



# ACIBADEM

## ÜNİVERSİTESİ

SAĞLIK BİLİMLERİ DERGİSİ



ACIBADEM  
ÜNİVERSİTESİ



# 10

## ULUSAL SAĞLIKLI YAŞAM KONGRESİ

16-19 Eylül 2021

Acıbadem Mehmet Ali Aydınlar Üniversitesi, İstanbul



Beslenme & Prebiyotik & Probiyotik  
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10. ULUSAL SAĞLIKLI YAŞAM KONGRESİ BİLİMSEL PROGRAM "HİBRİT KONGRE" Bağışıklık, Mikrobiyota ve Beslenme Üçlüsü 16 EYLÜL 2021 PERŞEMBE ANA SALON		
Saat	Konu / Moderatör	Konuşmacı
09:00-09:30	<b>AÇILIŞ</b> Konuşmacı: Murat Baş	
09:30-11:10	<b>1.Oturum: Enfeksiyon Hastalıkları Özelinde Bağırsak Mikrobiyotası</b> MODERATÖR:Gözde Artıcı Çolak	
09:30-09:50	Bağırsak İmmunolojisine Giriş İmmünite Aracılı Hastalıklarda Konak-Mikrobiyota Etkileşimleri	Özgür Kurt
09:50-10:10	Mikrobiyal Patogenez ve Enfeksiyon Hastalıkları	Ateş Kara
10:10-10:30	Solunum Yolu Enfeksiyonlarını Probiyotik Kullanarak Önlemek Mümkün mü?	Metehan Özen
10:30-10:50	Bağırsak Mikrobiyotası ve Metabolik İnflamasyon	Tarkan Karakan
10:50-11:10	Beslenme-Covid-19: Neler Biliyoruz?	Gözde Artıcı Çolak
11:10-11:30	<b>KAHVE ARASI</b> 	
11:30-12:10	<b>UYDU SEMPOZYUMU 1 GSK</b> Konu: Sağlıklı Beslenmenin Önemi ve Beslenmede Takviye Edici Gıdaların Yeri Oturma Başkanı/Konuşmacı: Prof. Dr. Murat Baş Konuşmacı: Alpa Shah – GSK Tüketici Sağlığı Global OTC AR-GE Kategori Lideri Konuşmacı: Dr. Ecz. Şükran Damgalı – GSK Tüketici Sağlığı Ülke Medikal Lideri (Soru & Cevap)	 GlaxoSmithKline Tüketici Sağlığı
12:10-13:30	<b>ÖĞLE YEMEĞİ</b> 	
13:30-15:10	<b>2. Oturum: Enfeksiyonların Geleceğinde Mikrobiyota-Bağışıklık-Beslenme</b> MODERATÖR: Duygu Sağlam	
13:30-13:50	Akciğer ve Mikrobiyota Aksı: Bağışıklık ve Enfeksiyonları Nasıl Etkiliyor?	Ener Çağrı Dinleyici
13:50-14:10	Pandemi Sonrasında Bağırsak Mikrobiyotası ve Bağışıklık	Esin Şenol
14:10-14:30	Bağışıklığı Beslemek: Enfeksiyonların Geleceği İçin Bir Yatırım Olabilir mi?	Özge Küçükerdönmez
14:30-15:10	<b>UYDU SEMPOZYUMU 2 SABRİ ÜLKER VAKFI</b> Covid-19 Salgını Döneminde Beslenme İletişimi ve Sağlık Okuryazarlığının Önemi Konuşmacı: Özge Dinç	 SABRİ ÜLKER GIDA ARAŞTIRMALARI ENSTİTÜSÜ VAKFI 10. yıl
15:10-15:30	<b>KAHVE ARASI</b> 	
15:30-16:10	<b>UYDU SEMPOZYUMU 3 CALIFORNIA CEVİZ</b> Obezite ve Eşlik Eden Hastalıklarda Ceviz ve Sert Kabuklu Yemişlerin Önemi Konuşmacı: Murat Baş	
16:10-16:40	KONFERANS - Sunucu:Cansu Zırtıl Bağırsak Mikrobiyotası-Diyet Örneği ve Kansere Neler Biliyoruz?	Dişat Baş
16:40-18:10	<b>PANEL:Sürdürülebilir Beslenme ve Sürdürülebilir Dünya İçin Diyetisyen Olmak -</b> MODERATÖR: Nihan Çakır Biçer	
16:40-17:00	Sürdürülebilir Beslenmede Diyetisyenin ve Toplumun Rolü	Dilara Koçak
17:00-17:20	Sürdürülebilir Beslenme Uygulamaları ve Sonuçları	Emine Aksoydan
17:20-17:30	<b>10 DAKİKADA GÜNÜN ÖZETİ: EVE GÖTÜRÜLECEK MESAJLAR</b>	

10. ULUSAL SAĞLIKLI YAŞAM KONGRESİ BİLİMSEL PROGRAM		
Toplu Beslenme Sistemleri Diyetisyenliği		
Prof. Dr. Nevin Çiğirim & Prof. Dr. Fatma Sağlam Ustalara Saygı Günü		
17 EYLÜL 2021 CUMA		
ANA SALON		
Saat	Konu / Moderatör	Konuşmacı
<b>09:00-10:40</b>	<b>3.Oturum: TBS 'de Güncel Konular</b> <b>MODERATÖR: Dilek Ongan</b>	
09:00-09:20	TBS Diyetisyenliği'nin Dünü Bugünü ve Yarını	Türkan Kutluay Merdol
09:20-09:40	Her Yönüyle Ev Dışı Tüketim: Nedenleri ve Sonuçları	Saniye Bilici
09:40-10:00	Menülerde Yeterlilik ve Sürdürülebilirlik Bir Paradoks Mu?	Yasemin Beyhan
10:00-10:20	Yemek Hizmetlerinde Sirkadiyen Ritmin İzleri	Hande Mortaş
10:20-10:40	Doğrusu ve Yanlışıyla TBS'de Satınalma Süreçleri	Murat Urhan
<b>10:40-11:10</b>	<b>KONFERANS - Sunucu: Cansu Zırtl</b> <b>Doğaya ve Çevreye Artı Değerlerimiz: TBS'de Sıfır Atık Farkındalığı</b>	Dilek Ongan
<b>11:10-11:30</b>	<b>KAHVE ARASI</b> 	
<b>11:30-12:10</b>	<b>UYDU SEMPOZYUMU 4 CHR. HANSEN</b> Probiyotikler ve Mikrobiyom İnsan Sağlığını Desteklemek İçin Bilimsel Bir Yaklaşım Konuşmacı: Dorte Eskesen	 <i>Improving food &amp; health</i>
<b>12:10-13:00</b>	<b>POSTER BİLDİRİ SUNUMLARI</b> Oturma Başkanları: Duygu Sağlam, Ecem Örkü, Gözde Artıcı Çolak	
<b>12:10-13:00</b>	<b>ÖĞLE YEMEĞİ</b>	
<b>13:00-14:40</b>	<b>4. Oturum: Tehlikelerimiz Neler? Ne Yapmalıyız?</b> <b>MODERATÖR: Dilek Ongan</b>	
13:00-13:20	Pandemilerde Yemek Hizmetleri Yönetimi: Mevcut Durum ve Yarına Dair Senaryolar	Gülden Akışık
13:20-13:40	Acil Durumlarda Eyleme Geçmek: Gıda Savunmasında Diyetisyenin Rolü	Mevlûde Kızıl
13:40-14:00	Dezenfektanlar Dost mu Düşman mı? Ne zaman, Neden, Nasıl?	Büşra Ayhan
14:00-14:20	TBS'lerde Alerjen Yönetimi	Derya Dikmen
14:20-14:40	Gözden Kaçan Tehlike: Pişirme Dumanı Aeroselleri	Semra Navruz Varlı
<b>14:40-15:10</b>	<b>KONFERANS - Sunucu: Cansu Zırtl</b> <b>Gıda Güvenliği: Dünü, Bugünü, Yarını</b>	Muhittin Tayfur
<b>15:10-15:30</b>	<b>KAHVE ARASI</b> 	
<b>15:30-16:50</b>	<b>5. Oturum: Şeker Şekerdır</b> <b>MODERATÖR: Murat Baş</b>	
15:30-15:50	Gıda Teknolojisi Perspektifinde Şeker	Sertaç Özer
15:50-16:10	Yeme Davranışı ve Gıda Bağımlılığında Şeker	Gizem Köse
16:10-16:30	Tüm Eklenmiş Şekerler Aynı mıdır? Aynı mıdır?	Murat Baş
16:30-16:50	Gastronomi Gözüyle Şeker ve Alternatifleri	Aslı Zuluğ
<b>16:50-17:00</b>	<b>10 DAKİKADA GÜNÜN ÖZETİ: EVE GÖTÜRÜLECEK MESAJLAR</b>	
<b>17:00-18:15</b>	<b>SÖZLÜ BİLDİRİLER</b> SS-01,SS-02, SS-03, SS-04, SS-05, SS-06, SS-07, SS-08, SS-09, SS-10, SS-11, SS-12, SS-14, SS-15	

