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RELATIONSHIP BETWEEN DISEASE ADAPTATION AND SELF-EFFICACY FOR DISEASE MANAGEMENT IN INDIVIDUALS WITH MULTIPLE CHRONIC DISEASES

ÇOKLU KRONİK HASTALIĞI OLAN BİREYLERİN HASTALIĞA UYUMLARI İLE HASTALIK YÖNETİMİ ÖZ ETKİLİLİKLERİ ARASINDAKİ İLİŞKİ

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ABSTRACT

Aim: This study examines the relationship between disease adaptation and self-efficacy in managing multiple chronic diseases.

Materials and Methods: This descriptive and correlational study was conducted from December 1st to December 31st, 2022, in the internal clinics of a university hospital in Konya. The population of the research consisted of individuals with multiple chronic diseases hospitalized at Necmettin Erbakan University Faculty of Medicine Hospital, and the sample consisted of 230 patients who met the criteria for inclusion in the research. Data collection utilised the Patient Information Form, the Assessment Scale for Adaptation to Chronic Diseases, and Self-Efficacy for Managing Chronic Disease 6-Item Scale. Data analysis employed the Mann-Whitney U test, Kruskal-Wallis H test, Dunn test, and descriptive statistics. Linear regression analysis was used to analyse the factors affecting the 6-item self-efficacy scale score for chronic disease management. Analysis results were presented as mean ± standard deviation and median (minimum-maximum) for quantitative data, and as frequency and percentage for categorical data.

Results: It was determined that 64.8% of the individuals were women, 83% were married, and 71.7% were primary school graduates. The mean level of adaptation with chronic diseases was 62.48 ± 9.81, while the mean self-efficacy level was 4.58 ± 2.01. Those who were married had a higher level of education, were employed, had a good income, lived in larger families and urban areas, and had two chronic diseases exhibited higher adaptation to chronic disease. A significant correlation was found between the total scores of the scales.

Conclusions: In conclusion, as individuals' adaptation levels to chronic diseases increase, their chronic disease management self-efficacy levels also increase. It is recommended to conduct qualitative studies examining individuals' adaptation to chronic diseases, self-efficacy and affecting factors, and to conduct multicenter studies evaluating the adaptation and self-efficacy of individuals with multiple chronic diseases.

Keywords: Disease adaptation, Multiple chronic diseases, Non-communicable diseases, Self-efficacy.

ÖZET

Amaç: Bu çalışma, hastalığa uyum ile çoklu kronik hastalıkların yönetiminde öz yeterlilik arasındaki ilişkiyi incelemektedir.

Gereç ve Yöntem: Tanımlayıcı ve korelasyonel nitelikteki bu çalışma, 1 Aralık - 31 Aralık 2022 tarihleri arasında Konya'da bir üniversite hastanesinin dahili kliniklerinde gerçekleştirilmiştir. Araştırmanın evrenini Necmettin Erbakan Üniversitesi Tıp Fakültesi Hastanesi'nde yatan çoklu kronik hastalığa sahip olan bireyler, örneklemini ise araştırmaya dahil edilmeleri kriterlerini karşılayan 230 hasta birey oluşturdu. Verilerin toplanmasında Hasta Bilgi Formu, Kronik Hastalıklara Uyum Değerlendirme Ölçeği ve Kronik Hastalıklarla Mücadelede Öz-Yeterlik Ölçeği 6 Maddelik Ölçeği kullanıldı. Veri analizinde Mann-Whitney U testi, Kruskal-Wallis H testi, Dunn testi ve tanımlayıcı istatistikler kullanıldı. Kronik hastalık yönetimine yönelik 6 maddelik öz yeterlilik ölçeği puanını etkileyen faktörleri analiz etmek için doğrusal regresyon analizi kullanıldı. Analiz sonuçları nicel veriler için ortalama ± standart sapma ve ortanca (minimum- maksimum) şeklinde, kategorik veriler ise frekans ve yüzde şeklinde sunuldu.

Bulgular: Bireylerin %64.8'inin kadın, %83'ünün evli, %71.7'sinin ilkokul mezunu olduğu belirlendi. Kronik hastalıklara uyum düzeyi ortalaması 62.48 ± 9.81, öz yeterlik düzeyi ortalaması ise 4.58 ± 2.01 olarak belirlendi. Evli olanların eğitim düzeyi daha yüksek, çalışıyor, iyi gelire sahip, daha geniş ailelerde ve kentte yaşayan, iki kronik hastalığı olanların kronik hastalığa uyumları daha yüksekti. Ölçeklerin toplam puanları arasında anlamlı bir ilişki bulundu.

