Physical (RP) and Role Emotional (RE) domains. Married participants showed reduced scores in General Health (GH), Vitality (VT), Social Functioning (SF), and Mental Health (MH). No significant differences were observed regarding educational level or occupation. Behavioral factors, including low physical activity and smoking, were associated with lower HRQoL in specific domains.

Conclusion: Socio-demographic and behavioral factors significantly impact HRQoL in patients with coexisting hypertension and abdominal obesity. Women and married individuals demonstrated lower quality-of-life scores in several physical and mental health domains, emphasizing the importance of targeted lifestyle and psychosocial interventions.

Keywords: Arterial hypertension, abdominal obesity, HRQoL, socio-demographic factors, lifestyle, SF-36.

Артериялық гипертензиясы мен абдоминальды семіздігі қосарласқан науқастарда әлеуметтік-демографиялық факторлардың өмір сүру сапасының деңгейіне байланысты бағалануы

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Аңдатпа. Артериялық гипертензия мен абдоминальды семіздікті емдеудің кешенді тәсілі дәрілік терапияны да, психоәлеуметтік қолдауды да қамтуы керек. Пациенттерге аурудың ауырлығы және дәрігердің барлық ұсыныстарын орындау қажеттілігі туралы хабардар болуға бағытталған білім беру бағдарламалары маңызды рөл атқарады. Өмір сүру сапасын жақсарту және науқастардың емделуге ұмтылысын арттыру кешенді және жекелендірілген шараларды қажет етеді.

Мақсаты: Қосарлас артериялық гипертензия және абдоминальды семіздігі бар науқастарда әлеуметтік-демографиялық және мінез-құлықтық факторлардың өмірге қатысты сапасына (HRQoL) әсерін бағалау.

Материал және әдістері: Зерттеу 101 науқасты қамтыды (орта жас 54,5 ± 1,02; 19 ер, 82 әйел), олар Қожа Ахмет Ясауи атындағы ХҚТУ Клиникалық-диагностикалық орталығында тіркелген. Қатысу критерийлері: 18 жастан асқан ересек адамдар, дәрігер тағайындаған артериялық гипертензия (≥140/90 мм сын. бағ.) және абдоминальды семіздік (ерлерде бел айналымы ≥102 см, әйелдерде ≥88 см). Науқастардың антропометриялық көрсеткіштері, қан қысымы өлшенді және өмір сапасы SF-36 сауалнамасы арқылы бағаланды. Мәліметтер сипаттамалы статистика, Манн–Уитни U және Краскел–Уоллис тесттері арқылы SPSS 29.0 бағдарламасында өңделді.

Нәтижелері: Әйелдерде ерлерге қарағанда Рөлдік физикалық қызмет (RP) және Эмоционалдық рөлдік шектеулер (RE) салаларында төменгі көрсеткіштер анықталды. Үйленген қатысушыларда Жалпы денсаулық (GH), Өміршеңдік, сергектік (VT), Әлеуметтік функционалдылық (SF) және Психикалық саулық (MH) салаларында төмен бағалар тіркелді. Білім деңгейі мен қызмет түрі бойынша статистикалық мәнділік байқалмады. Темекі шегу мен төмен физикалық белсенділік кейбір өмір сапасы салаларының төмендеуіне ықпал етті.

Қорытынды: Әлеуметтік-демографиялық және мінез-құлықтық факторлар қосарлас артериялық гипертензия мен абдоминальды семіздігі бар науқастарда өмір сапасына елеулі әсер етеді. Әйелдер мен үйленген қатысушылар бірнеше физикалық және психикалық салаларда төменгі көрсеткіштерге ие болды, бұл өмір салты мен психоәлеуметтік факторларды ескеретін мақсатты араласулардың маңыздылығын көрсетеді.

Түйін сөздер: Артериялық гипертензия, абдоминальды семіздік, HRQoL, әлеуметтік-демографиялық факторлар, өмір салты, SF-36.

Оценка влияния социально-демографических факторов на уровень качества жизни у пациентов с сочетанной артериальной гипертензией и абдоминальным ожирением

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Аннотация. Комплексный подход к лечению артериальной гипертензии и абдоминального ожирения должен включать как медикаментозную терапию, так и психосоциальную поддержку. Образовательные программы, направленные на информирование пациентов о тяжести заболевания и необходимости соблюдения всех рекомендаций врача, играют важную роль. Повышение качества жизни и укрепление приверженности пациентов лечению требуют комплексных и индивидуализированных мероприятий.