10. ULUSAL SAĞLIKLI YAŞAM KONGRESİ BİLİMSEL PROGRAM		
Gastroenteroloji Diyetisyenliği		
18 EYLÜL 2021 CUMARTESİ		
ANA SALON		
Saat	Konu / Moderatör	Konuşmacı
09:00-10:00	<b>6. Oturum: Sindirim Sistemi Hastalıkları Özelinde Bağırsak Mikrobiyotası &amp; Beslenme &amp; Probiyotik Üçgeni</b> <b>MODERATÖR: Gözde Arıtcı Çolak</b>	
09:00-09:20	Bağırsak - Gıda Hassasiyetine Çift Yönlü Bir Bakış	Murat Baş
09:20-09:40	İnflamatuvar Bağırsak Hastalığında Konak-Mikrobiyota Etkileşimleri	Meltem Kolgazi
09:40-10:00	Fonksiyonel Bağırsak Hastalıklarında Konak-Mikrobiyota Etkileşimleri	Suna Yapalı
10:00-10:20	<b>KAHVE ARASI</b> 	
10:20-10:50	KONFERANS - Sunucu: Cansu Zırtıl Hastalıkta ve Sağlıkta Diyet-Mikrobiyota Etkileşimi ve Kişiselleştirilmiş Beslenme	Sevinç Yücecan
10:50-11:20	KONFERANS - Sunucu: Cansu Zırtıl Pişirme İle Oluşan Bileşiklerin Bağırsak Mikrobiyotasına Etkileri	Zehra Büyüktuncer
11:20-11:50	KONFERANS - Sunucu: Cansu Zırtıl Çocuklarda Metabolik Hastalıklar Özelinde Mikrobiyota ve Diyet Etkileşimi	Hülya Gökmen Özel
11:50-12:20	KONFERANS - Sunucu: Cansu Zırtıl Yeme Bağlımlılığı, Penceresinden Beyin-Bağırsak Eksenini	Nesrin Dilbaz
12:20-13:30	<b>ÖĞLE YEMEĞİ</b> 	
13:30-14:30	<b>7. Oturum: Sağlıkta ve Hastalıkta Mitokondri</b> <b>MODERATÖR: Duygu Sağlam</b>	
13:30-13:50	Gücün Karanlık Tarafı: Mitokondriyal Bozukluklarla Bağlantılı Sağlık Koşulları	Ercüment İlgüz
13:50-14:10	Gücü Besleme: Mitokondriyal Sağlığı Geliştirmek İçin Beslenme ve Yaşam Tarzı Faktörleri	Selahattin Dönmez
14:10-14:30	Mikrobiyota ve Mitokondri Eksenini: Enteresan Bir Çift	Yeşim Temel Özcan
14:30-15:10	<b>UYDU SEMPOZYUMU 5 VOONKA</b> <b>Yağ Asitlerinin Bağışıklık Sistemindeki Rolü</b> <b>MODERATÖR: Murat Baş</b> <b>Konuşmacı Yeşim Temel Özcan</b>	<b>VOONKA®</b> <b>VITAMINS</b>
15:10-15:30	<b>KAHVE ARASI</b> 	
15:30-16:10	<b>UYDU SEMPOZYUMU 6 EKŞİ MAYA AKADEMİSİ</b> <b>Gelenekten Geleceğe Ekşi Mayalı Ekmek</b> <b>Konuşmacılar Prof. Dr. Sevinç Yücecan , Prof. Dr. Zafer Yenal</b>	<b>EKŞİ MAYA</b> — AKADEMİSİ —
16:10-17:50	<b>8. Oturum: Sağlık ve Hastalıkta Mikrobiyota-Bağırsak-Beyin Eksenini</b> <b>MODERATÖR: Gamze Akbulut</b>	
16:10-16:30	Mikrobiyota-Bağırsak-Beyin Eksenini Etkileyen Mekanistik Faktörler	İsmet Melek
16:30-16:50	Mikrobiyota-Bağırsak-Beyin Eksenini Temelinde Nörolojik Hastalıklar ve Bilişsel Fonksiyon	İsmet Melek
16:50-17:10	Obezite Temelinde Mikrobiyota ve İnflamasyon	Hakan Alagözlü
17:10-17:30	Mikrobiyota-Bağırsak-Beyin Ekseninde Bağırsak Bariyer Fonksiyonu	Güldane Koturoğlu
17:30-17:50	Mikrobiyota-Bağırsak-Beyin Eksenini Bozukluklarında Probiyotiklerin Bugünü ve Geleceği: Psikobiyotikler	Gamze Akbulut
17:50-18:50	<b>9. Oturum: Bağırsak Mikrobiyotasında Özel Konular</b> <b>MODERATÖR: Ecem Örkü</b>	
17:50-18:10	Diyet Polifenollerinin Bağırsak Mikrobiyotası Üzerindeki Rolü, Metabolitleri ve Sağlık Yararları (Online)	Hilal Yıldırım
18:10-18:30	Bağırsak Mikrobiyotası, Egzersiz ve Performans Üçlüsü	Şengül Sangu Talak
18:30-18:50	Mikroşişilerin Gözünden Karbonhidratlar ve Lif	Şule Aktaç
18:50-19:00	<b>10 DAKİKADA GÜNÜN ÖZETİ: EVE GÖTÜRÜLECEK MESAJLAR</b>	



10. ULUSAL SAĞLIKLI YAŞAM KONGRESİ BİLİMSEL PROGRAM		
Beslenme ve Diyetetik Münazara Meydanı		
19 EYLÜL 2021 PAZAR		
ANA SALON		
Saat	Konu / Moderatör	Konuşmacı
09:30-11:50	<b>10. Oturum: Münazara Meydanı</b> <b>MODERATÖR: Murat Baş</b>	
09:30-09:50	Ketojenik Diyet: Bilimsel Kanıta Dayalı Olan Güncel Bir Tedavi Yaklaşımıdır: EVET	<i>Binnur Okan Bakır</i>
09:50-10:10	Ketojenik Diyet: Bilimsel Kanıta Dayalı Olan Güncel Bir Tedavi Yaklaşımıdır: HAYIR	<i>Esra Güneş</i>
10:10-10:30	Aralıklı Açlık: Bilimsel Kanıta Dayalı Olan Güncel Bir Tedavi Yaklaşımıdır: EVET	<i>Reci Meseri</i>
10:30-10:50	Aralıklı Açlık: Bilimsel Kanıta Dayalı Olan Güncel Bir Tedavi Yaklaşımıdır: HAYIR	<i>Gizem Köse</i>
10:50-11:10	Süt ve Süt Ürünleri Sağlıklı Beslenme Planının Önemli Bir Parçasıdır: EVET	<i>Nurcan Yabancı Ayhan</i>
11:10-11:30	Süt ve Süt Ürünleri Sağlıklı Beslenme Planının Önemli Bir Parçasıdır: HAYIR	<i>Nihal Tunçer</i>
11:30-11:50	Münazara Sonuç Raporu: Hastalık Yoktur, Hasta Vardır Yaklaşımı Yeterli midir?	<i>Murat Baş</i>
11:50-12:10	<b>KAHVE ARASI</b> 	
12:10-12:50	<b>PANEL</b> <b>Hastalık ve Sağlıkta Gıda Takviyeleri: Barkın Berk</b>	
12:10-12:30	Modern Yaşamın Bir Zorunluluğu Olarak Gıda Takviyeleri: Gerekli mi?	<i>Yeter Çelik</i>
12:30-12:50	Gıda Takviyelerinde Güven Sorunu: Tüm Takviyeler Aynı mı?	<i>Barkın Berk</i>
12:50-13:00	<b>10 DAKİKADA GÜNÜN ÖZETİ: EVE GÖTÜRÜLECEK MESAJLAR</b>	