Sonuç: Sonuç olarak bireylerin kronik hastalıklara uyum düzeyleri arttıkça kronik hastalık yönetimi öz-yeterlik düzeyleri de artmaktadır. Bireylerin kronik hastalıklara uyumunu, öz yeterliliğini ve etkileyen faktörleri inceleyen nitel çalışmaların yapılması ve çoklu kronik hastalığı olan bireylerin uyumunu ve öz yeterliliğini değerlendiren çok merkezli çalışmaların yapılması önerilmektedir.

Anahtar Kelimeler: Bulaşıcı olmayan hastalıklar, Çoklu kronik hastalıklar, Hastalığa uyum, Öz etkililik.

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This study was produced from the master's thesis titled "The relationship between disease adaptation and disease management self-efficacy of individuals with multiple chronic diseases (2023)", conducted by the first author under the supervision of the second author, at Necmettin Erbakan University.

INTRODUCTION

Chronic diseases, increasingly recognised as one of the foremost health challenges of the 21st century, are escalating and being regarded as a global issue (Akpınar and Ceran, 2019; WHO, 2019; WHO, 2022). Chronic illnesses such as diabetes mellitus, cancer, and cardiovascular diseases are prominent causes of mortality globally (WHO, 2019) and within our country (TUIK, 2018). The prevalence of multiple chronic diseases poses a substantial challenge in contemporary times. In our country, the rate of individuals with one chronic disease is 21.4%, those with two chronic diseases is 10.6%, those with three chronic diseases is 3.7%, and those with four chronic diseases is 0.46% (Ministry of Health Cohort Study, 2021). The emergence of multiple chronic diseases in individuals significantly impacts themselves, their caregivers, and the broader community (Bulut et al., 2020).

The increasing prevalence of multiple chronic diseases contributes to escalating healthcare expenditures within the healthcare system (Bahler et al., 2015; Zulman et al., 2015) and complicates individual disease management. The impact of chronic diseases on individuals varies depending on factors such as the number of diseases, the type of diseases, the duration of illness, the individual's biological and psychological makeup, coping skills, and self-care management (Duran and Keser, 2021).

Self-care management, which delineates an individual's responsibility for their health, encompasses a dynamic and interactive process (Bakır and Zengin, 2023; Şentürk, 2021). Effective maintenance of self-care management hinges on internal and external factors, such as the individual's knowledge about the disease and their level of self-efficacy (Bakır and Zengin, 2023; Şentürk, 2021). In a study by Ebrahimi et al. (2018), it was found that participants were able to maintain control over their diseases through regular doctor visits, adherence to medication regimens, and monitoring of tests and symptomatology.

Self-efficacy, first conceptualised by Bandura (1999), pertains to an individual's capacity to exert influence and manage their situation in the endeavours and behaviours of their life. Individuals' existing self-efficacies evolve in conjunction with their life experiences and can serve as a significant source of motivation (Ceyhan and Ünsal, 2018). Low self-efficacy is associated with a higher prevalence of psychological disorders, while individuals with high self-efficacy are noted to adhere more closely to recommended health behaviours for themselves (Demirbaş and Kutlu, 2020). For individuals to take an active role in their care process, a high level of adherence to the disease is necessary. Adherence, an integral component of disease management, should be addressed in the context of disease management (Aslan et al., 2021; Bilgiç and Pehlivan, 2023).

Disease adherence involves the individual with an illness fulfilling the practices and actions required by their medical diagnosis, often delineated in specific domains (Aslan et al., 2021; Demirkol and Tamam, 2016). Adherence to disease management is influenced by environmental factors, factors related to medications, and factors associated with the patient and the healthcare provider (Demirkol and Tamam, 2016). One of these factors is the duration of the illness. Chronic diseases, which can persist for extended periods and leave lasting damage, often present initial challenges to adherence in affected individuals (Aydemir and Çetin, 2019).

