The Relationship of Type D Personality to Herbal Product Use and Asthma Control in Asthma Patients[*]

Astım Hastalarında D Tipi Kişiliğin Bitkisel Ürün Kullanımı ve Astım Kontrolü ile İlişkisi

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ABSTRACT

Aim: The aim of this descriptive study was to determine the correlation of type D personality with Herbal Product (HP) use and asthma control in asthma patients.

Method: The target population of the study comprised all patients (n=408) who applied to the chest diseases clinic in a university hospital between 11/01/2019-11/03/2019 and were diagnosed with asthma, while the sample comprised patients above 18 years old who applied to the clinic between the afore mentioned dates, had no communication problems, were not diagnosed with any psychiatric disorders, and agreed to take part in the study (n=216). The study data was collected using a 17-item survey form questioning the patients' sociodemographic and HP use characteristics, the Type D-14 Personality Scale (DS-14) and Asthma Control Test.

Findings: Of the asthma patients, 74.1% has been using HP for the past year and nearly half of them (58.3%) had type D personality. The HP use ratio was higher in the patients with better income (p=0.000), an additional chronic illness (p=0.001), type D personality (p=0.000) and a poor asthma control (p=0.000). The presence of an additional chronic illness and type D personality predicted 0.063% of the HP use (R2=0.063, p=0.000). The patients with type D personality were mostly housewives, had smoking habit, used 2-3 inhalers and had a poor asthma control (p<0.05).

Conclusion: Most of the asthma patients (74.1%) used HP and nearly half of them (58.3%) had type D personality. The patients who used HP and had type D personality had a poor asthma control.

Keywords: Asthma, asthma control, complementary and alternative medicine, herbal product, type D personality

ÖZ

Amaç: Bu tanımlayıcı çalışmanın amacı, astım hastalarında D tipi kişiliğin Bitkisel Ürün (HP) kullanımı ve astım kontrolü ile ilişkisini belirlemektir.

Yöntem: Araştırmanın evrenini 11/01/2019-11/03/2019 tarihleri arasında bir üniversite hastanesi göğüs hastalıkları polikliniğine başvuran astım hastalığı tanısı almış tüm hastalar (n=408) örneklemini ise belirtilen tarihlerde bu polikliniğe başvuran, 18 yaş üstü, iletişim sorunu ve herhangi bir psikiyatrik bozukluk tanısı olmamış, çalışmaya katılmayı kabul eden (n=216) hastalar oluşturmuştur. Araştırma verileri hastaların sosyodemografik ve HP kullanım özelliklerini sorgulayan 17 maddeden oluşan anket formu, D-14 Kişilik Tipi Ölçeği (DS-14) ve Astım Kontrol Testi ile toplanmıştır.

Bulgular: Astım hastalarının %74,1'i son bir yıldır HP kullanmaktadır ve hastaların yaklaşık yarısı (%58,3) D tipi kişiliğe sahiptir. Gelir düzeyi yüksek olanlar (p=0,000), ek bir kronik hastalığı olanlar (p=0,001), D tipi kişiliğe sahip olanlar (p=0,000) ve hastalığı kontrol altına alınamayanlar (p=0,000) daha fazla HP kullanmaktadır. Ek bir kronik hastalık varlığı ve D tipi kişiliğe sahip olma durumu HP kullanımında %0,063 belirleyicidir. (R2=0,063, p=0,000) D tipi kişiliğe sahip olan hastaların ev hanımı oldukları, sigara içtikleri, 2-3 inhaler kullandıkları ve astım kontrolünün kötü olduğu bulunmuştur (p<0,05).

Sonuç: Astım hastalarının çoğunluğu (%74,1) HP kullanmakta olup, yaklaşık yarısı (%58,3) D tipi kişiliğe sahiptir. HP kullananların ve D tipi kişiliğe sahip olanların astım kontrolü iyi değildir.