**10. ULUSAL SAĞLIKLI YAŞAM KONGRESİ BİLİMSEL PROGRAM**  
**RENAL DİYETİSYENLİK KURS PROGRAMI**  
**26 EYLÜL 2021, PAZAR**  
**Sunucu: Araş. Gör. Cansu Zırtıl**

Saat	Konu	Eğitmen
09.00-09.30	Böbrek Fizyolojisi	Güldal Süyen
09.30-10.00	Son Dönem Böbrek Hastalığının Patofizyolojisi	Sevgi Şahin
10.00-10.30	Son Dönem Böbrek Yetmezliğinde İştah Kontrolü	Selen Müftüoğlu
10.30-10.40	Tartışma	
10.40-10.50	<b>ARA</b>	
10.50-11.50	<b>Konferans:</b> Son Dönem Böbrek Yetmezliğinde Karbonhidrat, Protein, Yağ Metabolizması	Binnur Okan Bakır
11.50-12.00	Tartışma	
12.00-12.20	<b>ARA</b>	
12.20-12.50	Son Dönem Böbrek Yetmezliğinde Beslenme Durumunun Saptanmasında Güncel Yaklaşımlar ve Obezite Paradoksu	Gözde Arıtcı Çolak
12.50-13.20	Diyabetik Nefropatide TBT	Gamze Akbulut
13.20-13.50	Son Dönem Böbrek Yetmezliğinin Tıbbi Beslenme Tedavisinde Güncel Kılavuzlar Ne Diyor? Pediatri	Nihan Çakır Biçer
13.50-14.00	Tartışma	
14.00-14.10	<b>ARA</b>	
14.10-14.40	Son Dönem Böbrek Yetmezliğinin Tıbbi Beslenme Tedavisinde Güncel Kılavuzlar Ne Diyor? (HD VE SAPD TBT) Yetişkin	Feray Gençer
14.40-15.10	Böbrek Hastalıklarında Nutrisyon Tedavisi ve İntradiyalitik Parenteral Beslenme	Perim Türker
15.10-15.40	Böbrek Transplantasyonunda TBT	İrem Olcay Eminsoy
15.40-16.10	Son Dönem Böbrek Yetmezliğinde Vitamin ve Mineraller, Tamamlayıcı Alternatif Tıp Uygulamaları	Pınar Göbel
16.10-16.20	Tartışma	
16.20-16.30	<b>ARA</b>	
16.30-17.00	Kronik Böbrek Hastalığında Polifenollerin Yeri	Aleyna Ermiş
17.00-17.30	Deney Hayvanları Çalışmalarında Böbrek Modelleri	Güldal Süyen
17.30-18.00	Farklı Diyet Modellerinin Ürojenital Sistem Üzerine Histolojik Değerlendirmesi	Merve Elmas
18.00-18.10	Tartışma	
18.10-19.30	<b>Vaka Çözümleri</b> <b>Moderatör:</b> Gözde Arıtcı Çolak	Elif Gizem Arıburnu Transplantasyon sonrası TBT Ezgi Hazal Çelik Hemodiyaliz Burcu Dikmen Tezcan Hemodiyaliz Güler Tosunbayraktar Diyabetik Nefropati Hazal Deniz Pediatri
	<b>KAPANIŞ</b>	

<b>SÖZLÜ BİLDİRİLER</b>		
<b>SS NO</b>	<b>BİLDİRİ BAŞLIĞI</b>	<b>AD &amp; SOYAD</b>
SS-01	COVID-19 PANDEMİSİ DÖNEMİNDE YETİŞKİN BİREYLERİN BESİN TAKVİYESİ KULLANIM DURUMLARININ DEĞERLENDİRİLMESİ	<b>CENAN POYRAZ</b>
SS-02	TİP 1 DİYABETLİ ÇOCUK VE ADOLESANLARDA AKDENİZ DİYETİNE UYUMUN METABOLİK KONTROLE ETKİSİ	<b>DİDEM GÜNEŞ KAYA</b>
SS-03	BESLEME UYGULAMALARI VE YAPISI ANKETİ TÜRKÇE GEÇERLİLİK GÜVENİLİRLİK ÇALIŞMASI	<b>ECE MORAL</b>
SS-04	YETİŞKİNLERDE HEDONİK AÇLIK, ANHEDONİ VE KRONOTİP İLİŞKİSİ	<b>GİZEM KÖSE</b>
SS-05	DUYGUSAL İŞTAH, DİYET KALİTESİ VE BESLENME BİLGİ DÜZEYİ ARASINDAKİ İLİŞKİNİN DEĞERLENDİRİLMESİ	<b>HAZAL ÖYKÜ ASFUROĞLU</b>
SS-06	YETİŞKİN BİREYLERDE COVID-19 TÜKENMİŞLİĞİNİN HEDONİK AÇLIK İLE İLİŞKİSİNİN DEĞERLENDİRİLMESİ	<b>HÜLYA KAMARLI ALTUN</b>
SS-07	SIÇANLARDA YÜKSEK YAĞLI DİYET VE MONOSODYUM GLUTAMAT (MSG) İLE OLUŞTURULAN BÖBREK HASARININ MORFOLOJİK ETKİLERİNİN GÖSTERİLMESİ	<b>MERVE AÇIKEL ELMAS</b>
SS-08	ÇEVREYE DUYARLI BESLENME ÖLÇEĞİ'NİN (GREEN EATING SURVEY) TÜRKÇE GEÇERLİLİĞİ VE GÜVENİLİRLİĞİ	<b>MERVE CAMBAZ</b>
SS-09	PANDEMİ DÖNEMİ ÖNCESİ VE SÜRESİ FERMENTE GIDA TÜKETİMİ VE BU GIDALARIN HAKKINDA BİLGİ DÜZEYLERİNİN BELİRLENMESİ	<b>MERVE İNCE PALAMUTOĞLU</b>
SS-10	POSTPARTUM DÖNEMDE BESLENME, STRES VE UYKU DURUMUNUN EMZİRME TUTUMUNA ETKİSİ	<b>MERVE SARI</b>
SS-11	18-65 YAŞ ARASI KİŞİLERDE SEZGİSEL YEME, KISITLI YEME DAVRANIŞI VE DUYGUSAL YEME DAVRANIŞLARI ARASINDAKİ İLİŞKİNİN DEĞERLENDİRİLMESİ	<b>MERYEM KAHRIMAN</b>
SS-12	YETİŞKİN BİREYLERDE HEDONİK AÇLIK DURUMLARININ SATIN ALMA DAVRANIŞLARINA ETKİSİNİN DEĞERLENDİRİLMESİ	<b>NİHAN ÇAKIR BİÇER</b>
SS-13	GEZEĞEN SAĞLIĞI VE SÜRDÜRÜLEBİLİR BESLENME KAVRAMI	<b>SENA ORUÇ</b>
SS-14	BESLENME İLE İLGİLİ BÖLÜMLERDE EĞİTİM GÖREN ÜNİVERSİTE ÖĞRENCİLERİNİN SÜRDÜRÜLEBİLİR BESLENME HAKKINDAKİ BİLGİ VE TUTUMLARI	<b>ŞULE AKTAÇ</b>

# 10. ULUSAL SAĞLIKLI YAŞAM KONGRESİ

**SÖZLÜ BİLDİRİLER**

# COVID-19 PANDEMİSİ DÖNEMİNDE YETİŞKİN BİREYLERİN BESİN TAKVİYESİ KULLANIM DURUMLARININ DEĞERLENDİRİLMESİ

Cenan Poyraz<sup>1</sup>, Yağmur Kaya<sup>1</sup>, Dilara Demiran<sup>1</sup>, Aleyna Ermiş<sup>1</sup>, Gözde Arıtcı Çolak<sup>1</sup>