Research has demonstrated that as the number of diseases increases, the quality of life diminishes (Bilgiç and Pehlivan, 2023; Oktar et al., 2021), while an increase in adherence to disease management correlates with an improvement in quality of life (Bilgiç and Pehlivan, 2023). Acceptance of the illness by patients and their ability to adhere to disease management, along with individual control of this process, are crucial for reducing complications, hospital admissions, and exacerbations of the disease and ensuring the continuity of medical treatment (Koşar and Besen, 2015). As adherence to disease management increases, individuals often experience an improvement in their self-efficacy levels, subsequently enhancing their self-care capabilities. Increased self-care is associated with greater awareness of the disease, empowerment in one's care, improved quality of life, reduced burden on family members and the healthcare system, and enhanced prospects for future treatment and care outcomes (Özdelikara et al., 2020; Sadler et al., 2017; Topçu and Oğuz, 2017). Therefore, this study investigates the relationship between disease adherence and self-efficacy in individuals with multiple chronic diseases.

Research Questions:

- What are the sociodemographic characteristics of individuals with multiple chronic diseases?
- What is the level of disease adherence among individuals with multiple chronic diseases?
- What is the level of self-efficacy in disease management among individuals with multiple chronic diseases?
- Is there a relationship between disease adherence and self-efficacy in disease management among individuals with multiple chronic diseases?
- What variables predict the self-efficacy of individuals with multiple chronic diseases?

MATERIALS AND METHODS

Study Design

This descriptive and correlational research was conducted with patients admitted to the internal medicine clinics (Endocrinology, Nephrology, Gastroenterology, Neurology, Internal Medicine, Cardiology, and Pulmonology) at Necmettin Erbakan University Faculty of Medicine Hospital. The study data were collected between December 1st and December 31st, 2022. The population of this study consisted of individuals with multiple chronic diseases admitted to Necmettin Erbakan University Faculty of Medicine Hospital. Calculations were conducted using the G power program to determine the sample size, requiring at least 191 participants with a significance level of 0.05, a power of 0.95, and a 95% confidence interval for a medium effect size (effect size = 0.10). Therefore, the research was completed with a total of 230 individuals. Inclusion criteria for the study encompassed individuals who were literate, aged 18 and above, diagnosed with at least two chronic diseases at least three months prior, receiving inpatient treatment in internal medicine units, without self-reported physical or mental disabilities, and willing to participate in the research. Individuals with difficulties in comprehension and self-expression or those undergoing treatment in oncology clinics were excluded from the study.

Data Collection Technique and Instruments

Data were collected using a Patient Information Form, An Assessment Scale for Adaptation to Chronic Diseases, and the Self-Efficacy for Managing Chronic Disease 6-Item Scale.

Patient Information Form

The Patient Information Form is a questionnaire created by the researcher through a literature review (Acaroğlu Değirmenci, 2019). The form consists of 12 questions, including age, gender, marital status, educational level, place of residence, employment status (including occupation if employed), income level, parental status, family structure, existing diseases, medication usage status, and routes of administration for medications.

The Assessment Scale for Adaptation to Chronic Diseases

The Assessment Scale for Adaptation to Chronic Diseases, developed by Kacaroğlu Vicdan and Birgili (2018), consists of 28 items on a three-point Likert scale. It comprises four subscales: a physiological subscale with four items (items 1, 2, 3, 4), a psychological subscale with 16 items (items 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20), a social subscale with five items (items 21, 22, 23, 24, 25), and a spiritual subscale with three items (items 26, 27, 28). On the scale, items 1, 2, 3, 4, 7, 8, 9, 11, 13, 16, 20, 21, 23, 25, 26, 27, and 28 are scored in a usual manner (3, 2, 1), while items 5, 6, 10, 12, 14, 15, 17, 18, 19, 22, 24 are scored in a reverse manner (1, 2, 3). The scale's response options are "1-Never, 2-Sometimes, 3-Always." Scores on the scale can range from a minimum of 28 to a maximum of 84 points. As the score increases, individuals' adherence to chronic diseases also increases. The Cronbach's alpha reliability coefficient for the scale is 0.83, which was calculated as 0.86 in this study.

The Self-Efficacy for Managing Chronic Disease 6-Item Scale

The Self-Efficacy for Managing Chronic Disease 6-Item Scale, developed by Lorig et al. (2001), has been validated and made reliable in Turkish by İncirkuş and Nahcivan (2019). The scale is rated on a

10-point scale ranging from "not at all sure" to "completely sure." The scale consists of two subscales: psychological attitude (items 1, 2, 3, 4) and behavioural attitude (items 5, 6). The scale score is calculated by taking the average scores on these six items, with higher scores indicating higher self-efficacy. If more than one response is given to a single item, and the responses are consecutive, the lower score is included in the calculation. If the responses are not consecutive, that item is excluded from the analysis. A minimum of 4 items must be answered to calculate the scale score. The Cronbach's alpha reliability coefficient for the scale is 0.90, which was calculated as 0.87 in this study.