Anahtar Kelimeler: Astım, astım kontrolü, tamamlayıcı ve alternatif tıp, bitkisel ürün, D tipi kişilik

Introduction

Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation. It's defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary overtime and in intensity, together with variable expiratory airflow limitation.[1] Symptom reduction medication for controlling bronchospasms in the airways and controlling medication that requires long term use and manages asthma through their anti-inflammatory effects are used in the treatment of asthma.[2]

Asthma patients seek natural treatments with no long term side effects for their chronic illness. The high cost of current asthma treatments, patients' desire to feel better, dissatisfaction with the methods of modern medicine, and the toxicities of inhaled corticosteroids have increased the demand for complementary and alternative medicine (CAM) methods.[3,4] In a study conducted by the National Asthma Campaign, 60% of individuals with moderate asthma and 70% of individuals with severe asthma were reported to use CAM methods to support their treatments.[5] CAM methods include natural products (such as herbal products, vitamins and minerals, and probiotics) and mind and body practices (such as yoga, chiropractic and osteopathic manipulation, meditation, acupuncture, relaxation techniques and breathing techniques). Natural products are widely marketed, readily available to consumers, and often sold as "dietary supplements". However, natural products are among the most widely used CAM methods in asthma. However, asthma patients are mostly unaware that CAM methods can hinder their current asthma treatments or interact with their asthma medication.[5,6] Also, psychological factors such as stress and anxiety cause worsening in symptoms in asthma patients. Especially stress has been reported to be an important factor that predisposes individuals to asthma or causes worsening in symptoms.[7]

The intense stress experienced in type D behavior, also named the stress personality, can trigger dyspnea crises in individuals with hyperreactivity.[8] In individuals with type D personality, also known as distressed personality, negative affect and social introversion are at the forefront and individuals with negative affect have been reported to usually be in a depressive mood, experience anxiety and stress, exhibit more physical symptoms, feel well less, and feel suppressed more.[7,8] Although the underlying mechanisms are not clear, stress is assumed to increase inflammatory effect, change the function of immune cells, and increase sensitivity to infectious and systemic diseases.[7] Therefore, type D personality can trigger stress in asthma patients, increase symptom severity, and negatively affect quality of life. And type D personality can negatively affect the management of the disease and treatment in asthma patients.

Therefore, both the type D personality and the use of herbal products may adversely affect the compliance with treatment and asthma control in patients with asthma. There are no studies in the literature examining the relationship between type D personality, HP use and asthma control in asthma patients. This study was thus planned to determine the relationship of type D personality characteristics to HP use and asthma control in asthma patients.

Materials and Methods

Design, Setting, and Sample

This descriptive and cross-sectional study was performed with patients presenting at the chest diseases polyclinic of a university hospital who were diagnosed with asthma. The population of the study consisted of all of the patients diagnosed with asthma presenting at the chest diseases clinic of the 408 patients who applied to a university hospital chest diseases outpatient clinic between 11/01/2019-11/03/2019, there were 228 patients who were diagnosed with asthma, over 18 years of age, without communication

problems and without any psychiatric disorders. The sample of the study consisted of 216 (94.7%) of these 228 patients who agreed to participate in the study.

Data collection

Data was collected using a 17-item questionnaire regarding the sociodemographic and HP usage characteristics of the patients and HP's used together with medical treatments for asthma in the last year, and certain medical characteristics (such as disease duration, additional chronic disease, medication, use inhaler, type of inhaler and duration, asthma severity and asthma control, number of attacks), and the Type D Personality Scale (DS-14), and the Asthma Control Test. The DS-14 is a 4-point Likert type scale developed by Denolett specifically to evaluate type D personality and has 14 items.[9] It consists of two 7-item subscales, namely negative emotions, and social inhibition. Total subscale scores range between 0 and 28. The cut-off point for both subscales is ≥10. The Turkish validity and reliability study of the scale was performed by Alçelik et al.[10] The Cronbach alpha coefficient of the scale was found to be 0.85 in the current study.

The Asthma Control Test (ACT) is a widely used test that evaluates the course of asthma and can be easily administered to asthma patients and their relatives. The test was developed by Nathan et al. and tested for validity and reliability in Turkish by Uysal et al.[11,12] The ACT consists of 5 items each scored by the patients between 1 and 5. A total score of 25 is interpreted as full control, a score between 24 and 20 is interpreted as partial control, and a score of ≤19 is indicative of uncontrolled asthma. This classification reflects the efficacy of treatments. The aim of treatment is to achieve full control. The Cronbach alpha coefficient of the ACT was found to be 0.77 in the current study.