**Giriş-Amaç:** COVID-19 pandemisi bir yılı aşkın süredir tüm dünyayı ve sağlık sistemlerini olumsuz olarak etkilemektedir. Bu hastalıktan korunmak için toplumların aşılınması ve diğer korunma önlemleri primer önemli olmakla birlikte hastalığa yakalanma ve hasta olduktan sonrasındaki tedavi süreçlerinde bireylerin bağışıklık sistemlerinin güçlü olması oldukça önemlidir. Yeterli ve dengeli beslenme, fiziksel aktivite ve düzenli uykuyu içeren yaşam tarzı faktörleri, optimal bağışıklık ve enfeksiyonların önlenmesini içeren ve vücudun doğal savunma mekanizması olan güçlü bir immün sistem üzerinde önemli bir etkiye sahiptir. Yapılan araştırmalarda bazı besin öğelerinin immün sistemi destekleme ve enfeksiyon hastalıklarından korunmada önemli rolleri olduğu gösterilmiştir. Bu durumun bireylerin besin takviyesi kullanım durumlarını etkilediği düşünülmektedir. Bu araştırma COVID-19 pandemisi döneminde bireylerin besin takviyesi kullanımı durumunun değerlendirilmesi amacıyla planlanmıştır.

**Yöntem-Gereçler:** Bu çalışma, Aralık 2020-Mayıs 2021 tarihleri arasında yapılmış kesitsel bir araştırmadır. Katılımcılara çevrimiçi anket uygulanarak ulaşılmıştır. Çalışma, 18-66 yaş arası 374 kadın, 111 erkek toplam 485 gönüllü birey ile yürütülmüştür. Çalışmaya, 18 yaşından küçük ve 66 yaşından büyük bireyler ile gebe ve emzikli olan bireyler dahil edilmemiştir. Çalışmaya başlamadan önce bireylere "Çalışmaya Katılma Onam Formu" gönderilmiş ve katılmayı kabul edenler çalışmaya dahil edilmiştir. Gönüllü ve çalışma kriterlerine uygun olan bireylere demografik özellikleri, beslenme ve besin takviyesi kullanım alışkanlıkları ve tıbbi özgeçmişlerine ilişkin bilgileri saptamak amacıyla internet üzerinden çevrimiçi anket formu uygulanmıştır. Çalışma sonunda veriler Windows ortamında SPSS 21.0 SPSS (Statistical Package for Social Sciences) Paket Programı ile değerlendirilmiştir. Elde edilen nicel değişkenlere normal dağılıma uygunluk testi için Kolmogorov-Smirnov testi kullanılmıştır. Nitel değişkenler arasındaki fark için Ki-kare testi kullanılmıştır.

**Bulgular:** Çalışmaya katılan bireylerin %10,9'u COVID-19 geçirmiş, %89,1'i geçirmemiştir. COVID-19 geçirmiş katılımcıların %64,2'sinde, COVID-19 geçirmemiş katılımcıların %45,1'inde besin takviyesi kullanımı pandemi döneminde artmıştır. Çalışmaya katılan kişilerin COVID-19 geçirme durumu ve besin takviyesi kullanımı arasında istatistiksel olarak anlamlı farklılık bulunmuştur (p 0.05).

**Sonuç:** Yeterli ve dengeli beslenme ile elde edilen makro ve mikro besin öğeleri sağlıklı ve güçlü bir immün sistemin desteklenmesi için kritik rol oynamaktadır. Aksi takdirde, immün yanıtın zayıflaması, yeterli immün yanıtın oluşamaması, hastalıktan korunamama ve hastalık progresyonunda kötüleşme riski oluşmaktadır. Hastalık öncesi, süreci ve sonrası immün yanıtın sağlanması için yeterli ve dengeli beslenmenin önemli rolü bulunmaktadır. Beslenme ile yeterli miktarda sağlanamayan makro ve mikro besin öğeleri eksikliklerinin yerine konması oldukça önemlidir ancak mevcut kılavuzlarda COVID-19 için hastalığın önlenmesi ve tedavisinde rutin besin takviyeleri kullanımı ile ilgili öneri bulunmamaktadır.

**Anahtar Kelimeler:** Besin Takviyesi, C Vitamini, COVID-19, Çinko, D Vitamini

<sup>1</sup>Acıbadem Mehmet Ali Aydınlar Üniversitesi, Sağlık Bilimleri Fakültesi, Beslenme ve Diyetetik Bölümü

# TİP 1 DİYABETLİ ÇOCUK VE ADOLESANLARDA AKDENİZ DİYETİNE UYUMUN METABOLİK KONTROLE ETKİSİ

Didem Güneş Kaya<sup>1</sup>, Hande Turan<sup>2</sup>, Oya Ercan<sup>2</sup>

**Giriş-Amaç:** Sağlıklı bir diyet, genel sağlığı geliştirmek için en önemli faktörlerden biri olarak kabul edilir. Diyet, kardiyovasküler hastalıkların insidansı ve yaşam beklentisi için değiştirilebilir anahtar bir belirleyici olarak görülmektedir (1). Akdeniz Diyeti, besin ögesi içerikleri açısından dengeli ve eksiksiz olması nedeniyle en sağlıklı beslenme modellerinden biri olarak kabul edilir. Literatürde genel olarak, mevcut araştırmalar Akdeniz Diyeti'ne daha fazla bağlılık ile ölüm riski, kanser, Tip 2 diyabet, metabolik sendrom, obezite, nöropsikolojik hastalıklar ve kardiyovasküler hastalıklar gibi kronik hastalıkların insidanslarında negatif bir ilişki olduğunu öne sürmektedir. Bölgesel farklılıklar olmasına rağmen Akdeniz Diyeti Akdeniz diyeti (MedDiet) genel olarak yüksek oranda sebze, baklagiller, meyve ve sert kabuklu yemişler, rafine edilmemiş tahıllar, zeytinyağı, orta düzeyde balık alımı, düşük ila orta düzeyde süt ürünleri alımı, düşük et ve kümes hayvanları tüketimi ile karakterize edilir. Bu diyetin kardiyovasküler ve metabolik hastalıklara karşı koruyucu sağlık etkileri olduğu yaygın olarak kanıtlanmıştır (2,3). Son zamanlarda, farklı popülasyonlar arasında diyet kalitesini araştırmak için artan sayıda doğrulanmış diyet kalite indeksi geliştirilmiştir. Özellikle, Akdeniz ve Akdeniz dışı popülasyonlar arasında MedDiet'e uyumu değerlendirmek için farklı puanlama yöntemleri oluşturulmuştur (4,5). Serra-Majem ve arkadaşları tarafından geliştirilen Akdeniz Diyet Kalite İndeksi (KIDMED) anketi, MedDiet'e uyumu değerlendirmek için uluslararası alanda en çok kullanılan ölçütlerden biridir (6). Bu diyetin sağlık yararlarına ilişkin geniş kanıtlara bakılmaksızın, son veriler bu yeme düzenine bağlılığın Akdeniz bölgelerinde, özellikle gençler arasında azalmakta olduğunu göstermektedir. Bu çalışmanın amacı Akdeniz Diyeti'ne bağlılığın Tip1 diyabetli çocuk ve adolesanlarda metabolik kontrol ve bazı biyokimyasal parametreler üzerine olumlu etkisinin olup olmadığının araştırılmasıdır.

