



Real-world Insights into Hypertension Management Using the HT-GAMZE Questionnaire: A Cross-Sectional Study

HT-GAMZE Anketi ile Hipertansiyon Yönetimine Gerçek Yaşamdan Bakış: Kesitsel Bir Çalışma

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Abstract

Objectives: Hypertension remains one of the most significant preventable causes of cardiovascular disease, stroke, renal failure, and premature death worldwide. Despite effective pharmacological options and evidence-based lifestyle interventions, optimal blood pressure control remains inadequate in many populations. Patient non-adherence, insufficient lifestyle modification, and socio-cultural dynamics are major contributors to poor hypertension outcomes. In Türkiye, culturally embedded practices—including the use of herbal remedies, garlic, lemon, and other alternative methods—may further influence adherence and self-management behaviors. This study aimed to design and implement an original, culturally adapted assessment tool, the hypertension therapy-global assessment of management, zero non-compliance, and evaluation of quality of life (HT-GAMZE) questionnaire, to evaluate antihypertensive medication adherence, lifestyle modification behaviors, awareness of hypertension-related risks, and perceived quality of life among Turkish hypertensive patients.

Material and Methods: In this cross-sectional study, 300 hypertensive patients aged 30-80 years who had been receiving antihypertensive therapy for at least six months completed the HT-GAMZE questionnaire. The instrument assessed demographic characteristics, pharmacological adherence, lifestyle behaviors (diet, salt intake, physical activity), use of alternative therapies, and perceived changes in quality of life after treatment. Internal consistency was evaluated using Cronbach's alpha. Descriptive statistics, Student's t-test, one-way analysis of variance, and Spearman correlation analysis were used for data interpretation.

Results: The mean total HT-GAMZE score was 74.2 ± 11.1 , indicating good pharmacological adherence but only moderate lifestyle modification. Women showed significantly higher adherence than men ($p=0.01$), and patients aged 45-65 showed better compliance ($p=0.03$). Monotherapy was associated with higher adherence than combination therapy ($p=0.02$). Thirty percent reported using alternative methods, while only 40% engaged in regular exercise. Regular exercisers achieved significantly higher lifestyle modification scores ($p<0.001$).

Conclusion: The HT-GAMZE questionnaire effectively captured multidimensional aspects of hypertension management in Turkish patients. While medication adherence was relatively high, notable deficiencies were observed in lifestyle behaviors. These findings underscore the need for culturally sensitive, personalized educational strategies to improve hypertension outcomes.

Keywords: Hypertension, lifestyle modification, quality of life



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Öz

Amaç: Hipertansiyon, dünya genelinde kardiyovasküler hastalık, inme, böbrek yetmezliği ve erken mortalitenin en önemli önlenebilir nedenlerinden biri olmaya devam etmektedir. Etkili farmakolojik seçenekler ve kanıta dayalı yaşam tarzı müdahalelerine rağmen, optimal kan basıncı kontrolü birçok popülasyonda yetersiz kalmaktadır. Hasta uyumsuzluğu, yetersiz yaşam tarzı değişiklikleri ve sosyo-kültürel dinamikler, hipertansiyonla ilişkili olumsuz sonuçların başlıca belirleyicileridir. Türkiye'de bitkisel ürünler, sarımsak, limon ve diğer alternatif yöntemler gibi kültürel olarak yerleşmiş uygulamalar, tedavi uyumunu ve hastanın kendi kendini yönetme davranışlarını etkileyebilmektedir. Bu çalışmanın amacı, Türk hipertansif hastalarda antihipertansif ilaç uyumunu, yaşam tarzı değişikliği davranışlarını, hipertansiyonla ilişkili sağlık risklerine yönelik farkındalığı ve tedavi sonrası algılanan yaşam kalitesini değerlendirmek üzere özgün ve kültürel olarak uyarlanmış bir ölçüm aracı olan *hypertension therapy-global assessment of management, zero non-compliance, and evaluation of life quality (HT-GAMZE)* anketini geliştirmek ve uygulamaktır.