Ethical Considerations

Before the study, written permission dated 09 January 2019 with the protocol number 2019-08-09/01 was taken from a University Human Research Board of Ethics.

Each patient was informed about the study and written consent was taken from the patients.

The study protocol conforms to the ethical guidelines of the 1975 Declaration of Helsinki as reflected in a priori approval by the institution's human research committee.

Statistical Analysis

Data was analyzed using the SPSS 16.0 program. Data was tested for normality by calculating skewness and kurtosis. Data was analyzed using percentages, mean values, standard deviation, chi-square test, the t-test and linear regression analysis. It was choosen as significant relationships between dependent variable and independent variable in linear regression analysis.

Results

The comparison of HP use among asthma patients according to sociodemographic characteristics (such as gender, mean age, education and marital status, occupation, level of education and income) certain medical characteristics (such as disease duration, additional chronic disease, medication, use inhaler, number of inhalers, and asthma control, number of attacks), and status regarding Type D personality was given in *Table 1*.

Table 1. The Comparison of HP Use among Asthma Patients According to Socio-demographic Characteristics, Certain Medical Characteristics, and Status Regarding Type D Personality (n=216)

Variables	HP not used (n=56-%25.9)	HP used (n=160-%74.1)	p
Age (years)			0.77
18-39	31(26.7)	85(73.3)	
40 and above	25(25.0)	75(75.0)	
Gender			0.72
Male	13(24.1)	41(75.9)	
Female	43(26.5)	119(73.5)	
Marital status			
Married	23(24.0)	73(76.0)	0.55
Single	33(27.5)	87(72.5)	
Level of Education			
Uneducated	6(20.7)	23(79.3)	0.82
Elementary	18(26.5)	50(73.5)	
High school	8(22.9)	27(77.1)	
Bachelor's and above	24(28.6)	60(71.4)	
Level of income			**0.001$^\mp$**
Poor	15(37.5)	25(62.5)	
Moderate	17(38.6)	27(61.4)	
Good	24(18.2)	108(81.8)	
Occupation			0.22
Officer	1(6.7)	14(93.3)	
Retired	5(21.7)	18(78.3)	
Laborer	4(20.0)	16(80.0)	
Self employed	2(16.7)	10(83.3)	
Housewife	16(25.0)	48(75.0)	
Student	28(34.1)	54(65.9)	
Smoking status			
No	44(25.9)	126(74.1)	0.98
Yes	12(26.1)	34(73.9)	
Disease duration			
1-5 years	25(30.5)	57(69.5)	0.61
6-10 years	16(25.0)	48(75.0)	
11-16 years	7(25.0)	21(75.0)	
17 years and above	8(19.5)	33(80.5)	
Additional chronic disease			**0.001$^\mp$**
Yes	23(19.0)	98(81.0)	
No	33(34.7)	62(65.3)	
Number of attacks in last year			
0-5 attacks	145(74.0)	51(26.0)	0.96
6-10 attacks	10(76.9)	3(23.1)	
11 and above	5(71.4)	2(28.6)	
Regular medication			
Yes	23(24.5)	71(75.5)	0.66
No	33(27.0)	89(73.0)	
Number of inhalers			
0-2	26(25.5)	76(74.5)	0.94
2-4	30(48.9)	84(73.3)	
Type D personality	39(69.6)	87(54.4)	**0.001$^\mp$**
Non Type D personality	17(30.4)	73(45.6)	
Uncontrolled asthma	35(62.5)	119(74.4)	**0.001$^\mp$**
Controlled asthma	21(37.5)	41(25.6)	

*p <0.05; **p <0.001; $^\mp$ chi-square test

The majority of patients (74.1%) used HP. Patients with higher income (p=0.000), additional chronic disease (p=0.001), type D personality (p=0.000), and uncontrolled asthma (p=0.000) used HP at higher rates.

Income level, the presence of an additional chronic disease, type D personality, and asthma control were found to affect HP use among asthma patients. In linear regression analysis, the presence of a chronic disease and having type D personality were found to predict HP use (R^2=0.063, p=0.000) (***Table 2***).