**Yöntem-Gereçler:** Cerrahpaşa Tıp Fakültesi Çocuk Endokrinolojisi Polikliniği'nde takipli çocuk ve adolesanlardan rutin poliklinik kontrolü için başvuran ve çalışma için gönüllü olan 132 olgu çalışmaya dahil edilmiştir. Gönüllülerin antropometrik ölçümleri biyokimyasal bulguları poliklinik dosyalarından alınmıştır. Olgulara yüz yüze anket yöntemi ile "Akdeniz Diyeti Uyum Ölçeği (Kid-Med)" uygulanmıştır. Serra Majem ve arkadaşları tarafından 2004 yılında geliştirilen KID\_MED ölçeğinin Türkçe güvenilirlik geçerliliği Şahingöz ve arkadaşları tarafından 2019 yılında yapılmıştır (7). Bu ölçekte Akdeniz Diyet Modeli'ne bağlılığı değerlendirmek için 16 soru bulunmaktadır. 12 soru için 'Evet' cevapları 1 puan kazandırırken, 4 soru için 'Evet' cevapları 1 puan kaybettirmektedir ve anketten en fazla 12 puan alınabilmektedir. Ölçekten alınan toplam puan < 7 mg/dl), orta (HbA1c % 7-9 mg/dl) ve kötü kontrollü (HbA1c > 9 mg/dl) olarak sınıflandırılmıştır. Lipit profilini değerlendirmek için Total kolesterol > 200 mg/dl, LDL kolesterol > 130 mg/dl, HDL Kolesterol 100 mg/dl ve 10-19 yaş için > 130 mg/dl üzeri için yüksek kabul edilmiştir. Lipit parametrelerinden herhangi biri üst sınırdan yüksek olduğu durumda olgu dislipidemi olarak değerlendirilmiştir. İstatistiksel analiz, Windows için SPSS sürüm 21.0 (Statistical Package for the Social Sciences) yazılımı kullanılarak yapılmıştır. Verilerin normalliğini değerlendirmek için Kolmogrov-Smirnov ve Shapiro Wilk testleri kullanılmıştır. Korelasyonlar, parametrik olmayan ölçümler için Spearman korelasyon testi kullanılarak değerlendirildi. Oranlardaki farklılıkları test etmek için Fisher Exact testi ve Pearson Ki Kare testi kullanıldı. HbA1c ve Akdeniz Diyeti arasındaki ilişki ve dislipidemi Akdeniz Diyeti arasındaki ilişki değerlendirilirken Kruskal Wallist testi ve Post-hoc analiz yapılmıştır. Tüm istatistiksel karşılaştırmalar için %5 (p < 0.05) anlamlılık düzeyi kullanılmıştır.

**Bulgular:** Çalışmaya 132 olgu (74 kız, 58 erkek) dahil edilmiştir. Olguların yaş ortalamaları 13,6 ± 4,2 yıl olarak belirlenmiştir. Ortalama HbA1c %8,1 ± 1,5 olarak saptanmıştır. Olguların %22,7'sinin (n:30) iyi, %54,5'inin (n:72) orta, %22,7'sinin (n:30) kötü metabolik kontrole sahip olduğu saptanmıştır. Olguların ortalama KID-MED puanları 6,5 ± 2,5 olarak belirlenmiştir ve olguların genel olarak Akdeniz Diyeti'ne uyumu orta/geliştirilmesi gereken diyet kalitesi olarak belirlenmiştir. Olguların %43,9'u (n:58) yüksek, %45,4'ü (n:60) orta % 10,6'sı (n:14) kötü diyet kalitesine sahiptir. HbA1c grupları ile diyet kalitesi arasındaki ilişki analiz edildiğinde sadece en düşük ve en yüksek HbA1c'lere sahip gruplar arasında Akdeniz Diyeti'ne uyum açısından anlamlı farklılık saptanmıştır. (p=0,002)

**Sonuç:** En sağlıklı beslenme modellerinden biri olarak kabul edilen Akdeniz Diyet Modeli Tip1 diyabetli çocuk ve adolesanlar için de uygun bir beslenme modeli olarak metabolik kontrolün iyileştirilmesinde ve diyabetin uzun dönem komplikasyonlarının önlenmesinde rol oynayabilir. Diyabetlilerin beslenme planları oluşturulurken ve beslenme takipleri yapılırken Akdeniz Diyeti'ne bağlılığın göz önünde bulundurulması ve bu beslenme modeline uyumun artırılması daha iyi glisemik kontrol sağlanmasına yardımcı olabilir.

**Anahtar Kelime:** KID-MED, Tip1 diyabet, Diyet kalitesi, Akdeniz diyeti

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<sup>2</sup>İstanbul Üniversitesi Cerrahpaşa Tıp Fakültesi, Çocuk Sağlığı ve Hastalıkları Anabilim Dalı, Pediatrik Endokrinoloji Bilim Dalı

# BESLEME UYGULAMALARI VE YAPISI ANKETİ TÜRKÇE GEÇERLİLİK GÜVENİLİRLİK ÇALIŞMASI

Ece Moral Yılmaz<sup>1</sup>, Şule Aktaş<sup>1</sup>

**Giriş-Amaç:** Okul öncesi dönemde çocukların sağlıklı beslenme alışkanlıkları kazanması oldukça önemlidir. Beslenme alışkanlıklarının temeli çocuklukta oluşur ve erken öğrenilmiş yeme davranışları daha sonraki yıllarda da devam eder. Yapılan çalışmalarda çocukların yiyecek tercihleri, yeme davranışları ve açlık-tokluk sinyallerine dayanarak kendi enerji alımını düzenleme yeteneği üzerinde ebeveynlerin kendi beslenme kalıplarının ve çocuk besleme uygulamalarının etkileri tartışılmıştır. Ebeveynlerin besleme uygulamalarına ilişkin geliştirilmiş ölçekler incelendiğinde sadece okul öncesi dönem yaş grubuna ilişkin bir ölçek olmadığı ölçeklerin uygulandığı örneklemin okul öncesi ve okul çağı çocuklarını birlikte kapsadığı görülmüştür. Bu çalışma 2-5 yaş arası çocukların ebeveynlerine uygulanan 'Besleme Uygulamaları ve Yapısı Anketinin' Türkçe geçerlik güvenilirliğinin belirlenmesi amacıyla yapılan bir anket uyarlama çalışmasıdır. Besleme Uygulamaları ve Yapısı anketi; çocukların enerji alımlarının kendi kendilerine düzenleme yeteneklerini potansiyel olarak etkileyebilecek besleme uygulamalarını değerlendirmektedir.

**Yöntem-Gereçler:** İki-5 yaş aralığında okul öncesi dönem çocuklarının ebeveynleri ile yürütülen çalışmada, 314 ebeveyne Besleme Uygulamaları ve Yapısı Anketi ile demografik anket formu uygulanmıştır. Ebeveynlere ait antropometrik özellikler incelenirken beden kütle indeksi, çocuklar için ise z skoru değerleri WHO Anthro Plus programı ile değerlendirilmiştir. Anketin geçerlik güvenilirliği değerlendirilirken kapsam geçerliği, iç geçerlik, dış geçerlik, Cronbach alfa güvenilirlik katsayısı ve test-tekrar test güvenilirliği incelenmiştir. Rasch analizi ile madde-kişi ayrımı ve madde-kişi ortalama kare uyum istatistikleri değerlendirilmiştir.

**Bulgular:** Anketin kapsam geçerlik indeksi tüm maddeler için 0,80'inin üzerinde bulunmuştur. Cronbach alfa katsayısı 0,74'tür. Test-tekrar test analizinde tüm maddeler için anlamlı farklılık bulunmuştur (p

**Sonuç:** Besleme Uygulamaları ve Yapısı Anketi ebeveynlerin besleme davranışlarını değerlendirmeye yönelik bir anket çalışmasıdır. Anketin geçerlik güvenilirliği değerlendirildiğinde Besleme Uygulamaları ve Yapısı Anketi güveniliridir. Ancak uygulandığı örneklemden dolayı geçerli olduğunu söylemek mümkün değildir.