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Цель: Оценить влияние социально-демографических и поведенческих факторов на показатели качества жизни, связанные со здоровьем (HRQoL), у пациентов с сочетанной артериальной гипертензией и абдоминальным ожирением.

Материалы и методы: Кросс-секционное исследование включало 101 пациента (средний возраст 54,5 ± 1,02 года; 19 мужчин, 82 женщины), зарегистрированных в Клинико-диагностическом центре Международного казахско-турецкого университета имени Ходжи Ахмета Ясави. Критерии включения: взрослые ≥18 лет с установленной врачом артериальной гипертензией (≥140/90 мм рт. ст.) и абдоминальным ожирением (окружность талии ≥102 см у мужчин, ≥88 см у женщин). Измерялись антропометрические показатели, артериальное давление, а качество жизни оценивалось с помощью анкеты SF-36. Данные анализировались с использованием описательной статистики, тестов Манна–Уитни U и Краскелла–Уоллиса в SPSS 29.0.

Результаты: У женщин по сравнению с мужчинами наблюдались более низкие показатели в доменах Ролевые физические функции (RP) и Ролевые эмоциональные ограничения (RE). Женатые/замужние участники имели сниженные показатели в доменах Общее здоровье (GH), Жизненная энергия (VT), Социальное функционирование (SF) и Психическое здоровье (MH). Статистически значимых различий по уровню образования и профессиональной деятельности не выявлено. Курение и низкая физическая активность были связаны с ухудшением качества жизни в отдельных доменах.

Вывод: Социально-демографические и поведенческие факторы существенно влияют на качество жизни пациентов с сочетанной артериальной гипертензией и абдоминальным ожирением. Женщины и женатые участники продемонстрировали более низкие показатели в нескольких физических и психических доменах, что подчеркивает необходимость целевых вмешательств, учитывающих образ жизни и психосоциальные факторы.

Ключевые слова: Артериальная гипертензия, абдоминальное ожирение, HRQoL, социально-демографические факторы, образ жизни, SF-36.

Introduction

Arterial hypertension and abdominal obesity are interrelated pathological conditions that significantly increase the risk of cardiovascular diseases. The combination of these two factors substantially affects patients' quality of life and their adherence to treatment [1]. These conditions require long-term therapy and strict compliance with treatment regimens, which often pose challenges for patients [2]. Treatment adherence encompasses consistent follow-up with medical recommendations, timely medication intake, and maintaining prescribed diet and physical activity levels [3]. In patients with hypertension and obesity, quality of life is frequently compromised due to the chronic nature of therapy, medication side effects, psychological barriers, and economic constraints. Moreover, low motivation and lack of support from family or healthcare providers can negatively influence adherence [4]. Several factors influence both treatment adherence and quality of life in these patients:

- Social and economic factors – financial accessibility of medications and healthcare services, support from family and friends.
- Psychological factors – low motivation, stress, and depression may reduce adherence.
- Physical factors – obesity and related limitations may hinder the ability to follow lifestyle and physical activity recommendations.

A comprehensive approach to treating arterial hypertension and abdominal obesity should include both pharmacotherapy and psychosocial support [5]. Educational programs that raise patient awareness about disease severity and the importance of following medical

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recommendations play a crucial role. Improving quality of life and enhancing treatment adherence require comprehensive and individualized interventions [6]. Therefore, the objective of this study is to determine the level of quality of life in patients with arterial hypertension and abdominal obesity in relation to socio-demographic factors.

Material and methods. The study employed a single-stage cross-sectional design and was conducted among 101 residents of Turkistan city (mean age: 54.5 ± 1.02 years), including 19 men and 82 women. Each participant provided written informed consent prior to enrollment.

The primary population consisted of individuals registered at the Clinical-Diagnostic Center of the International Kazakh-Turkish University named after Khoja Akhmet Yassawi who participated in the study between 2012 and 2014. Out of 938 patients during that period, 56 had deceased, 130 had relocated to other cities or countries, and 200 declined participation. The remaining 552 individuals were contacted via telephone with the assistance of their primary care physicians using the electronic health records database. Clinical and laboratory assessments were conducted at the university's research and diagnostic laboratories, as well as at the "KDL Olymp" clinical diagnostic laboratory, and participants completed questionnaires. All collected data were subsequently processed statistically.

Inclusion criteria were: adults aged 18 years or older; physician-diagnosed arterial hypertension (≥140/90 mmHg); abdominal obesity (waist circumference ≥102 cm for men, ≥88 cm for women); and voluntary agreement to participate.