Table 2. The Examination of HP Use through Linear Regression Analysis According to Socio-demographic Characteristics, Certain Clinical Characteristics, and Status Regarding Type D personality (n=216)

HP use				
	B	Beta	t	p
Constant	0.881		5.892	0.000
Income level	-0.021	-0.030	-0.445	0.656
Additional chronic disease	0.147	0.166	0.433	**0.001**
Asthma control status	0.097	0.100	1.451	0.148
Type D personality	0.143	0.161	2.393	**0.001**
R= 0.252 R²= 0.063 F= 3.576	**p=0.000**			

R= Regression coefficient

The distribution of the mean Type D Personality Inventory (D-14) and Asthma Control Test scores of the asthma patients were given in *Table 3*. The mean D-14 score of the patients was 27.93±8.16, and 58.3% of the patients had type D personality. The mean Asthma Control Test score of the patients was 16.37±3.65, and their illnesses were found to be not under control.

Table 3. The Distribution of the Mean Type D Personality Inventory (D-14) and Asthma Control Test Scores of the Asthma Patients (n=216)

Scales	Mean scores
Asthma control test mean score	16.37±3.65
DS-14	27.93±8.16.
Social inhibition	14.31±3.84
Negative affect	13.62±5.82

The sociodemographic and clinical characteristics of patients with and without type D personality were given in *Table 4*. There was a statistically significant difference between patients with and without type D personality with regard to occupation (p<0.04), smoking status (p<0.04), number of inhalers used (p<0.0001), and asthma control (p<0.0001). Patients with type D personality were found to be mostly housewives and smokers, use 2 or 3 inhalers, and have poor asthma control (p<0.05). No statistically significant difference between patients with and without type D personality could be found with regard to age, sex, marital status, educational level, income level, disease duration, presence of an additional chronic disease (such as heart diseases, cancer, diabetes mellitus, arthritis, rheumatic diseases, thyroid disease, anemia) number of attacks within the last year, and regular medication use (p>0.05).

Table 4. The Comparison of the Socio Demographic and Certain Clinical Characteristics of Patients with and without Type D Personality (n=216)

Variables	Non type D personality (n=90)	Type D personality (n=126)	p
Age (years)			
18-39	51(56.7)	65(51.6)	0.46
40 and above	39(43.3)	61(48.4)	
Gender			
Male	26(28.9)	28(22.2)	0.26
Female	64(71.1)	98(77.2)	
Marital status			
Married	37(41.1)	59(46.8)	0.40
Single	53(58.9)	67(53.2)	
Education			
Uneducated	12(13.3)	17(13.5)	0.36
Elementary	24(26.7)	44(34.9)	
High school	13(14.4)	22(17.5)	
Bachelor's and above	41(45.6)	43(34.1)	

Level of income	12(13.3)	26(20.6)	0.22
Poor	60(66.7)	72(57.1)	
Moderate	18(20.0)	28(22.2)	
Good			
Occupation			
Officer	7(7.8)	8(6.3)	**0.04** ᵀ
Retired	11 (12.2)	12 (9.5)	
Laborer	11 (12.2)	9 (7.1)	
Self employed	3 (3.3)	9 (7.1)	
Housewife	18 (20.0)	46-(36.5)	
Student	40 (44.4)	42-(33.3)	
Smoking status			
No	76(84.4)	94(74.6)	**0.04** ᵀ
Yes	14(15.6)	**32(25.4)**	
Disease duration			
1-5 years	35(38.9)	47(37.6)	0.86
6-10 years	27(30.0)	37(29.6)	
11-16 years	13(14.4)	15(12.0)	
17 years and above	15(16.7)	26(20.8)	
Additional chronic disease			
Yes	47(52.2)	74(58.7)	0.34
No	43(47.8)	52(41.3)	
Number of attacks in last year			
0-5 attacks	83(92.2)	113(89.7)	0.74
6-10 attacks	5(5.6)	8(6.3)	
11 ve and above	2(2.2)	5(4.0)	
Regular medication			0.43
Yes	42(46.7)	52(41.3)	
No	48(53.3)	74(58.7)	
Number of inhalers			
0-1	50(55.6)	52(41.3)	**0.000** ᵀ
2-4	40(54.4)	74(58.7)	
Uncontrolled asthma	58(64.4)	96(76.2)	**0.000** ᵀ
Controlled asthma	32(35.6)	30(23.8)	

*p <0.05; **p <0.001; ᵀ chi-square test

The occupation, smoking status, number of inhalers used, and asthma control variables were found to predict type D personality among asthma patients. In linear regression analysis, number of inhalers used and asthma control were found to significantly predict type D personality (R^2=0.070, p=0.000) (***Table 5***).