Yöntem ve Gereçler: Bu kesitsel çalışmada, en az altı aydır antihipertansif tedavi almaktan 30-80 yaş arası toplam 300 hipertansif hasta HT-GAMZE anketini tamamladı. Anket; demografik özellikleri, farmakolojik tedavi uyumunu, yaşam tarzı davranışlarını (diyet, tuz alımı, fiziksel aktivite), alternatif yöntem kullanımını ve tedavi sonrası yaşam kalitesindeki değişiklikleri değerlendirdi. İç tutarlılık Cronbach alfa katsayı ile analiz edildi. Tanımlayıcı istatistiklerin yanı sıra Student t-testi, tek yönlü varyans analizi ve Spearman korelasyon analizi kullanıldı.

Bulgular: Ortalama toplam HT-GAMZE skoru $74,2 \pm 11,1$ olup, iyi düzeyde farmakolojik uyuma ancak yalnızca orta düzeyde yaşam tarzı adaptasyonuna işaret etti. Kadın hastalar erkeklerle kıyasla anlamlı derecede daha yüksek uyum gösterdi ($p=0,01$). Kırk beş-65 yaş arası hastaların uyumu diğer yaş gruplarından daha iyiydi ($p=0,03$). Monoterapi kullananlarda uyum, kombin tedavi kullananlara göre anlamlı olarak yükseltti ($p=0,02$). Hastaların %30'u kan basıncını kontrol etmek için alternatif yöntemler kullandığını, yalnızca %40'ının düzenli egzersiz yaptığıını bildirdi. Düzenli egzersiz yapanların yaşam tarzı modifikasyonu skorları anlamlı ölçüde daha yükseltti ($p<0,001$).

Sonuç: HT-GAMZE anketi, Türk hipertansif hastalarında hipertansiyon yönetiminin çok boyutlu yönlerini etkili biçimde değerlendirmiştir. Farmakolojik uyum görece yüksek olmakla birlikte, yaşam tarzı davranışlarında belirgin eksiklikler gözlemlenmiştir. Bulgular, hipertansiyon sonuçlarını iyileştirmek için kültürel olarak duyarlı, kişiselleştirilmiş eğitim stratejilerinin gerekliliğine işaret etmektedir.

Anahtar Kelimeler: Hipertansiyon, yaşam tarzı değişikliği, yaşam kalitesi

INTRODUCTION

Hypertension is the most common chronic disease worldwide and a leading preventable risk factor for cardiovascular morbidity and mortality. According to the World Health Organization, approximately 1.28 billion adults aged 30-79 years globally are affected by hypertension, with a significant proportion unaware of their condition (1). Despite major advances in pharmacological therapies and lifestyle interventions, only about 21% of hypertensive individuals achieve adequate blood pressure control (2). Hypertension substantially increases the risk of ischemic heart disease, stroke, heart failure, renal dysfunction, and premature death (3).

In Türkiye, hypertension represents a major public health burden. The PatenT 2 study reported that the prevalence of hypertension among Turkish adults was 31.2%, with a higher prevalence observed in women compared to men (36.1% vs. 27.5%) (4). Alarmingly, blood pressure control among hypertensive patients remains suboptimal; only 28.7% of hypertensive individuals in Türkiye are adequately controlled, reflecting significant gaps in management practices (4,5).

Poor medication adherence, inadequate lifestyle modifications, and limited patient awareness are key barriers to effective hypertension control worldwide (6). In Türkiye, cultural

beliefs, limited health literacy, alternative medicine practices (such as garlic consumption, herbal remedies, and lemon juice intake), and socioeconomic factors further complicate hypertension management (7,8). Lifestyle changes, including salt restriction, weight control, regular physical activity, and smoking cessation, are well-established components of hypertension management, but they are often poorly adopted (9).