**Anahtar Kelime:** besleme uygulamaları, okul öncesi, ebeveyn, geçerlik, güvenilirlik.

<sup>1</sup>Marmara Üniversitesi, Sağlık Bilimleri Fakültesi, Beslenme ve Diyetetik Bölümü

# YETİŞKİNLERDE HEDONİK AÇLIK, ANHEDONİ VE KRONOTİP İLİŞKİSİ

Ece Işık<sup>1</sup>, Kezban Esen Karaca<sup>2</sup>, Gizem Köse<sup>3</sup>

**Giriş-Amaç:** Beslenmenin nasıl programlandığı oldukça karmaşık olsa da, homeostatik ve hedonik düzenlemeler ile kontrol edildiği bilinmektedir. En az 8 saat bir besin yokluğunda, vücutta enerji açığının olması nedeniyle lezzetten bağımsız olan açlık "homeostatik açlık" olarak adlandırılır. "Hedonik açlık" ise enerji açığının sebep olduğu açlık hissinden daha çok haz için lezzetli besinlerin tüketilmesine sebep olan bir dürtüdür. Olumlu uyaranlardan haz alma becerisinin azalması veya daha önce deneyimlenen hazın hatırlanmaması ise anhedoni olarak tanımlanmıştır. Anhedoni depresyonun önemli bir semptomudur; aynı zamanda aşırı ve kontrolsüz yeme ile de ilişkilidir. Kronotip, günlük aktiviteleri ve bunların altında yatan sirkadiyen ritimleri zamanlama tercihindeki bireysel farklılıkları yansıtır. Sabah saatlerinde kendilerini en iyi şekilde hisseden bireyler sabahçıl, geç uyumayı ve akşam saatlerinde kendilerini en iyi şekilde hissedenler ise akşamcıl kronotipe sahip bireylerdir. Besin alımı ritmiktir ve besin alım zamanlarının bireylerin kronotiplerinden etkilenebileceği bildirilmiştir. Bu çalışmada amaç, yetişkin bireylerin hedonik açlık, anhedoni düzeyleri ve kronotipleri arasındaki ilişkiyi belirlemektir.

**Yöntem-Gereçler:** Çalışma, Aralık 2020-Mart 2021 tarihleri arasında, İzmir Bakırçay Üniversitesi'nde okuyan ve çalışan 18-65 yaş arası 402 katılımcı ile yapılmıştır. Çalışmanın örneklem büyüklüğü, G-Power güç analizi programı ile belirlenmiştir. Psikiyatrik tedavi gören ve/veya ilaç kullanan, hastalıkları nedeniyle özel diyet uygulayan kişiler çalışmaya dahil edilmemiştir. Bu araştırma, "Google Formlar" ile internet üzerinden çevrimiçi olarak gerçekleştirilmiştir. Uygulanan ankette katılımcıların sosyodemografik özelliklerini ve beslenme alışkanlıklarını belirleyen sorularla birlikte; katılımcıların hedonik açlık düzeylerinin belirlenmesi için Besin Gücü Ölçeği (BGÖ), kronotiplerinin değerlendirilmesi için Sabahçıl-Akşamcıl Anketi (SAA) kullanılmıştır. Araştırmanın Etik Kurul Onayı 03.12.2020 tarihinde Acıbadem Üniversitesi ve Acıbadem Sağlık Kuruluşları Tıbbi Araştırma Etik Kurulu'ndan (ATADEK) 2020/25 sayılı, 2020/25-24 karar numarası ile alınmıştır.

**Bulgular:** Hedonik açlığı sahip olan bireylerin yaş ortalamasının ( $25,6 \pm 9,2$  yıl), hedonik açlığa sahip olmayan bireylerin yaş ortalamasına ( $31,9 \pm 12,4$  yıl) göre daha düşük olduğu belirlenmiştir ( $p=0,000$ ). Kadınlarda hedonik açlık görülme oranı %79,6, erkeklerde ise hedonik açlık görülme oranı %68,6'dır. Kadınlarda erkeklere göre hedonik açlık görülme oranı anlamlı olarak daha yüksektir ( $p=0,014$ ). Erkeklerin anhedonik olma oranı %10,9, kadınların anhedonik olma oranı ise %4,5'tir. Erkek bireylerde kadınlara göre anhedonik olma oranı daha fazladır ve bu durum istatistiksel olarak anlamlıdır ( $p=0,015$ ). Bireylerin kronotip durumu ile hedonik açlık durumu arasında doğrusal negatif yönde anlamlı bir ilişki tespit edilmiştir ( $r=-0,238$ ,  $p=0,000$ ). Hedonik açlık düzeyi yüksek olan bireyler, akşamcıl kronotipe daha yatkındır. Araştırmaya katılan bireylerin hedonik açlık toplam puanı ve alt grup puanları ile anhedoni toplam puanı ve alt grup puanları arasında anlamlı bir ilişki bulunmamıştır ( $p>0,05$ ).

**Sonuç:** Bu çalışmada, hedonik açlık ile kronotipin birbirlerinden etkilendiği ancak bu durumun anhedoniyle ilişkili olmadığı belirlenmiştir. Sonuç olarak, hedonik açlığa sahip olma durumu bireylerin kronotipleri de göz önüne alınarak değerlendirilmelidir. Sağlıklı besin tüketiminin sağlanabilmesine yardımcı olabileceği için hedonik açlığın azalmasında önemli bir etken olan bireyin kronotipi düzenlenmelidir.

**Anahtar Kelime:** Açlık, Anhedoni, Hedonik Açlık, Kronotip, Sirkadiyen Ritim

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# DUYGUSAL İŞTAH, DİYET KALİTESİ VE BESLENME BİLGİ DÜZEYİ ARASINDAKİ İLİŞKİNİN DEĞERLENDİRİLMESİ

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**Giriş-Amaç:** Duygusal yeme olumsuz duygu/durumlarla baş etme amacı ile ortaya çıkan bir davranış olarak tanımlanmaktadır. Duygusal yeme davranışının varlığı obezite ve sağlıksız beslenme durumlarıyla ilişkilendirilmektedir. Olumlu duyguların beslenme durumu ve besin tercihlerine etkisini değerlendiren çalışmalar ise kısıtlıdır. Bu çalışmada 18-25 yaş aralığındaki üniversite öğrencilerinde yeme davranışını etkileyen duygu durumlarının belirlenmesi ve bu duygu durumlarına yanıt olarak ortaya çıkan duygusal yeme davranışlarının diyet kalitesi ve beslenme bilgi düzeyi ile olan ilişkisinin belirlenmesi amaçlanmıştır.

**Yöntem-Gereçler:** Bu araştırma Ocak 2021- Nisan 2021 tarihleri arasında 18-25 yaş aralığındaki üniversite öğrencilerine online anket aracılığıyla yürütülmüştür. 4 bölümden oluşan 83 soruluk ankette 3 adet ölçekten yararlanılmıştır. Birinci bölümde bireylerin demografik özellikleri, antropometrik ölçümleri ve beslenme alışkanlıkları sorgulanmıştır. Bireylerin olumlu ve olumsuz duygu durumlarının yeme davranışına etkisini değerlendirmek amacıyla Nolan ve ark. (2010) tarafından geliştirilen Duygusal İştah Anketi (DİA) kullanılmıştır. Yetişkinler için beslenme bilgi düzeyini ölçmede pratik bir ölçme aracı olarak Batmaz ve Güneş (2018) tarafından geliştirilmiş olan Yetişkinler İçin Beslenme Bilgi Düzeyi Ölçeği (YETBİD) kullanılmıştır. Bireylerin beslenme alışkanlıklarının Akdeniz Diyetine uyumunu ve kalitesini belirlemek amacıyla Serra-Majem ve ark. (2004) tarafından geliştirilen ve 16 sorudan oluşan Akdeniz Diyeti Kalite indeksi (KİDMED) kullanılmıştır. Elde edilen veriler SPSS for Windows 16.0 programı aracılığıyla analiz edilmiştir.

**Bulgular:** 471 kişinin katıldığı bu çalışmada %83,4 (n=39) kadın, %16,6 (n=78) erkektir. Kadınların yaş ortalaması 22±1,6, erkek katılımcıların yaş ortalaması 21,5±1,9 olarak hesaplanmıştır. Katılımcıların beden kütle indeksleri (BKİ) ortalamasına bakıldığında kadınlarda 28.22±3.58 kg/m<sup>2</sup> olduğu, erkeklerde ise 30.75±4.17 kg/m<sup>2</sup> olduğu belirlenmiştir. Anket sonuçlarına bakıldığında DİA olumlu puanı kadınlarda 32,5±2,21, erkeklerde ise 34,6±2,5 olarak bulunmuş olup; DİA olumsuz puanı kadınlarda 29,2±2,51, erkeklerde ise 31,6±2,44 olarak saptanmıştır. KİDMED puanları sınıflandırıldığında kadınların %59.3'ü, erkeklerin %62.8'i 4-7 puan (orta) aralığında bulunmuştur. Çalışmaya katılan bireylerin temel beslenme bilgisi puan dağılımları değerlendirildiğinde kadınlar %98.9 oranında, erkekler ise %98.7 oranında 0.05). YETBİD puanları ile DİA olumlu, DİA olumsuz ve KİDMED puanları arasında da istatistiksel olarak anlamlı farklılık saptanmamıştır (p>0.05).