Table 5. The Examination of Status Regarding Type D Personality According to Socio demographic and Certain Clinical Characteristics Through Linear Regression Analysis (n=216)

Status Regarding Type D personality				
	B	Beta	t	p
Constant	0.166		0.814	0.417
Occupation	0.022	0.073	1.024	0.307
Smoking status	0.064	0.106	1.538	0.125
Number of inhalers	0.124	0.144	2.082	**0.03**
Asthma control	0.156	0.125	2.043	**0.04**
R= 0.264 R^2= 0.070 F= 3.155 **p=0.000**				

R= Regression coefficient

Discussion

In the current study, it was found that 74.1% of the asthma patients used HP, while patients with higher income (p=0.000), additional chronic disease (p=0.001), type D personality (p=0.000), and poor asthma control (p=0.000) used HP at higher rates. In linear regression analysis, the presence of a chronic disease and having type D personality were found predict HP use.

In a systematical review conducted by Slader et al., asthma patients were reported to use CAM methods with rates varying between 4-79% and preferred herbal products with rates varying between 21-31%. In a study by Ng et al., asthma patients were reported to use CAM methods at a rate of 27.2% and preferred herbal products with a rate of 10%.[4,6] However, in our study, we found the rate of herbal product use to be much higher than reported in literature (74.1%). Similarly, in different studies conducted in our country with asthma patients, the rates of herbal product and dietary supplements use were reported to be between 31% and 67%.[13,15] The rate of HP use may be higher in Turkey due to geographical differences.

In the current study, we determined that patients with higher income or an additional chronic disease used HP at higher rates. In a systematical review by Slader et al. and in other studies conducted with different samples, asthma patients with better income or an additional chronic disease were found to prefer HP at higher rates, which is similar to our findings.[3,6,16,17] However, asthma patients are mostly unaware that CAM methods can hinder their current asthma treatments or interact with their asthma medication.[18] We also found that the asthma control of patients using HP were inadequate. In parallel to our findings, Kurt et al. reported that 41.2% of asthma patients stopped taking their medication while using CAM methods, and poor asthma management among patients using CAM methods were reported in various studies performed with children and adults with asthma.[4,13,14,19-21] The patients may have preferred herbal products and dietary supplements to protect themselves from the side effects of medication or because of the benefits of these medications becoming evident in the long term. Due to these reasons, the asthma control of the patients using herbal products may have deteriorated.

Thus, patients presenting at the clinic should be informed that they should use their medication regularly, that they will experience benefits of medication in long term use, and that starting to use HP by discontinuing their medication may increase asthma complaints and make disease management more difficult.

In the current study, patients with type D personality were found to use HP at higher rates. No studies on type D personality and the use of CAM methods among asthma patients could be found in the literature. In this context, this study can guide other studies. In individuals with type D personality, which is defined as stressful personality, depressive affect, anger, anxiety, fewer connections to other people, tension, and unhappiness are prominent.[10,22] These psychological factors are associated with asthma symptoms and thus, patients may be using CAM methods to cope with these psychological symptoms. In a study conducted by Erdoğan and Kurçer, IBS patients were found to prefer dietary supplements to cope with gastrointestinal symptoms and patients who used CAM methods were found to feel more hopeful.[16] In a similar vein, the patients with type D personality in our study may be preferring CAM methods to feel themselves better. However, it is difficult to make a certain conclusion with our findings. Thus, more studies examining the effect of type D personality on prevalent HP use in asthma patients are needed.