Although several instruments exist to evaluate adherence to antihypertensive treatment and lifestyle behaviors, many have been developed for Western populations and may not adequately reflect cultural factors influencing management behaviors in non-Western settings (10). To address this gap, we developed the hypertension therapy-global assessment of management, zero non-compliance, and evaluation of life quality (HT-GAMZE) questionnaire, an original, culturally adapted tool designed to assess pharmacological adherence, lifestyle changes, alternative medicine usage, and quality of life among Turkish hypertensive patients.

This study aims to evaluate real-world hypertension management patterns among Turkish patients using the HT-GAMZE questionnaire, providing a comprehensive assessment of treatment adherence and lifestyle behaviors in a culturally relevant context.

MATERIAL AND METHODS

This cross-sectional observational study was conducted at the Cardiology Outpatient Clinic of Kepez State Hospital (Antalya, Türkiye) between September and October 2025. Institutional ethical approval was obtained prior to study initiation, and written informed consent was collected from all participants in accordance with the Declaration of Helsinki. The primary objective of the study was to evaluate antihypertensive medication adherence, lifestyle modification behaviors, alternative treatment practices, treatment awareness, and quality of life among Turkish patients with hypertension using an original and culturally adapted instrument.

A total of 300 adult patients aged 30-80 years with a confirmed diagnosis of primary hypertension who had been receiving treatment for at least six months were consecutively enrolled. The diagnosis of hypertension was based on repeated clinic blood pressure measurements of $\geq 140/90$ mmHg or on ongoing pharmacological therapy. Patients with secondary hypertension, advanced heart failure (New York Heart Association III-IV), end-stage renal disease requiring dialysis, severe hepatic failure, pregnancy, or cognitive impairment preventing questionnaire completion were excluded. Demographic data, clinical history, type of antihypertensive therapy (monotherapy or combination), comorbidities, duration of hypertension, physical activity habits, dietary patterns, salt consumption, smoking and alcohol use, and the use of alternative therapies (e.g., garlic, lemon, herbal mixtures) were recorded during the routine outpatient visit.

The central measurement tool was the HT-GAMZE questionnaire, a novel assessment instrument developed *de novo* by the authors based on clinical needs and cultural observations among Turkish hypertensive patients. Unlike commonly used adherence scales derived from Western populations, the HT-GAMZE tool integrates cultural and lifestyle habits and alternative treatments frequently used in Türkiye. The questionnaire includes 31 items across five major domains: demographic-clinical information, medication adherence, lifestyle modification, treatment awareness, and quality of life. The full item list is presented in Table 1, and the scoring structure is provided in Table 2. All items are rated on a 4-point Likert scale ranging from never (0) to always (3). Higher scores indicate better adherence and healthier lifestyle behaviors. The scoring system yields both domain-specific scores and a total HT-GAMZE score with a maximum of 104 points. Score interpretation categories are: excellent adherence (85-100%), good adherence (70-84%), moderate adherence (55-69%), and poor adherence (<55%). The questionnaire was administered face-to-face under supervision to ensure accurate and complete responses.

Table 1. HT-GAMZE questionnaire

Section 1: Demographic & clinical information	
1.	Duration of hypertension
2.	Current antihypertensive therapy (monotherapy/combination)
3.	Family history of hypertension
4.	Current hypertension-related symptoms
5.	Frequency of blood pressure self-measurement
Section 2: Medication adherence	
6.	I take my medications at the prescribed times every day
7.	I initially had concerns about starting antihypertensive medication
8.	I prefer combination pills to multiple medications
9.	I experienced an improvement after starting medication
10.	I attempted lifestyle changes before starting medication
11.	I have experienced side effects from antihypertensive medications
12.	I sometimes have difficulty obtaining my medications
13.	I have used alternative methods (garlic, lemon juice, and herbal supplements) to lower my blood pressure
Section 3: Lifestyle modification	
14.	I follow a low-sodium diet
15.	I reduced consumption of fast food and processed foods
16.	I increased my intake of fresh fruits and vegetables
17.	I engage in physical exercise weekly
18.	I started exercising regularly after my diagnosis
19.	I quit smoking or reduced my smoking
20.	I quit or reduced my alcohol consumption
21.	My sleep quality has improved
Section 4: Treatment awareness & beliefs	
22.	I am aware that untreated hypertension can cause cardiovascular complications
23.	I know that stopping medication will likely increase my blood pressure
24.	My doctor has provided adequate information about my treatment plan
25.	I believe I can successfully manage my blood pressure
26.	My medications are reviewed regularly during follow-up visits
27.	I believe that adherence positively affects my health
Section 5: Quality of life assessment	
28.	Physical well-being
29.	Impact of hypertension on daily activities
30.	Mental well-being
31.	Overall change in quality of life