Data Collection

The researcher collected data from 11:00 AM to 4:00 PM, considering the patients' convenient time slots. Participants were provided with information about the research, and after obtaining their written consent, they were asked to complete the survey forms. It took approximately 20 minutes to fill out one form. The researcher was present with the participants while they completed the data collection forms.

Statistical Analysis

The data was analysed using IBM SPSS V23. The normality of the data distribution was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. For non-normally distributed data, the Mann-Whitney U test was used for comparing two groups, and the Kruskal-Wallis H test was employed for three or more groups. Multiple comparisons were examined using the Dunn test. Factors affecting the Self-Efficacy for Managing Chronic Disease 6-Item Scale scores were analysed using linear regression. The significance level was set at $p<0.05$).

RESULTS

Table 1. The Distribution of Demographic Characteristics of Individuals with Chronic Diseases (n=230)

	n	(%)
Gender		
Female	149	64.8
Male	81	35.2
Marital Status		
Single	39	17.0
Married	191	83.0
Education Level		
Primary School	165	71.7
Secondary School	23	10.0
High School	28	12.2
University and above	14	6.1
Place of Residence		
Village	35	15.2
Town	4	1.8
District	52	22.6
City	139	60.4
Employment Status		
Not working	202	87.8
Working	28	12.2
Occupation		
None (Retired)	202	87.8
Worker	12	5.2
Trader	8	3.5
Civil Servant	8	3.5
Income Status		
Poor	24	10.4
Moderate	170	73.9
Good	36	15.7

Having Children		
No	26	11.3
Yes	204	88.7
Family Structure		
Nuclear	185	80.4
Extended	45	19.6
Number of Diagnosed Diseases		
Two	115	50.0
Three	84	36.5
Four and above	31	13.5
	X± SD	**Median (Min. - Max.)**
Age (years)	61.53 ± 14.68	64 (20 - 92)
Number of Children	3.30 ± 2.08	3 (0 - 10)

Table 1 provides the distribution of demographic characteristics of individuals with chronic diseases. According to the table, it was observed that 64.8% of the individuals were female. 83% were married, and 71.7% had completed primary school. When the number of diagnosed diseases among individuals was examined, it was found that 50% had two diseases, and 36.5% had three diseases. The average age of the individuals was 61.53 ± 14.68 years.

Table 1. The Distribution of Additional Diseases Observed in Individuals Based on their Initial Diagnosis

Initial diagnosis (%)	**Duration of illness (month) Median (Min. - Max.) X± SD**	**Number of additional diseases n (%)**		
		2.Diagnosis	**3. Diagnosis**	**4. Diagnosis**
DM 13 (57.8)	144 (3-480) 169.09±109.42	HT 102(76.7)	CVD 28(21.1)	Respiratory Diseases 6(4.6)
HT 52(22.6)	120(3-636) 159.4±139.14	CVD 14(26.9)	Respiratory Diseases 6(11.5)	
CVD 13(5.7)	120(12-336) 104.31±86.59	Hyperlipidemia 4(30.8)	Musculoskeletal Diseases 2 (15.4)	
Other 32(13.9)	96 (12-360) 135.37±102.7	HT 7(21.9)	Rheumatic Diseases 1(3.1) CVD 1(3.1) HT 1(3.1)	

DM: Diabetes Mellitus, HT: Hypertension, CVD: Cardiovascular Diseases

Table 2 provides the distribution of additional diseases observed in individuals based on their initial diagnosis. According to the table, the initial diagnoses were DM (Diabetes Mellitus) 133 (57.8%), HT (Hypertension) 52 (22.6%), Cardiovascular Diseases (CVD) 13 (5.7%), and other diseases 32 (13.9%). The mean duration of illness for individuals based on their initial diagnoses was as follows: for individuals with DM:169.09 ± 109.42 months; for individuals with HT: 159.4 ± 139.14 months; for individuals with CVD: 104.31 ± 86.59 months; for individuals with other diseases: 135.37 ± 102.7 months. Among individuals whose primary diagnosis was DM, the most common second, third, and fourth diseases were HT in 102 individuals (76.7%), CVD in 28 individuals (21.1%), and Respiratory Diseases in 6 individuals (4.6%).