Exclusion criteria included: secondary hypertension; severe chronic conditions (oncological diseases, kidney failure, class IV heart failure); psychiatric or cognitive disorders; and pregnancy or lactation.

From the 552 eligible respondents, 101 participants meeting the inclusion criteria for arterial hypertension and abdominal obesity were selected for the final study sample. Anthropometric measurements (height, weight, waist and hip circumferences), blood pressure readings, socio-demographic characteristics, and health-related quality of life (assessed using the SF-36 questionnaire) were collected. All data were entered into an electronic database (Excel) to create a unified dataset.

As shown in Table 1, the participants' mean age was 54.5 ± 1.02 years. The sample comprised predominantly women (81.2%), individuals with higher or incomplete higher education (65.3%), civil servants (59.4%), and married respondents (93.1%). Among the participants, overweight and obesity were observed in 26.7% and 57.4%, respectively, and 94.1% exhibited elevated waist circumference.

Table 1. Socio-demographic characteristics of study participants (n=101)

Variables		abs. val. n=101	%
Gender	Men	19	18,8
	Women	82	81,2
Age	up to 40 years old	10	9,9
	between 40-49 years old	18	17,8
	between 50-59 years old	27	26,7
	between 60-69 years old	46	45,5
Education level	high/unfinished high	66	65,3
	average/below average	35	34,7
Occupation type	civil servant/educator	60	59,4
	unemployed (able to work or unable to work)/housewife/retired	41	40,6

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Marital status	Married	94	93,1
	unmarried/divorced/single	7	6,9
Waist circumference	Normal	6	5,9
	High	95	94,1
Body mass index	normal weight	16	15,8
	Overweight	27	26,7
	obesity (I, II, III degrees)	58	57,4

The distribution of the collected data was assessed using descriptive statistics, quantile plots, histograms, and tested with the Kolmogorov–Smirnov and Shapiro–Wilk tests. For normally distributed variables, values are presented as mean (M) ± standard deviation (SD). When comparison groups deviated from a normal distribution, central tendency was expressed as the median (Me) with 25th and 75th percentiles. Non-parametric methods were applied for statistical analysis: the Mann–Whitney U test was used to compare two independent groups, while the Kruskal–Wallis test was employed for three or more groups.

Statistical analyses were performed using the licensed version of SPSS 29.0. Statistical significance was set at $p < 0.05$ for all hypothesis testing.

Results. In accordance with the third objective of our study, the analysis examined the impact of socio-demographic characteristics—such as age, sex, educational level, occupation, and marital status—alongside key behavioral risk factors, including smoking, alcohol consumption, and low physical activity, on the quality of life of respondents with coexisting arterial hypertension and abdominal obesity.

For non-normally distributed variables involving three or more groups, the Kruskal–Wallis test was applied, and no statistically significant associations were found between these variables and the quality-of-life scales (Table 2).

Table 2. Comparison of age and SF-36 questionnaire scales

SF-36 scales	p-value related on Age
Physical Functioning (PF)	0,621
Role Physical (RP)	0,743
Bodily Pain (BP)	0,857
General Health (GH)	0,946
Vitality (VT)	0,753
Social Functioning (SF)	0,853
Role Emotiona (RE)	0,475
Mental Health (MH)	0,965

During the study, the Mann–Whitney U test was initially applied to compare two independent variables due to the non-normal distribution of the data. Based on Table 3, the results indicated that, relative to men, women demonstrated statistically significant differences in quality-of-life domains assessed by the SF-36 questionnaire, specifically in Role Physical (RP) ($p = 0.049$) and Role Emotional (RE) ($p = 0.034$).

Table 3. Comparison of gender and SF-36 questionnaire scales

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SF-36 scales	p-value related on Gender
Physical Functioning (PF)	0,089
Role Physical (RP)	0,049
Bodily Pain (BP)	0,359
General Health (GH)	0,724
Vitality (VT)	0,318
Social Functioning (SF)	0,560
Role Emotiona (RE)	0,034
Mental Health (MH)	0,692

As presented in Table 4, marital status was significantly associated with several SF-36 quality-of-life domains among respondents. Married participants exhibited statistically significant differences in General Health (GH) ($p = 0.028$), Vitality (VT) ($p = 0.014$), Social Functioning (SF) ($p = 0.005$), and Mental Health (MH) ($p = 0.026$). This finding indicates that, within the group of respondents with arterial hypertension and abdominal obesity, married individuals displayed lower scores in mental health-related domains compared to physical health components.