(All items scored 0-3), HT-GAMZE: Hypertension therapy-global assessment of management, zero non-compliance, and evaluation of life quality

Table 2. HT-GAMZE scoring system (domain structure & interpretation)

Domain	Items	Score range	Maximum score
Medication adherence	6-13	0-32	32
Lifestyle modification	14-21	0-32	32
Treatment awareness	22-27	0-24	24
Quality of life	28-31	0-16	16
Total score	6-31	0-104	104

HT-GAMZE: Hypertension therapy-global assessment of management, zero non-compliance, and evaluation of life quality

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics version 25.0. The Kolmogorov-Smirnov test assessed the normality of the distribution. Continuous variables were summarized as mean \pm standard deviation or median (interquartile range), as appropriate. Categorical variables were expressed as counts and percentages. Group comparisons (male vs. female, monotherapy vs. combination therapy, regular exercise vs. no exercise) were made using the independent samples t-test or Mann-Whitney U test. Comparisons involving more than two groups were analyzed using one-way analysis of variance with Tukey post-hoc test or the Kruskal-Wallis test. Correlations between HT-GAMZE scores and clinical variables were examined using Spearman's rank correlation coefficient. The internal consistency of the questionnaire was assessed using Cronbach's alpha. A p-value <0.05 was considered statistically significant.

The full dataset used in the analysis, including calculated scores and cross-group comparisons, is provided in the supplementary figures.

Total Score Interpretation:

- 85-100% → Excellent adherence and lifestyle modification
- 70-84% → Good
- 55-69% → Moderate
- <55% → Poor

Ethics Approval and Informed Consent Statement

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the University of Health Sciences Türkiye, Gazi Yaşargil Training and Research Hospital Ethics Committee (approval no: 647, date: 19.09.2025). Written informed consent was obtained from all patients prior to inclusion in the study.

RESULTS

A total of 300 hypertensive patients were enrolled in the study, and their baseline demographic and clinical characteristics are

Table 3. Baseline demographic and clinical characteristics of the study population

Variable	Value
Number of patients	300
Mean age (years)	55.3 \pm 11.6
Women, n (%)	165 (55%)
Men, n (%)	135 (45%)
Monotherapy, n (%)	180 (60%)
Combination therapy, n (%)	120 (40%)
Family history of hypertension, n (%)	186 (62%)
Alternative method use, n (%)	90 (30%)
Regular physical exercise, n (%)	120 (40%)

Baseline demographic and clinical characteristics of the hypertensive cohort. Values are expressed as mean \pm standard deviation or number (percentage)

summarized in Table 3. The mean age of the study population was 55.3 \pm 11.6 years, with a slight predominance of women (55%). The majority of patients (62%) reported a positive family history of hypertension, and 60% were receiving monotherapy at the time of evaluation. Approximately 30% of patients reported using alternative or complementary methods, such as garlic, lemon, and herbal mixtures, to support blood pressure control, while 40% engaged in regular physical exercise. These baseline characteristics illustrate a cohort with heterogeneous treatment approaches, cultural practices, and lifestyle behaviors, all relevant to the management of hypertension.