Table 3. Descriptive Statistics of the Scales

	X± SD	**Median (Min. - Max.)**	**Receiving Min.-Max. Values**	**Cronbach Alpha**
Assessment Scale for Adaptation to Chronic Diseases				
Physiological subscale	9.20 ± 2.09	10.00 (4.00 - 12.00)	4 - 12	0.66
Psychological subscale	33.01 ± 7.31	33.00 (16.00 - 48.00)	16 - 48	0.86

Social subscale	12.24 ± 2.50	13.00 (5.00 - 15.00)	5 - 15	0.77
Spiritual subscale	8.03 ± 1.45	9.00 (3.00 - 9.00)	3 - 9	0.79
Total Score	62.48 ± 9.81	63.00 (40.00 - 80.00)	28 - 84	0.86
The Self-Efficacy for Managing Chronic Disease 6-Item Scale				
Psychological attitude	4.50 ± 2.20	4.50 (1.00 – 10.00)	1 - 10	0.89
Behavioural attitude	4.76 ± 2.40	4.50 (1.00 – 10.00)	1 - 10	0.77
Total Score	4.58 ± 2.01	4.33 (1.00 – 10.00)	1 - 10	0.87

Table 3 provides descriptive statistics for the Assessment Scale for Adaptation to Chronic Diseases and the Self-Efficacy for Managing Chronic Disease 6-Item Scale. According to the table, the median total score for the Assessment Scale for Adaptation to Chronic Diseases among individuals was 63.00 (40.00-80.00), and the median total score for the Self-Efficacy for Managing Chronic Disease 6-Item Scale was 4.33 (1.00-10.00).

Table 4: Relationship Between Individuals' Scores on The Assessment Scale for Adaptation to Chronic Diseases and The Self-Efficacy for Managing Chronic Disease 6-Item Scale

	Psychological attitude		**Behavioural attitude**		**The Self-Efficacy for Managing Chronic Disease 6-Item Scale Total Score**	
	r	**p**	**r**	**p**	**r**	**p**
Physiological subscale	0.134	**0.042**	0.119	0.072	0.142	**0.031**
Psychological subscale	0.594	**<0.001**	0.345	**<0.001**	0.567	**<0.001**
Social subscale	0.211	**0.001**	0.157	**0.017**	0.213	**0.001**
Spiritual subscale	0.038	0.567	0.026	0.690	0.027	0.680
Assessment Scale for Adaptation to Chronic Diseases Total Score	0.541	**<0.001**	0.345	**<0.001**	0.525	**<0.001**

*p<0.05

Table 4 provides information about the relationship between individuals' scores on the Assessment Scale for Adaptation to Chronic Diseases and Self-Efficacy for Managing Chronic Disease 6-Item Scale. It is noted that there is a statistically significant positive and moderate-level relationship (r=0.525; p<0.001) between the total scores of the scales.

Table 5 presents the results of the linear regression analysis examining the independent variables affecting individuals' total scores on Self-Efficacy for Managing Chronic Disease 6-Item Scale. The established model was statistically significant (F=6.297, p<0.001). In the model, the independent variables explain 35.7% of the variation in the Self-Efficacy for Managing Chronic Disease 6-Item Scale total score (Adjusted R^2=35.7%; p<0.001).

Specifically, singles (unmarried individuals) have a Self-Efficacy for Managing Chronic Disease 6-Item Scale total score of 0.691 points higher than married individuals (SH=0.327; p=0.036). Individuals living in districts have a Self-Efficacy for Managing Chronic Disease 6-Item Scale total score of 0.786 points higher than those living in villages (SH=0.377; p=0.038). As the score for the psychological subscale increases, the Self-Efficacy for Managing Chronic Disease 6-Item Scale total score increases by 0.126 points (SH=0.019; p<0.001). The effects of other variables were not found to be statistically significant (p>0.050).