**Sonuç:** Sonuç olarak çalışmaya katılan bireylerin diyet kaliteleri değerlendirildiğinde katılımcıların önemli bir kısmının Akdeniz diyetine uyumu kötü ve geliştirilmesi gerekli grupta olduğu saptanmıştır. Beslenme bilgi düzeyi yönünden de, hem kadın hem erkeklerde temel beslenme puanları düşük bulunmuştur. DİA ile YETBİD ve KİDMED puanları arasında ise anlamlı bir ilişki saptanmamıştır. Bu sonuçlardan hareketle öncelikli olarak bireylerin beslenme bilgi düzeyinin iyileştirilmesi amacıyla beslenme eğitimlerinin artırılması ve araştırmanın daha geniş bir örneklem ile uygulanması önerilmektedir.

**Anahtar Kelime:** beslenme bilgi düzeyi, duygusal yeme, obezite

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# YETİŞKİN BİREYLERDE COVID-19 TÜKENMİŞLİĞİNİN HEDONİK AÇLIK İLE İLİŞKİSİNİN DEĞERLENDİRİLMESİ

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**Giriş-Amaç:** COVID-19 pandemisiyle uygulanan kısıtlılıklar yaşamımızda birçok değişiklikler meydana getirmiştir. Özellikle sosyal izolasyonun uygulanması buna yönelik iş yerlerinin ve okulların kapatılması, kamu kurumlarında esnek mesaiye geçilmesi gibi değişiklikler ile hastalığa yakalanma korkusu bireylerde tükenmişlik duygusunun artmasına neden olmuştur. Tükenmişlik duygusunu aşmak içinde bazı bireylerin yemek yemeye yönelimlerinde artış olabileceği düşünülmektedir. Bu çalışma, yetişkin bireylerde COVID-19 tükenmişliğinin aşırı yeme isteği (hedonik açlık) ile olan ilgisini araştırmak amacıyla planlanmıştır.

**Yöntem-Gereçler:** Çalışmaya onam vererek katılmayı kabul eden ve anketi tam dolduran 18-64 yaş arası 346 yetişkin birey dahil edilmiştir. Bireylerin genel özellikleri, pandemi dönemindeki vücut ağırlığı ile beslenme alışkanlıkları değişimleri, fiziksel aktivite düzeyleri, hedonik açlık ve COVID-19 tükenmişliği web tabanlı anket formu aracılığıyla toplanmıştır. Bireylerin hedonik açlık (aşırı yeme isteği) durumu besin gücü ölçeği (BGÖ) ve COVID 19 tükenmişliği ise koronavirüs tükenmişlik ölçeği (KTÖ) ile değerlendirilmiştir.

**Bulgular:** Çalışmaya katılan bireylerin çoğunluğunu kadınlar (%74,3) oluşturmaktadır. Bireylerin ortalama yaşı  $37,5 \pm 10,84$  yıl, vücut ağırlığı  $69,97 \pm 16,27$  kg, boy uzunluğu  $167,1 \pm 8,71$  cm ve beden kütle indeksi (BKİ)  $24,96 \pm 4,81$  kg/m<sup>2</sup>'dir. Bireylerin %43,6'sı COVID-19 döneminde beslenme alışkanlıklarının olumsuz yönde değiştiğini, %45,7'si iştah durumunun arttığını ve yarıya yakını (%47,1) vücut ağırlığının arttığını bildirmiştir. Pandemi döneminde bireylerin çoğunluğunun (%81,2) fiziksel aktivite durumunun yetersiz olduğu görülmüştür. Bireylerin BGÖ skor ortalaması  $2,76 \pm 1,04$  ve KTÖ skoru  $29,02 \pm 10,7$  olarak bulunmuştur. Bireyler hedonik açlık durumuna göre değerlendirildiğinde bireylerin yarıdan fazlasında (%59,8) hedonik açlığının olduğu belirlenmiştir. Hedonik açlığı olan bireylerin KTÖ ( $31,4 \pm 10,51$ ) puanının normal olan bireylere göre ( $25,4 \pm 9,90$ ) anlamlı düzeyde daha yüksek olduğu saptanmıştır ( $p=0.014$ ).

**Sonuç:** Pandemi süresinin uzaması, işsizlik, kısıtlılıklar ve ekonomik sıkıntılar gibi birçok faktör bireylerde fiziksel aktivitede azalmaya ve stres düzeylerinde artışa neden olmakta ve stresle baş edilememesi de bireylerde tükenmişlik duygusunun ve aşırı yeme isteğinin artışına yol açabilmektedir. Bu çalışmada bireylerde koronavirüs tükenmişliği arttıkça hedonik açlığın daha sık görüldüğü ve fiziksel aktivitenin azaldığı saptanmıştır. Bu nedenle bu süreçte bireylere tükenmişlik duygusu ile başa çıkma, aktivitenin önemi ve sağlıklı beslenme konusunda daha fazla bilgilendirme yapılması gerektiği düşünülmektedir.

**Anahtar Kelimeler:** COVID-19, hedonik açlık, pandemi, tükenmişlik

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# SIÇANLARDA YÜKSEK YAĞLI DİYET VE MONOSODYUM GLUTAMAT (MSG) İLE OLUŞTURULAN BÖBREK HASARININ MORFOLOJİK ETKİLERİNİN GÖSTERİLMESİ

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**Giriş-Amaç:** Uzun süreli yüksek yağlı diyet tüketiminin renal disfonksiyon gibi metabolik ve klinik problemlere yol açtığı bilinmektedir. Oksidatif stresin, reaktif oksijen türlerinin (ROS) artışı ile obez bireylerde arttığı ve üriner sistem üzerine olumsuz etkilerinin olduğu yapılan çalışmalarda gösterilmiştir. Monosodyum glutamat (MSG, C<sub>5</sub>H<sub>8</sub>NO<sub>4</sub>Na, E621) ise glutamik asidin sodyum tuzudur. Tat almadan sorumlu olan sinirlerin uyarılması ile yiyeceklerin tadını güçlendirir ve bu durumda daha sık ve daha çok yeme isteği uyandırır. MSG karaciğerde metabolize olup böbrek yoluyla atılmaktadır. Bu nedenle MSG'nin böbrek üzerinde olumsuz etkisinin olduğu bilinmektedir. Bu çalışmada yüksek yağlı diyet ve MSG gibi farklı diyet modelleri ile indüklenmiş böbrek hasarının histolojik ve biyokimyasal parametrelerle gösterilmesi amaçlanmıştır.

**Yöntem-Gereçler:** Sprague Dawley cinsi erkek sıçanlar 18 hafta boyunca standart (Kontrol grubu; %6 yağ içeren yem) veya yüksek yağlı diyet (YYD grubu; %45 yağ içeren yem) ile beslenmişlerdir. MSG ile indüklenmiş böbrek hasar modeli oluşturmak için de Sprague Dawley cinsi erkek sıçanlar kullanılmıştır. MSG grubundaki sıçanlara gavaj yöntemiyle 28 gün boyunca MSG solüsyonu (120mg/kg) verilmiştir. Tüm deney hayvanlarından alınan böbrek dokularından malondialdehit (MDA), glutatyon (GSH) seviyeleri biyokimyasal olarak değerlendirilmiştir ve alınan böbrek dokuları rutin ışık ve elektron mikroskopik incelemeler için hazırlanmış ve gruplar arasındaki farklılıklar istatistiksel olarak değerlendirilmiştir.

**Bulgular:** Kontrol grubuna ait doku örneklerinde normal morfoloji gözlenirken, YYD ve MSG ile indüklenen böbrek hasar gruplarında, glomerular ve tübüler hasar görülmüştür. Biyokimyasal analizlerin (MDA ve GSH) de histolojik bulgular ile uyumlu olduğu gözlenmiştir.