The overall mean HT-GAMZE total score was 74.2 \pm 11.1, corresponding to a generally "good" level of adherence and hypertension-related self-management behaviors. Subdomain analysis (summarized in Table 4) showed that medication adherence exhibited the highest score (27.1 \pm 4.2), suggesting that pharmacological compliance was relatively strong across the study population. In contrast, the lifestyle modification domain demonstrated a comparatively lower mean score (22.8 \pm 5.0), indicating persistent gaps in exercise adherence,

Table 4. HT-GAMZE total and subdomain scores

Domain	Mean score \pm SD
Total HT-GAMZE score	74.2 \pm 11.1
Medication adherence	27.1 \pm 4.2
Lifestyle modification	22.8 \pm 5.0
Treatment awareness	20.1 \pm 2.8
Quality of life	14.2 \pm 2.1

Mean overall and domain-specific HT-GAMZE scores. Higher scores reflect greater adherence, healthier lifestyle behaviors, greater awareness, and better quality of life

HT-GAMZE: Hypertension therapy-global assessment of management, zero non-compliance, and evaluation of life quality, SD: Standard deviation

salt restriction, dietary optimization, smoking cessation, and reduced alcohol consumption. Treatment awareness and beliefs were well preserved (20.1 ± 2.8) and the quality-of-life domain reflected favorable scores (14.2 ± 2.1), indicating that most patients perceived clinical benefit and improved well-being following antihypertensive therapy.

When treatment regimens were examined, patients receiving monotherapy had significantly higher total HT-GAMZE scores than those on combination therapy (75.4 ± 10.9 vs 72.1 ± 11.2 , $p=0.02$), as presented in Table 5. This difference suggests that therapeutic simplicity may enhance overall treatment adherence and lifestyle behaviors. The finding is consistent with prior evidence showing that a lower pill burden improves medication-taking consistency and self-management.

The use of alternative treatment methods while culturally common did not significantly influence HT-GAMZE scores. As shown in Table 6, alternative method users had slightly lower scores compared with non-users (73.1 ± 11.6 vs 75.0 ± 10.8), but the difference did not reach statistical significance ($p=0.09$). Although these methods did not significantly alter adherence patterns in this sample, the trend toward lower scores suggests that some patients may prefer non-pharmacological approaches, which may affect long-term treatment adherence.

A prominent and clinically meaningful finding emerged regarding physical exercise. Regular exercisers demonstrated substantially higher lifestyle modification scores (24.9 ± 4.3) compared with non-exercisers (21.6 ± 5.2), with this difference being statistically significant ($p=0.001$), as shown in Table 7.

Table 5. Comparison of total HT-GAMZE score by treatment type

Treatment type	Mean total score \pm SD	p-value
Monotherapy	75.4 ± 10.9	0.02
Combination therapy	72.1 ± 11.2	
Comparison of total HT-GAMZE scores between monotherapy and combination therapy users. A significant difference favored monotherapy ($p<0.05$)		
HT-GAMZE: Hypertension therapy-global assessment of management, zero non-compliance, and evaluation of life quality, SD: Standard deviation		

Table 6. Comparison of total HT-GAMZE score by alternative method use

Alternative method use	Mean total score \pm SD	p-value
Users	73.1 ± 11.6	0.09
Non-users	75.0 ± 10.8	-
HT-GAMZE total score comparison between patients using alternative therapies (garlic, lemon, herbal mixtures) and those using standard therapy alone		
HT-GAMZE: Hypertension therapy-global assessment of management, zero non-compliance, and evaluation of life quality, SD: Standard deviation		

Table 7. Comparison of lifestyle modification score by physical exercise status

Physical exercise	Mean lifestyle modification score \pm SD	p-value
Regular exercisers	24.9 ± 4.3	0.001
Non-exercisers	21.6 ± 5.2	-
Lifestyle modification scores stratified according to weekly exercise habits. Regular physical activity was significantly associated with better lifestyle behaviors. The p-value represents the statistical comparison between the two groups		
SD: Standard deviation		

This highlights the crucial role of physical activity in facilitating overall lifestyle improvements, reinforcing guideline-driven recommendations for hypertension management. Furthermore, regular exercise was associated with higher overall HT-GAMZE scores, suggesting a broader beneficial impact on multiple treatment-related behaviors.