Table 5. The Linear Regression Analysis Examining the Independent Variables Affecting Individuals' Total Scores on Self-Efficacy for Managing Chronic Disease 6-Item Scale

	β_0 (%95 CI)	**SH**	**β_1**	**t**	**p**	**r^1**	**r^2**	**VIF**
Fixed	-0.544 (-3.132 – 2.044)	1.313		-0.414	0.679			
Gender (Reference: Female)	-0.425 (-0.974 – 0.125)	0.279	-0.101	-1.525	0.129	0.048	-0.106	1.572
Marital Status (Reference: Married)	0.691 (0.046 – 1.337)	0.327	0.129	2.111	**0.036**	0.164	0.146	1.34
Educational Level (Reference: Elementary School)								
Secondary Education	0.43 (-0.393 – 1.252)	0.417	0.064	1.03	0.304	0.086	0.072	1.39
High School	0.474 (-0.322 – 1.27)	0.404	0.077	1.175	0.241	0.169	0.082	1.545
University and Above	0.109 (-1.018 – 1.237)	0.572	0.013	0.191	0.848	0.16	0.013	1.659
Place of Residence (Reference: Village)								
Town	1.228 (-0.621 – 3.077)	0.938	0.08	1.31	0.192	-0.011	0.091	1.334
District	0.786 (0.043 – 1.529)	0.377	0.164	2.087	**0.038**	0.082	0.144	2.206
City	0.51 (-0.123 – 1.144)	0.321	0.125	1.588	0.114	0.051	0.11	2.192
Occupation (Reference: None)								
Worker	1.036 (-0.041 – 2.112)	0.546	0.115	1.897	0.059	0.206	0.131	1.308
Trader	-0.261 (-1.578 – 1.057)	0.668	-0.024	-0.39	0.697	0.089	-0.027	1.33
Civil Servant	0.423 (-0.967 – 1.813)	0.705	0.039	0.6	0.549	0.187	0.042	1.482
Income Level (Reference: Poor)								
Moderate	0.123 (-0.613 – 0.858)	0.373	0.027	0.328	0.743	-0.009	0.023	2.381
Good	0.336 (-0.574 – 1.246)	0.461	0.061	0.728	0.468	0.086	0.051	2.495
Having Children (Reference: No)	0.298 (-0.655 – 1.251)	0.483	0.047	0.617	0.538	0.036	0.043	2.079
Family Structure (Reference: Nuclear)	-0.054 (-0.634 – 0.527)	0.294	-0.011	-0.182	0.855	-0.067	-0.013	1.211
Age	-0.014 (-0.035 – 0.007)	0.011	-0.105	-1.353	0.178	-0.298	-0.094	2.152
Number of Children	0.008 (-0.132 – 0.148)	0.071	0.008	0.11	0.912	-0.147	0.008	1.915
Number of Medications	-0.079 (-0.178 – 0.021)	0.051	-0.104	-1.555	0.122	-0.255	-0.108	1.592
Number of Diseases	0.109 (-0.27 – 0.489)	0.192	0.039	0.568	0.571	-0.14	0.04	1.647
Physiological Subscale Score	0.042 (-0.077 – 0.161)	0.06	0.044	0.699	0.485	0.175	0.049	1.403
Psychological Subscale Score	0.126 (0.088 – 0.163)	0.019	0.459	6.627	**<0.001**	0.58	0.42	1.706
Social Subscale Score	-0.012 (-0.114 – 0.09)	0.052	-0.015	-0.228	0.820	0.233	-0.016	1.474
Spiritual Subscale Score	0.047 (-0.12 – 0.213)	0.084	0.034	0.553	0.581	0.068	0.039	1.318
Total Duration of Illness	-0.002 (-0.006 – 0.003)	0.002	-0.049	-0.745	0.457	-0.166	-0.052	1.544

F=6.297. p<0.001. R^2=%42.4. Adjusted R^2=%35.7. β0: Unstandardized Beta Coefficient. β1: Standardized Beta Coefficient. r^1: Zero-order correlation. r^2: Partial correlation

DISCUSSION

This study, which aimed to examine the relationship between disease adaptation and self-efficacy in individuals with multiple chronic diseases, found that the most frequently diagnosed chronic disease among the individuals was diabetes mellitus, hypertension, and heart diseases. Hypertension ranked first among the most commonly observed chronic diseases in individuals in our study. This aligns with other studies' findings (Daniali et al., 2017; Yılmazel and Duman, 2018). However, it is essential to note that the prevalence of specific chronic diseases may vary in the literature, as reported in different studies (Daniali et al., 2017; İncirkuş and Nahcivan, 2020; Kütmeç Yılmaz and Kara, 2021; Sarhan et al., 2022; Violán et al., 2019; Yılmazel and Duman, 2018; Yuan et al., 2021) the most common chronic diseases in the literature include lupus, rheumatic diseases, and rhythm and conduction disorders (Acaroğlu Değirmenci, 2019; Marconcin et al., 2021). Differences in the prevalence of these diseases are attributed to variations in dietary habits, Lifestyles, genetic factors, and geographical and socio-economic differences among countries. In this study, participants' mean duration of diseases based on their initial diagnoses ranged from a minimum of three months to a maximum of 636 months. Various studies have reported varying durations of chronic diseases, ranging from less than one year to 40 years (Acaroğlu Değirmenci, 2019; Bakan and İnci, 2021; Ceyhan and Ünsal, 2018). Given that chronic diseases persist for many years with no definitive cure, the disease durations identified in this study can be considered in line with the literature.