In the current study, 58.3% of the asthma patients were found to have type D personality. In a study conducted by Kim et al. with asthma patients, this rate was reported to be 32.7%. In studies conducted with different disease and sample groups, the prevalence of type D personality has been reported in varying rates (31%, 38.5% in healthy young adults in England, and 59%).[23,24] When it is considered that approximately half of our sample group had type D personality, future studies investigating type D personality among asthma patients is needed. In the current study, patients with type D personality were mostly housewives, were smokers, used 2-4 inhalers, and had poor asthma control. In linear regression analysis, number of inhalers used and asthma control were found significantly predict type D personality (R^2=0.070, p=0.000)

In parallel to our study, Kim et al. found that patients with type D personality had a higher number of oral medication, and that type D personality was not affected by age, sex, and marital status. However, in our study, type D personality was found to be more prevalent among housewives. In studies evaluating type D personality and sex differences, Kupper et al. found type D personality to be more prevalent among female patients with heart disease, and in another study conducted with female patients with ulcerative colitis, approximately half (59%) of the patients were found to have type D personality, all suggesting a predilection for type D personality among females.[25,26] Two other studies reporting poorer health among housewives compared to employed females also supports our finding.[27,28] In the current study, patients with type D personality were found to use inhalers more and to have poorer asthma control than patients who did not have type D personality. The patients with type D personality may be using more inhalers because of their poorer asthma control. Kim et al. and Witusik et al. also reported poorer asthma control in patients with type D personality.[7,8]

In the current study, patients with type D personality were found to use tobacco at higher rates compared to patients who did not at a statistically significant level. In another study performed with a different disease group where the effect of type D personality on smoking status after myocardial infarction was examined, patients without type D personality were found to have greater rates of quitting smoking compared to patients with type D personality.[29] Type D personality is characterized by a predilection to increased negative affect and the suppression of such affect in social environments however, it is still not clear which mechanisms are related to negative clinical outcomes. These mechanisms include both physiological and behavioral factors and the most prominent behavioral connection may be the failure to modify risk factors (e.g. quitting smoking).[29] This may be the reason behind patients with type D personality using tobacco at higher rates. This finding implies that type D personality may be one of the barriers to smoking cessation not only in asthma patients but also in healthy individuals.

Avoiding social environments, which is another characteristic of type D personality, may retain patients from referring to a physician, and these patients may be using HP because of the ease of accessing them. It is important that news coverage of health issues is of high quality as there is substantial evidence of a link between health news reports and health behaviour. As attempts continue to generate knowledge on the efficacy and safety of CAM the media has a crucial role in communicating that information to the public.[30] Additionally, studies on CAM methods stress that mass communication devices (TV, radio, Internet) play an important role in the acquisition of knowledge regarding CAM methods. In the current study, housewives having higher levels of type D personality and easier access to tabloidized TV news on miracle herbs as well as the consumption of certain herbs becoming "fashionable" through the effect of mass communication may have contributed to increased rates of herb use among the patients.[3,31]

Conclusion

In the current study, the majority of asthma patients (74.1%) were found to use HP and approximately half (58.3%) were found to have type D personality. Patients with higher income, additional chronic disease, and poor asthma control were found to prefer HP more. The presence of an additional chronic disease and type D personality were found to significantly predict HP use. Additionally, patients with type D personality were found to use 2-4 inhalers and have poor asthma control and these two variables significantly predicted having type D personality.

Asthma patients are mostly unaware that CAM methods can hinder their current asthma treatments or interact with their asthma medication.[18] In the current study, it was found that HP use was prevalent and that the asthma patients, half of whom had type D personality, had poor asthma control and thus used

more inhalers. Because the survey is easy to complete and calculate, if there are no time constraints, patients presenting at the clinics should be questioned with regard to type D personality and HP use, and patients with type D personality should be informed that the effect of asthma medication will emerge in the long term with regular use. Since HP may interact with medications used, health personnel should improve their knowledge on the subject with evidence-based information and guide patients accordingly. Unconscious and hidden HP use should be prevented. Especially, symptoms can thus be controlled in asthma patients with type D personality.

Acknowledgement

Ethical Approval

In this study, national and international ethical rules are observed. Before the study, written permission dated 10 January, 2018 with the protocol number 93-28/03 was taken from a University Clinical Research Board of Ethics.

Researcher contribution rate statement

Zeynep Erdoğan: Idea, design, data collection and processing, analysis and interpretation, literature review, article writing, critical review.
Mehmet Ali Kurtçer: Design, supervision/consultancy, analysis and comment, critical review.
Bülent Altınsoy: Supervision, data collection and processing, critical review.

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