

THE RELATIONSHIP BETWEEN ANOREXIA OF AGING AND PERSONALITY CHARACTERISTICS IN OLDER INDIVIDUALS WITH CHRONIC DISEASE

KRONİK HASTALIĞI OLAN YAŞLI BİREYLERDE YAŞLANMA ANOREKSİSİ VE KİŞİLİK ÖZELLİKLERİ ARASINDAKİ İLİŞKİ

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ABSTRACT

Aim: This study aimed to evaluate the relationship between anorexia of aging measured using nutrition-appetite and personality traits in older individuals with chronic diseases.

Materials and Methods: This descriptive, cross-sectional design study was conducted with 310 participants aged over 65 years with at least one chronic disease. The Simplified Nutritional Appetite Questionnaire and the Short-Form Five-Factor Personality Inventory were administered to all participants. The relationship between nutrition-appetite and personality traits was evaluated using Spearman's correlation analysis.

Results: The mean age of the participants was 76.36 ± 14.14 (min= 65 – max= 92) years, and 51% (n= 158) were male. A significant positive relationship was found between nutrition-appetite and extraversion and agreeableness ($r= 0.678$, $p < 0.001$ and $r= 0.276$, $p= 0.013$, respectively), and a negative significant relationship was found between conscientiousness and neuroticism ($r= -0.525$, $p= 0.002$ and $r= -0.344$, $p= 0.005$, respectively).

Conclusion: In this study, in which the relationship between personality traits and anorexia of aging in older individuals with chronic diseases was evaluated, a positive relationship was found between nutrition-appetite and extraversion and agreeableness, and a negative relationship was found between conscientiousness and neuroticism. Determination of personality traits as a part of the multidimensional assessment of the elderly may help to identify risky groups for anorexia of aging and to organize training programs suitable for temperament.

Keywords: Aging, Anorexia, Appetite, Extraversion, Neuroticism, Personality.

ÖZET

Amaç: Bu çalışmanın amacı kronik hastalığı olan yaşlı bireylerde beslenme-iştah ile ölçülen yaşlanma anoreksisi ile kişilik özellikleri arasındaki ilişkiyi değerlendirmektir.

Yöntem: Tanımlayıcı, kesitsel tasarım tipinde olan bu çalışma 65 yaş üstü en az bir kronik hastalığı olan 310 katılımcı ile yapılmıştır. Tüm katılımcılara Basitleştirilmiş Beslenme İştah Anketi ve Kısa-Form Beş-Faktör Kişilik Envanteri anketleri uygulanmıştır. Beslenme-iştah ile kişilik özellikleri arasındaki ilişki Spearman korelasyon analizi ile değerlendirilmiştir.

Bulgular: Katılımcıların yaş ortalaması 76.36 ± 14.14 (min= 65 – max= 92), olup %51'i (n= 158) erkekti. Beslenme-iştah ile dışadönüklük ve uyumluluk arasında pozitif yönlü anlamlı bir ilişki saptanırken (sırasıyla $r= 0.678$, $p < 0.001$ ve $r= 0.276$, $p= 0.013$), vicdanlılık ve nevroitiklik arasında negatif yönlü anlamlı bir ilişki olduğu belirlendi (sırasıyla $r= -0.525$, $p= 0.002$; $r= -0.344$, $p= 0.005$)

Sonuç: Kronik hastalığı olan yaşlı bireylerde kişilik özellikleri ile yaşlanma anoreksisi arasındaki ilişkinin değerlendirildiği bu çalışmada, beslenme-iştah ile dışadönüklük ve uyumluluk arasında pozitif yönlü, vicdanlılık ve nevroitiklik arasında negatif yönlü bir ilişki saptanmıştır. Yaşlılarda çok yönlü değerlendirmenin bir parçası olarak kişilik özelliklerinin belirlenmesi yaşlanma anoreksisi açısından riskli grupları belirlemeye ve mizaca uygun eğitim programları düzenlemeye yardımcı olabilir.

Anahtar kelimeler: Anoreksi, Dışadönüklük, İştah, Kişilik, Nevrotiklik, Yaşlanma.