Table 4. Comparison of marital status and SF-36 questionnaire scales

SF-36 scales	p-value related on Martial status
Physical Functioning (PF)	0,814
Role Physical (RP)	0,721
Bodily Pain (BP)	0,941
General Health (GH)	0,028
Vitality (VT)	0,014
Social Functioning (SF)	0,005
Role Emotiona (RE)	0,851
Mental Health (MH)	0,026

No statistically significant associations were observed between educational level and quality-of-life scores among participants with arterial hypertension and abdominal obesity (Table 5).

Table 5. Comparison of educational level and SF-36 questionnaire scales

SF-36 scales	p-value related on Educational level
Physical Functioning (PF)	0,799
Role Physical (RP)	0,477
Bodily Pain (BP)	0,373
General Health (GH)	0,783
Vitality (VT)	0,600
Social Functioning (SF)	0,365
Role Emotiona (RE)	0,750
Mental Health (MH)	0,903

A similar pattern was observed for occupation, with no statistically significant association between occupational status and quality-of-life scores (Table 6).

Table 6. Comparison of occupational status and SF-36 questionnaire scales

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SF-36 scales	p-value related on Occupational status
Physical Functioning (PF)	0,244
Role Physical (RP)	0,779
Bodily Pain (BP)	0,260
General Health (GH)	0,687
Vitality (VT)	0,389
Social Functioning (SF)	0,833
Role Emotiona (RE)	0,776
Mental Health (MH)	0,617

Discussion. The analysis of coexisting arterial hypertension and abdominal obesity is of increasing importance due to the rising global prevalence of these conditions. Arterial hypertension represents a significant public health challenge, with prevalence increasing with age: approximately 7% of individuals under 30 years and 53% of those over 70 years are affected [7]. Non-communicable diseases (NCDs), including cardiovascular diseases and diabetes, account for 41 million deaths annually, representing 74% of all deaths worldwide [8]. Abdominal obesity is closely associated with these conditions, contributing to various metabolic disorders such as hypertension, diabetes, and cardiovascular disease, and adversely affecting health outcomes [8].

Abdominal obesity is characterized by excessive fat accumulation in the abdominal region and is a more accurate predictor of cardiovascular risk than general obesity determined by body mass index (BMI) [8]. Waist circumference, assessed according to sex-specific thresholds, is a standard measure for evaluating abdominal obesity [8]. Socio-demographic factors, including educational level and socioeconomic status, are critical for understanding the prevalence and management of these conditions. Research indicates that lower education levels and socioeconomic disadvantages are associated with higher risk factors for hypertension and obesity [9,10].

Previous studies have demonstrated that hypertension and hyperlipidemia significantly affect health-related quality of life (HRQoL), leading to impaired physical functioning and reduced overall well-being [11,12]. Lifestyle factors, such as low physical activity, smoking, and dietary habits, also contribute to the prevalence of abdominal obesity and hypertension, highlighting the need for targeted public health interventions [11,13]. Understanding these associations is essential for developing effective strategies to improve quality of life in populations with coexisting conditions.

Socio-demographic factors, including age, sex, educational attainment, marital status, family income, and employment, significantly influence HRQoL in patients with coexisting arterial hypertension and abdominal obesity. These variables substantially affect behavioral risk factors and overall health outcomes [9,10,14]. Age is one of the most important socio-demographic determinants of health. Studies analyzing patients with hypertension and obesity report that the most common age group is 50–60 years, comprising approximately 59.7% of participants [15]. This demographic group is at heightened health risk, making an understanding of age-related health trends critical for targeted interventions.

Sex-based differences in HRQoL are observed, with women typically reporting lower scores across multiple domains compared to men. These differences are influenced by factors such as mental health and social relationships. Men generally exhibit higher scores in physical and psychological health domains, while notable disparities exist in social functioning [12,16].

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These findings suggest that sex influences not only health outcomes but also social dynamics within healthcare settings.

Educational level and socioeconomic status are associated with health outcomes and health-related behaviors. Individuals with higher education are more likely to adopt healthy lifestyles and exhibit lower prevalence of chronic diseases, including hypertension [17]. Economic factors, such as family income, affect access to medical resources, dietary habits, and health management strategies [10]. Community health workers (CHWs) play a key role in addressing these gaps by providing education and resources tailored to socio-demographic characteristics, particularly in low-resource communities [14].

Marital status and family structure represent additional socio-demographic factors influencing HRQoL. Single individuals or those from larger families may experience different stressors compared to married participants. Support systems inherent to marital and family structures significantly influence health behaviors and overall well-being [18,19].