Overall, the results of this study indicate that although pharmacological adherence is satisfactory among Turkish hypertensive patients, lifestyle modification remains suboptimal. Physical activity emerges as a key determinant of favorable behavioral profiles, while the simplicity of treatment (monotherapy) appears to enhance adherence. The substantial reliance on culturally rooted alternative practices underscores the need for continued patient education and culturally informed management strategies.

DISCUSSION

In this cross-sectional study, we comprehensively evaluated antihypertensive medication adherence, lifestyle modification behaviors, treatment awareness, and cultural practices among hypertensive patients using the newly developed HT-GAMZE questionnaire, a culturally adapted tool designed specifically for the Turkish population. The findings revealed that while overall pharmacological adherence was satisfactory, lifestyle modifications remained suboptimal and significant behavioral gaps persisted in physical activity, dietary regulation, and salt restriction. These results provide important real-world insights into hypertension management in Türkiye, where cultural practices and patient beliefs significantly influence treatment behaviors.

The mean total HT-GAMZE score observed in this study (74.2 ± 11.1) indicates a good level of adherence, comparable to previous adherence studies conducted in hypertensive populations in Türkiye and worldwide. For instance, Grassi et al. (11) reported similar adherence patterns among Turkish hypertensive adults, highlighting persistent challenges in effecting lifestyle changes despite adequate medication compliance. Internationally, several studies have shown that

medication adherence tends to be considerably higher than lifestyle adherence, reflecting the universal difficulty patients face when attempting to implement sustainable behavioral changes such as daily salt restriction, regular exercise, and weight reduction.

Our findings demonstrated that medication adherence was the strongest domain, with high mean scores across most patients. This suggests that despite cultural tendencies toward alternative treatments, adherence to prescribed pharmacological therapy remains a priority for many Turkish patients. This observation aligns with previous evidence indicating that patients with hypertension are more adherent to medication when they perceive symptomatic improvement or receive regular physician follow-up.

In contrast, lifestyle modification scores were significantly lower, underscoring a persistent gap between pharmacological adherence and behavioral change. Only 40% of the patients reported regular exercise, and lifestyle modification scores were significantly higher among this subgroup (Table 7). This strongly supports the role of exercise as an independent predictor of improved lifestyle behaviors and is consistent with evidence from multiple meta-analyses demonstrating that physical activity enhances cardiovascular outcomes and improves adherence to non-pharmacological recommendations.

One of the most important findings of this study was the effect of treatment regimen complexity on adherence. Patients receiving monotherapy had significantly higher HT-GAMZE scores compared to those on combination therapy (Table 5). This aligns with prior studies reporting that simplifying antihypertensive therapy by reducing pill burden significantly enhances adherence. Treatment complexity has long been recognized as a central determinant of patient compliance, and our results provide further support for adopting simplified regimens whenever clinically feasible.

Another culturally relevant finding was the widespread use of alternative treatment methods, including garlic, lemon, and various herbal preparations. Although users of alternative treatments did not differ significantly in total adherence scores from non-users (Table 6), a slight trend toward lower scores suggests a possible reliance on non-pharmacological methods that, in some cases, may undermine adherence to conventional treatment. This finding is particularly important in the Turkish context, where herbal remedies and natural approaches are deeply ingrained in community health practices. While some of these practices may provide mild benefit, unsupervised use may lead to inadequate blood pressure control, delayed medical consultation, or treatment fragmentation. These observations reinforce the importance of culturally sensitive patient education and open physician-patient communication regarding the role and limitations of alternative therapies.

A major strength of this study is the development and implementation of the HT-GAMZE questionnaire, which represents one of the first validated tools specifically tailored to the Turkish hypertensive population. Existing adherence questionnaires, such as the Morisky Scale and the Hill-Bone Adherence Scale, were primarily developed in Western populations and lack domains addressing culturally embedded behaviors. The HT-GAMZE tool—supported by detailed domain scoring (Table 1 and Table 2)—incorporates essential components of Türkiye's hypertensive patient profile, including dietary habits, exercise patterns, alternative medicine use, and perceived changes in quality of life. This ensures a more comprehensive and culturally relevant assessment of behavioral and adherence patterns.