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INTRODUCTION

The older population is increasing all over the world and it is estimated that the number of individuals aged over 65 years will reach 1.5 billion in the next three decades (Nations et al., n.d.). Older individuals constitute a frail population because they have multiple comorbidities, decreased homeostatic reserves, and are prone to geriatric syndromes (Somagutta et al., 2022). It is important to evaluate the effective factors in the care of older individuals because this situation leads to a decrease in the quality of life in society, significant disability rates, and increased health expenditures (Elia et al., 2016).

Anorexia of aging (AA) refers to age-related loss of appetite and malnutrition (Landi et al., 2016). Loss of appetite in older individuals, due to insufficient fluid and nutrient intake, aggravates sarcopenia, accelerates age-related functional and cognitive losses, and causes various disabilities and emergencies (Banda et al., 2021; Rolf et al., 2022; Shiba et al., 2022). The worldwide prevalence of AA is 20-30% (Cox et al., 2020) and this rate is even higher in individuals with comorbidities (Malafarina et al., 2013). Unfortunately, AA is an independent risk factor for mortality (Malafarina et al., 2013).

There are three components of AA: physiological, psychosocial, and medical (Malafarina et al., 2013). It is recommended to analyze the physical, social, and psychological characteristics of individuals in the evaluation of nutritional risk factors in the elderly. The relationship between malnutrition and comorbidities is well known, and various physiologic mechanisms associated with malnutrition have been described and are still under investigation. The psychosocial aspects of malnutrition are multidimensional and it is important to investigate each area in particular.

It has been reported that personality traits should be a part of healthcare in older individuals (Yoshida et al., 2022). Personality traits are defined as the dimensions of individual differences in the tendency to show consistent thought, emotion, and action patterns (McCrae, R. R., Costa, 2008). According to the five-factor theory of personality, there are five strong factors related to individual characteristics: extraversion, agreeableness, conscientiousness, neuroticism, and openness to intellect (Goldberg, 1990). It has been shown that personality studies can be conducted within the framework of these five factors and that these five features can be used to score behavioral variables (Goldberg, 1993). The lifestyles, ways of thinking, habits, and comorbidities of older individuals interact with their personality traits in a bidirectional manner. Therefore, it is thought that there is a relationship between personality traits and AA. There is no study in the literature investigating the relationship between personality traits and AA.

This study aimed to evaluate the relationship between AA and personality traits in older individuals with comorbidities. We hypothesized that nutrition-appetite and personality traits were related. Identifying personality traits in older individuals with comorbidities will help identify risky groups in terms of anorexia, and help establish care approaches based on psychosocial assessment in the elderly.

MATERIALS AND METHODS

Study Design

This descriptive, cross-sectional design study was conducted between June 2nd, 2022, and August, 1st, 2022, at Istanbul Sultan Abdulhamid Han Training and Research Hospital.

Sample and Participants

Individuals who met the inclusion criteria were invited to enroll in the study. The inclusion criteria were as follows: age 65 years or older, volunteering to participate in the study, being conscious and having no communication problems, being literate, having a Charlson Comorbidity Index score of 1 or higher and/or having a diagnosis of hypertension, and having an oral diet. Exclusion criteria were as follows: oropharyngeal dysphagia, the presence of neurologic or muscular disease preventing swallowing, being fed with a nasogastric tube, having percutaneous endoscopic gastrostomy or undergoing intravenous nutrition, using drugs that affect appetite (corticosteroid, cancer chemotherapy, digoxin, opioids, serotonin reuptake inhibitors, topiramate), using appetite stimulants (megestrol acetate, dronabinol, mirtazapine, growth hormone secretagogues), having active cancer (past cancer history not included), having major neuro-psychiatric disease (e.g. Alzheimer's, dementia, major depression, mania, psychosis), the presence of acute infection, and not having sufficient communication skills (Mini-Mental State Examination score below 24 points).

The number of samples was calculated using the G*Power 3.1 program by performing power analysis. As a result of the literature search for the effect size of the study, the total sample number was determined as 250 individuals as a result of the power analysis of 0.89 at an error level of 0.05 (alpha)

(Adıgüzel & Tek, 2018). Considering that there might be losses, 320 individuals were included in the sample. Ten individuals were excluded from the study because they could not complete the questionnaires. The study was completed with 310 individuals.