The study found that individuals' adaptation to chronic diseases was above average. Studies examining the adaptation of individuals with multiple chronic diseases have reported that adaptation is moderate (Acaroğlu Değirmenci, 2019) or above average (Kütmeç Yılmaz and Kara, 2021). The higher level of adaptation observed in this study is thought to be due to the relatively higher average age of the participants. In this study, it was observed that individuals had below average of self-efficacy. In studies focusing on self-efficacy, individuals' self-efficacy is above average (Allam et al., 2020; Eslami et al., 2017; Fan and Lv, 2016; Marconcin et al., 2021; Yuan et al., 2021). These studies generally included individuals with one or two non-communicable diseases. Since our study was conducted with individuals who had multiple chronic diseases, the average age was high (61.53), and the majority were primary school graduates, it is thought that the self-efficacy level in managing chronic diseases was low. The results of this study are consistent with the literature, as they show that self-efficacy levels tend to decrease in individuals with an increasing number of chronic diseases (Chen et al., 2023; Sarhan, 2022), advanced age (Allam et al., 2020) and lower level of education (Fan and Lv, 2016).

Our study revealed that as individuals' adaptation to chronic diseases increased, their self-efficacy also increased. The literature emphasises the importance of supporting individuals in their disease processes to enhance self-care and adaptation (Graff et al., 2016). Providing social and psychological support to individuals, reducing their stress levels, and helping them express themselves more comfortably have increased self-efficacy (Almeida et al., 2022; Rostagni and Stutts, 2023). In our study, we observed that the level of adaptation increased with the average duration of chronic diseases (Demirtaş and Akbayrak, 2009; Maouro, 2010; Whittemore et al., 2005), and it is thought that this effect is associated with an increase in individuals' belief in managing the disease process.

This study found that the total self-efficacy score for chronic disease management was 0.691 higher for single individuals than married ones. Similar studies have not found a significant relationship between marital status and self-efficacy for chronic disease management (Gruber-Baldini et al., 2017; Peters et al., 2019). It is believed that the level of self-efficacy may vary based on the physical and psychological support married individuals receive from their spouses, potentially leading to a positive impact on their self-efficacy levels.

CONCLUSION

This study found that individuals' adaptation to chronic diseases was above average, while their self-efficacy levels were below average. Furthermore, as individuals' adaptation to chronic diseases increased, their self-efficacy also increased. Those who were married, had a higher level of education, were employed, had a good income, lived in larger families and urban areas, and had two chronic diseases exhibited higher adaptation to chronic disease. It was observed that singles and individuals

living in districts had higher self-efficacy levels. It is recommended that multicenter studies assessing the adaptation and self-efficacy of individuals with multiple chronic diseases should be conducted. Additionally, qualitative studies are suggested to examine individuals' adaptation to chronic diseases, self-efficacy, and influencing factors.

Limitations of The Study

The self-efficacy scores of the participants in the study may have been influenced by the higher average age of the individuals who participated. This can be considered as a limitation of the research.

Compliance with Ethical Statement

Ethical approval was obtained from the Necmettin Erbakan University Health Sciences Scientific Research Ethics Committee (decision number: 2022/302, date: 02.11.2022), and institutional permission was granted from the Necmettin Erbakan University Faculty of Medicine Hospital. Approval was also obtained via email from the authors of the scales used in the study. Before distributing the data collection forms, individuals who agreed to participate in the research were provided with information. Following this, verbal and written consent were obtained from the participants.

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Author Contributions
Plan, design: AG, GB**; Material, methods and data collection:** AG, GB**; Data analysis and comments:** AG, GB**; Writing and corrections:** AG, GB**.**

Conflict of interest
The Authors declare that there is no conflict of interest.

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