In our cohort, the low levels of lifestyle modification and the relatively high prevalence of use of alternative therapies are consistent with previous national and international findings. Several Turkish studies have shown that although pharmacological adherence is generally satisfactory, adoption of lifestyle measures—particularly salt restriction, exercise, and weight control—remains suboptimal, largely due to cultural dietary habits and limited risk awareness (12). International analyses have similarly reported that lifestyle adherence is typically weaker than medication adherence, with regular exercise rates below 35-40% in hypertensive populations across Europe and Asia. Furthermore, the use of herbal or “natural” remedies such as garlic, lemon, and plant-based mixtures has been documented in multiple countries, reflecting cultural tendencies similar to those observed in our population (13). These parallels reinforce that our findings are not only reflective of local cultural dynamics but also align with global challenges in hypertension management.

Study Limitations

First, its cross-sectional design restricts causal inference, and the findings may not fully reflect longitudinal adherence patterns. Second, the use of self-reported questionnaires introduces potential recall and social desirability biases, although supervised administration minimized data loss. Third, the single-center design may limit the generalizability of the findings to other regions of Türkiye. Nonetheless, the sample size was robust, and the population characteristics were representative of a typical outpatient hypertensive cohort, thereby supporting the external validity of the results.

Overall, the study highlights the multifaceted nature of hypertension self-management and emphasizes the need for integrated, culturally informed strategies that reinforce both pharmacological adherence and sustainable lifestyle changes. Incorporating simplified treatment regimens, reinforcing physical activity, addressing alternative treatment practices,

and applying culturally tailored educational interventions may significantly improve hypertension outcomes in Türkiye.

CONCLUSION

This study provides comprehensive, real-world insights into hypertension management in Türkiye through the newly developed, culturally tailored HT-GAMZE questionnaire. The findings demonstrate that although pharmacological adherence among hypertensive patients is generally satisfactory, adherence to lifestyle modifications—particularly regular physical activity, dietary modifications, and salt restriction—remains significantly suboptimal. Treatment simplicity emerged as a key determinant of adherence, as patients receiving monotherapy exhibited markedly better behavioral and adherence profiles than those on combination therapy. Furthermore, the widespread use of culturally rooted alternative therapies highlights the need for structured, evidence-based patient education to prevent delays in seeking medical care and to minimize reliance on non-standard treatment approaches.

The HT-GAMZE questionnaire, developed *de novo* from clinical observations and cultural patterns in Türkiye, effectively captured multidimensional treatment behaviors, including medication adherence, lifestyle habits, treatment awareness, and perceived quality of life. Unlike pre-existing international adherence tools, HT-GAMZE integrates culturally relevant components such as the use of herbal and other natural remedies, providing a more accurate representation of real-world hypertension management behaviors among Turkish patients.

Taken together, the findings of the study emphasize the need for holistic and culturally informed management strategies that address both pharmacological and lifestyle components of hypertension care. Interventions aimed at improving lifestyle adherence, particularly by increasing physical activity, reducing salt intake, and strengthening dietary habits, should be prioritized. Additionally, simplifying antihypertensive treatment regimens, where clinically appropriate, may further enhance adherence and long-term blood pressure control.

Future research should validate the HT-GAMZE questionnaire in multicenter cohorts across different regions of Türkiye and assess its prognostic utility for long-term cardiovascular outcomes. Expanding its use in clinical practice may support personalized, culturally sensitive hypertension management and contribute to improved treatment adherence and patient-centered care.

*Ethics

Ethics Committee Approval: Ethical approval was obtained from the University of Health Sciences Türkiye, Gazi Yaşargil

Training and Research Hospital Ethics Committee (approval no: 647, date: 19.09.2025).

Informed Consent: Written informed consent was obtained from all patients prior to inclusion in the study.

Footnotes

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