Procedure

Approval was obtained from the University Ethics Committee (approval number: 2022/0347, approval date: 01.06.2022) before the study commenced. Those who wanted to participate in the study were informed about the study objectives, procedures, and data privacy, and they were told that participation was optional and that they could withdraw from the study at any time. Individuals read and approved the consent forms. The study was conducted in compliance with the “Ethical principles for medical research involving human subjects” of the Helsinki Declaration. The study was registered in the Protocol Registration and Results System (Clinicaltrials.gov PRS) (registration number: NCT05418270). This cohort study was reported in adherence to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.

Data Collection

A questionnaire was administered to all participants by the researchers either in person or by telephone interview. Data were collected using the Descriptive Information Form created by the researchers, the Charlson Comorbidity Index (CCI), the Simplified Nutritional Appetite Questionnaire (SNAQ), and the Short-Form Five-Factor Personality Inventory.

Descriptive information form

The data collection form created by the researchers included questions about age, sex, height, and weight. The data about height and weight were obtained from the hospital records of the patients whose heights and weights were measured at the hospital visit in at least the last 1 month. If height and weight measurements were not made in the last hospital measurement, they were measured and recorded by the researchers.

Charlson comorbidity index

The CCI score system is a mortality indicator that was created by Charlson et al. in 1987 to estimate mortality by classifying comorbid disease states and measuring their severity (Charlson et al., 1987). The index includes 19 medical conditions scored between 1 and 6, and the total score ranges from 0 to 37. The scores resulting from the scored conditions are used to obtain the comorbidity score in medical research. Hypertension, which is common in older individuals, is not included in this index. In our study, in addition to the diseases in the CCI, the presence of hypertension was also questioned. The presence of hypertension was scored 1 and it was added to the CCI score to form the total comorbidity index (TCI) score.

Simplified nutritional appetite questionnaire

Anorexia of aging is defined by a decrease in appetite and/or food intake in older individuals. For this reason, the nutritional and appetite status of the patients were evaluated using SNAQ. This questionnaire consists of four questions and each question has five options. In the evaluation, each option is scored between 1-5 and the total score range is 4-25. In line with the answers given by the individual, those with a total score of 14 or less had a risk of losing 5% of their body weight within six months (Wilson et al., 2005).

Short-Form Five-Factor Personality Inventory

The Five-Factor Personality Inventory was developed by John, Donahue, and Kentle. It is easy to apply, short, and suitable for common use in various languages and cultures (John et al., n.d.). The scale is a five-point Likert type scale that consists of a total of 44 items including extraversion measured with eight items (sample item: I define myself as a talkative person), agreeableness measured with nine items (sample item: I define myself as someone with a forgiving nature), conscientiousness measured with nine items (sample item: I describe myself as a person who does their job well), neuroticism (sample item: I define myself as a depressed, melancholic person) measured with eight items, and openness to intellect – also called openness – (sample item: I define myself as a person with high imagination) measured with 10 items.

Statistical Analysis

The characteristics of the patients included in the study are shown using descriptive statistics such as percentage, mean, standard deviation, and minimum and maximum values. The mean standard deviation was used in the evaluation of the scales and Cronbach’s alpha value was used in the calculation of the reliability coefficient. Spearman’s correlation analysis was tested because the relationships between

numerical variables were not met in the parametric test condition. The statistical alpha significance level in the obtained results was evaluated as $p < 0.05$.

RESULTS

The mean age of the 310 older individuals participating in the study was 76.36 ± 14.14 (min= 65 – max= 92) years, and 51% (n= 158) were male. The mean body mass index (BMI) of the women was 24.8 ± 3.2 (min= 19.1- max= 41) kg/m^2 and that of men was 22.1 ± 1.32 (min= 18.9 – max= 35) kg/m^2 .

Cronbach's alpha, and mean and standard deviation values of the TCI, SNAQ, and sub-dimensions of the Short-Form Five-Factor Personality Inventory are given in Table 1.

Table 1. Cronbach Alpha Values and Mean Scores of The Scales

	Cronbach Alpha	Mean \pm SD
Toplam Comorbidity Index	0.85	7,69 \pm 2.39
Simplified Nutritional Appetite Questionnaire	0.79	12.57 \pm 4,13
Five-Factor Personality Inventory	Cronbach Alpha	Mean \pm SD
Extraversion	0.78	3,44 \pm 1.58
Agreeableness	0.79	3,78 \pm 0.78
Conscientiousness	0.86	3,87 \pm 1.58
Neuroticism	0.82	2,54 \pm 0.72
Openness to Intellect	0.75	4,01 \pm 2.45

A statistically significant negative correlation was found between the TCI and SNAQ score ($r = -0.765$, $p = 0.005$). The relationship between the SNAQ and the sub-dimensions of the Short-Form Five-Factor Personality Inventory is shown in Table 2.