The interplay between hypertension, abdominal obesity, and quality of life is complex and influenced by various socio-demographic and clinical factors. Evidence indicates that HRQoL is significantly reduced in individuals with coexisting hypertension and obesity [10,19]. These populations often report lower quality-of-life scores, underscoring the need for targeted health interventions.

Socio-demographic characteristics such as sex, income, and lifestyle are key determinants of HRQoL in patients with hypertension and abdominal obesity. For instance, higher family income is sometimes associated with higher levels of abdominal obesity, suggesting that economic status does not always predict health outcomes [20]. Age and education also play crucial roles in shaping health-related behaviors and access to medical resources, thereby affecting quality of life [21].

Comorbid conditions, including blood pressure, BMI, and diabetes, substantially impact HRQoL. Individuals with coexisting hypertension and abdominal obesity are at higher risk for cardiovascular complications, further reducing quality of life [22]. The presence of multiple comorbidities increases physical limitations and psychological stress [8]. Understanding these clinical conditions and their relationship with HRQoL is essential for effective management and intervention strategies.

Lifestyle factors, such as physical activity and dietary habits, play a critical role in managing hypertension and obesity. Sedentary behavior and poor nutrition contribute to abdominal obesity, adversely affecting cardiovascular health and quality of life [21]. Interventions aimed at promoting healthy dietary habits and physical activity have been shown to improve HRQoL [21–23]. Therefore, considering modifiable lifestyle factors is crucial for enhancing health outcomes and overall quality of life in populations with these interrelated conditions.

Studying HRQoL in patients with coexisting hypertension and abdominal obesity provides insight into the interplay of socio-demographic, clinical, and lifestyle factors. The study included 332 participants and assessed physical, psychological, social, and environmental domains using the WHO Quality of Life questionnaire to evaluate HRQoL [12,19].

Analysis revealed significant sex differences in HRQoL scores, with men generally scoring higher across all domains, particularly in social functioning, consistent with trends observed in studies from Greece, Italy, the USA, and Oman. These differences are often linked to women’s lower social status in male-dominated settings and societal norms [12,16,21,24]. Women in the study reported lower quality-of-life scores, potentially reflecting sociocultural influences on mental health, self-esteem, and overall well-being [12,16].

Another notable finding was the relationship between educational level and quality of life. Participants with lower education had higher prevalence of hypertension, which correlated

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with reduced HRQoL [25,26]. Specifically, 56% of hypertensive participants had primary or lower education, substantially higher than in previous studies conducted in Chinese populations [25]. This underscores the role of education in managing health conditions and improving quality of life, highlighting the need for targeted educational interventions [25,26].

The study also examined the impact of lifestyle factors, such as dietary habits and physical activity, on HRQoL. While sex differences in dietary quality were minimal, prior studies have shown that female healthcare workers in Riyadh consume more fruits and vegetables than males [12,24]. Nonetheless, overall lifestyle practices among participants raised concerns, as poor dietary habits were prevalent and could negatively impact health in the context of hypertension and abdominal obesity [18,21].

The primary aim of this analysis was to investigate the importance of socio-demographic and behavioral factors related to dietary habits influencing blood pressure control. A comprehensive model incorporating 72 variables from questionnaires, dietary recalls, and medical records allowed for an in-depth examination of these relationships [14].

Socio-demographic and behavioral factors were self-reported via questionnaires, including age, sex, race/ethnicity, marital status, household size, income, educational attainment, and employment. Due to small sample sizes in certain categories, variables such as sex, race, education, marital status, and occupation were combined to ensure statistical reliability. Participants' insurance status was verified through medical records [14]. Incorporating these factors enables a deeper understanding of the effects of individual socio-behavioral characteristics on health outcomes, particularly in populations with hypertension and obesity.

The analysis aligns with broader studies examining education and health, especially in socioeconomically disadvantaged communities such as Richmond, Virginia. Engaging local residents helps uncover systemic health disparities, while community members emphasize the importance of visible role models and environmental factors in shaping health goals and outcomes. Limited access to green spaces and healthcare resources constrains physical activity and overall health [17].

Future research should extend these findings longitudinally to clarify causal relationships between socio-demographic and behavioral factors and health outcomes. Such studies can provide valuable evidence to guide policies aimed at improving HRQoL, particularly in resource-limited regions [24]. As this study was cross-sectional, it is limited in establishing causality, highlighting the need for further longitudinal research [27].

Conclusion: The study identified decreased health-related quality of life in specific demographic groups and among individuals with certain lifestyle characteristics. Educational level and occupation showed no meaningful association with overall well-being. These findings emphasize the role of demographic and behavioral factors in shaping quality-of-life outcomes.

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