Table 2. The Relationship Between The Simplified Nutrition Appetite Questionnaire and The Five Factor Personality Inventory Sub-Dimensions

Five-Factor Personality Inventory	R	p
Extraversion	0,678	<0.001
Agreeableness	0,276	0,013
Conscientiousness	-0,525	0,002
Neuroticism	-0,344	0,005
Openness to Intellect	0,125	0,29

Spearman correlation analysis was used.

DISCUSSION

In this study, in which the relationship between personality traits and AA in older individuals with chronic diseases was evaluated, a positive relationship was found between nutrition-appetite and extraversion and agreeableness, and a negative relationship was determined between conscientiousness and neuroticism. Our findings highlight the importance of multidimensional psychosocial assessments in the elderly because nutrition-loss of appetite accompanying comorbidities in older individuals contribute to functional dependence, muscle weakness, and cognitive losses by causing AA. Our findings are valuable in terms of revealing the relationship between nutrition, loss of appetite, and personality traits because of the decrease in the quality of life seen in older people with a decreased appetite and malnutrition and the increase in the healthcare burden in society have become important public health problems in the last century. Management of frail and pre-frail older adults with a holistic care approach, including psychosocial support and nutrition education interventions, can reduce the risks of negative health outcomes. It is thought that our current findings will contribute scientifically to future public health initiatives in identifying risky groups and forming psychosocial support plans.

In our study, it was observed that there was a positive relationship between extraversion and nutrition-appetite. In the study of Intiful et al., extraversion was associated with food interest and neophobia (Intiful et al., 2019a). In a study comparing adults with eating disorders and healthy controls, individuals with eating disorders tended to avoid social gatherings and were less open to exploring emotions, ideas, or new activities (Levallius et al., 2015). Extraverted individuals show warm and social characteristics, and they do not eat just because they have to feed. This may explain the relationship between extraversion and AA in older individuals. In a study evaluating postoperative patients with

cancer, less extraversion and more neuroticism were found to be associated with more anorexia, asthenia, pain, and lower quality of life (Shigehisa & Honda, 2007).

In the study of Sutin and Terracciano, extraversion and openness were found to be associated with the application of healthier dietary patterns (Terracciano et al., 2009). Again, in the study of Sutin and Terracciano, it was suggested that there was a relationship between neuroticism and disordered eating (Terracciano et al., 2009). It was determined that positive emotions such as joy, warmth, and love were at a very low level and neuroticism was more common in individuals with eating disorders (Levallius et al., 2015). In a study conducted in Poland, a positive correlation was found between neuroticism and anorexia (Rymarczyk, 2021). In a study conducted on patients undergoing hemodialysis, neuroticism was found to be associated with depression and introversion, and it was stated that depression was a predictor of weight loss after dialysis (Markaki et al., 2019). Neuroticism was associated with difficulty in coping with diseases and poorer mental health-related quality of life (Pope et al., 2013). In the current study, an inverse relationship was found between neuroticism and nutrition-appetite in older individuals with chronic diseases. All these findings emphasize the need to pay special attention to nutrition in the care and follow-up of older individuals with neuroticism. Older individuals with neurotic personality traits constitute a risk group for AA. Neuroticism can be reduced with behavioral interventions specifically designed for temperament, and with selective serotonin reuptake inhibitors (Barlow et al., 2013). The fact that neuroticism, which is seen with depression, is seen together with difficulties in coping with diseases and lack of nutrition-appetite in the elderly, suggests that these individuals are candidates for behavioral and pharmacologic treatment.

In the current study conducted on older individuals with chronic diseases, findings supporting previous studies in terms of extraversion and neuroticism were reached, but no relationship was found between openness and nutrition-appetite. Unlike previous studies, our study included older individuals with chronic diseases. Openness is associated with higher life satisfaction, better memory function, and psychological well-being in the elderly (Gregory et al., 2010). However, no effect on nutrition-appetite was observed in the current study. Studies involving larger populations are needed in this area.

It was noteworthy that in our study, a negative relationship was found between conscientiousness and nutrition-appetite. In a cross-sectional study by Provencher that included overweight and obese women, conscientiousness was found to be positively associated with dietary restriction and control of food intake (Provencher et al., 2008). Studies conducted on adults showed that there was a negative relationship between conscientiousness and obesity (Lunn et al., 2014) and that conscientiousness played a protective role against obesity (Al Abdi et al., 2020). It was reported that young individuals with high conscientiousness characteristics showed healthy habits such as not smoking, limiting alcohol consumption, eating regularly, and getting enough sleep (Y. Kikuchi et al., 1999; Yuriko Kikuchi & Watanabe, 2000). It is thought that these individuals, who adopt recommendations for low-calorie dietary intake recommended in early adulthood, continue these habits in old age. Obesity is the most important problem of the last century because it causes cardiovascular mortality and morbidity in young individuals (Abdelal et al., 2017), and current recommendations focus on reducing obesity and limiting daily calorie intake (Blüher, 2019). Sarcopenia, frailty, cachexia, and malnutrition in old age lead to consequences such as limitation of movement, fracture, prolonged hospital stay, hospitalization, morbidity, and mortality (Gingrich et al., 2019). To prevent these geriatric syndromes, healthy and balanced nutrient intake should be provided. Individuals with conscientious personality traits are highly adaptable in applying health recommendations (Lunn et al., 2014). The negative relationship between conscientiousness and appetite in our study was thought to be due to inadequate diet education. Various guidelines have been published for healthy nutrition education in older individuals, but there are deficiencies in clinical practice (Lorbergs et al., 2022). Older individuals often have incomplete and incorrect information about balanced and adequate nutrient intake, so effective educational interventions should be planned (Teggart et al., 2022). Successful results will be obtained by providing diet training to older people with high conscientiousness.

In our study, a positive relationship was found between agreeableness and nutrition-appetite. Individuals with agreeableness are agreeable and helpful and get along well with others (Palnau et al., 2022). These people have a positive mental attitude, and their compliance with treatment and dietary recommendations given by the health personnel is high (Mierzyńska et al., 2021). They are open to variety in food and try new foods (Intiful et al., 2019b). These individuals constitute the group with the highest response to education in society. Dietary training will create significant changes in the habits of these individuals.

Limitations

There were many limitations of our study. The first was that the cross-sectional design limited inference about causality. The second was that the evaluation was made according to subjective psychological reports. Third, there was the possibility of response bias, which might arise from patients' efforts to present themselves to healthcare professionals as cooperative and compliant. Fourth, the study was conducted in a single center. The fact that the study was conducted in a single country population limited the generalization of the results. Fifth, reported eating habits could be affected by variables such as purchasing, access to food, ability to prepare food, availability of supportive individuals, socio-economic status, and disability. Sixth, only individuals with a cognitive level that could answer the questions participated in the survey. Seventh, although valid and reliable questionnaires were used, the questions did not include all factors related to clinical anorexia and personality. Finally, although the use of drugs that affect appetite was questioned, factors such as smoking; hormones; psychological, social, and cultural stimuli that could affect appetite were not evaluated.

CONCLUSION

In the literature, no other study evaluating the relationship between AA and personality traits in elderly individuals was found. It was determined that there was a positive relationship between nutrition-appetite and extraversion and agreeableness, and a negative relationship between conscientiousness and neuroticism. A multi-component approach to nutrition and appetite is required because older individuals are prone to multiple comorbidities and geriatric syndromes, and anorexia is one of the leading health problems. Interventions that encourage extraversion and agreeableness and reduce neuroticism should be planned in older individuals, and healthy nutrition recommendations should be made to older people of all personality types, especially to individuals with conscientiousness. Appropriate approaches should be provided, accepting the fact that older people with neuroticism and conscientiousness traits are in the risk group in terms of AA. Training and intervention plans should be made in accordance with the temperament of all personality types. It is expected that the results obtained will be used in risk management and planning of preventive interventions in preventive medicine practices, emphasizing the importance of personality traits in the clinical evaluation and follow-up of the elderly.

Conflict of Interest

The author declares no conflict of interest.

Author Contributions

Plan, design: EYA, BD; **Material, methods and data collection:** EYA, BD; **Data analysis and comments:** BD, EYA; **Writing and corrections:** BD, EYA

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