**Sonuç:** YYD ve MSG ile indüklenmiş böbrek hasarı üzerinde oksidatif stres kaynaklı olduğu düşünülen hasar biyokimyasal ve histolojik yöntemlerle gösterilmiştir.

**Anahtar Kelimeler:** Yüksek Yağlı Diyet, MSG, Böbrek, Morfoloji

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# ÇEVREYE DUYARLI BESLENME ÖLÇEĞİ'NİN (GREEN EATING SURVEY) TÜRKÇE GEÇERLİLİĞİ VE GÜVENİLİRLİĞİ

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**Giriş-Amaç:** Beslenme düzeni de dahil olmak üzere insan aktivitelerinin, iklim değişikliği üzerine önemli etkileri bulunmaktadır. Beslenmenin çevresel etkilerini içeren az sayıda ölçek bulunmaktadır. Bu çalışmada "Green Eating Survey" adlı ölçeğin Türk dili ve kültürüne uyarlanması amaçlanmıştır.

**Yöntem-Gereçler:** Çevreye duyarlı beslenme aşamasını ölçen transteorik model, çevreye duyarlı beslenme davranışı, çevreye duyarlı beslenme için karar verme ve çevreye duyarlı beslenme için öz yeterlilik ölçeklerinden oluşan toplam 25 soruluk likert tipte ölçeğin Türkçe versiyonunun dil geçerliliği çeviri-geri çeviri yöntemiyle sağlanmıştır. Kapsam geçerliliği için uzman görüşü alınmıştır. Ölçek, Türkçeye çevrildikten ve kültürlerarası adaptasyon tamamlandıktan sonra farklı bölümlerde okuyan 468 gönüllü lisans öğrencisine uygulanmıştır. Ölçeğin Türkçe versiyonunun güvenilirliğinin değerlendirilmesi amacıyla; iç tutarlık katsayısı, test-tekrar test, paralel form yöntemleri kullanılmıştır.

**Bulgular:** Gerçekleştirilen istatistiksel analizler sonucu ölçeğin Türk üniversite öğrencileri için geçerli ve güvenilir olduğu belirlenmiş ve böylece Türkiye'de sürdürülebilir beslenme alanında ilk ölçeklerden biri olarak uyarlanmıştır. Kadınların ve Beslenme ve Diyetetik Bölümü öğrencilerinin çevreye duyarlı beslenme konusunda daha çok bilgi sahibi olduğu ve sürdürülebilir besinleri daha çok tercih ettiği görülmüştür ( $p<0,05$ ).

**Sonuç:** Üniversite öğrencilerine beslenmenin çevresel etkilerinin öğretilmesini hedefleyen müdahalelerin planlanması ve sürdürülebilir besinlerin tüketiminin sağlanması için erişilebilirliğin artırılmasını hedefleyen politikaların geliştirilmesi önerilir. Gelecek çalışmalarda, Çevreye Duyarlı Beslenme ölçeği, Türk üniversite öğrencilerinde geçerli ve güvenilir bir ölçüm aracıdır.

**Anahtar Kelimeler:** Çevreye Duyarlı Beslenme Ölçeği, Sürdürülebilir Beslenme, Türkçe Geçerlilik ve Güvenilirlik

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# PANDEMİ DÖNEMİ ÖNCESİ VE SÜRESİ FERMENTE GIDA TÜKETİMİ VE BU GIDALARIN HAKKINDA BİLGİ DÜZEYLERİNİN BELİRLENMESİ

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**Giriş-Amaç:** Koronavirüs hastalığı 2019 (Covid-19), 2020'nin başı itibarıyla tüm dünyada pandemi haline gelmiştir. Etkili aşular veya ilaçlar için arayışlar devam ederken, bağışıklığı desteklemek için beslenme stratejileri de önem kazanmıştır. Fermente gıdalar, kontrollü koşullar altında mikrobiyal etki ve enzimleri ile üretilen gıdalardır. Fermantasyon, gıdanın raf ömrünü uzatır, sindirilebilirliğini artırır. Bazı fermente gıdalar, bağırsak bağışıklığını artırma potansiyeline sahip canlı mikroorganizmalar sağlayabilmektedir. Covid-19'a karşı bir etkinlik vaadi olmaksızın, onları diyeteye dahil etmek, bağırsak iltihabını azaltmaya ve mukozal bağışıklığı güçlendirmeye, enfeksiyon ataklarının şiddetini veya süresini azaltmaya katkıda bulunarak enfeksiyonla mücadelede yardımcı olabilir. Düşük Covid-19 mortalitesi olan ülkelerin bazıları, nispeten yüksek geleneksel fermente gıdaların tüketimine sahip oldukları görülmüştür. Bu sebeple çalışmada, Afyonkarahisar Sağlık Bilimleri Üniversitesi, Sağlık Bilimleri Fakültesinde uzaktan eğitim sürecinde beslenme üzerine en az bir ders almış öğrencilerin Pandemi dönemi öncesi ve süresinde Fermente gıda tüketimi ve bu gıdalar hakkında bilgi düzeylerinin belirlenmesi amaçlanmıştır.

**Yöntem-Gereçler:** Bu çalışmanın verileri, öğrencilere "google form" üzerinden online olarak yapılmış anketten sağlanan bilgilerden elde edilmiştir. Çalışmaya katılmayı kabul eden 209 öğrenciye 35 soruluk bir anket formu yönlendirilmiştir. Bu yolla elde edilen veriler üzerinde tanımlayıcı istatistikler kullanılmıştır (SPSS 25.0).

**Bulgular:** Çalışmaya katılmayı kabul eden 18-27 yaş arası 209 öğrencinin %51,2'si Beslenme ve Diyetetik, %28,2'si Hemşirelik ve %20,6'sı Fizyoterapi ve Rehabilitasyon bölümü öğrencileridir. Öğrencilerinin %65,6'sı fermente gıda kavramını daha önce duyduklarını ve tükettiklerini, %13,3'ü duyduğunu ama tüketmediğini, %21,1 ise ne olduğunu bilmediklerini ifade etmiştir. Çalışmaya katılan 36 (%17,2) öğrenci pandemi sürecinde Covid-19'a yakalanmış ve yakalananların 27'si (%75) pandemi öncesinde fermente gıda tükettiklerini bildirmişlerdir. Geleneksel fermente gıda tüketim oranları yoğurt %98,1, kefir %41,6, tarhana %86,1, turşu %95,2, şalgam 43,5'tir. Pandemi süresince tüketim miktarlarında herhangi bir değişiklik olmamıştır (sırasıyla yoğurt 98,1, kefir 45,0, tarhana 86,1, turşu 93,8, şalgam 43,8). Çalışmaya katılan öğrencilerden %57,4'ü pandemi öncesi günde en az 1 kez yoğurt yediğini ifade ederken pandemi süresince günde en az 1 kez yoğurt yiyenlerin miktarı %60,3'tür. Aynı şekilde pandemi öncesi günde en az 1 kez turşu tüketim oranı %14,4 iken pandemi süresinde bu oran %16,8'e çıkmıştır.

**Sonuç:** Elde edilen sonuçlar değerlendirildiğinde, fermente gıda duyma ve tüketme oranı bu konuda daha ileri düzeyde ders almış olan Beslenme ve Diyetetik bölümü öğrencileridir (%62,8). Özellikle çalışmaya katılan öğrencilerin %21,1 fermente gıdaları daha önce duymadıklarını ifade etmelerine rağmen yoğurt, tarhana, sucuk gibi fermente gıda tüketim oranları %90'nın üzerinde bulunmuştur. Bu sebeple öğrencilerin terim olarak bilgi eksikleri olduğu sonucuna varmamıza neden olmuştur. Çalışma sonunda Covid-19 döneminde öncesine göre fermente gıda tüketim sıklığında artış gözlenmiştir. Bu da çalışmaya katılanların %82,8'inin Covid-19'a yakalanmamasında fermente gıda tüketiminin bağışıklık üzerine sağlamış olduğu etkiden kaynaklı olabileceği yargısına varmamıza sebep olmuştur

**Anahtar Kelimeler:** Fermente gıdalar, Fermente gıda tüketimi, Fermente gıda tüketim sıklığı, Covid-19, Pandemi

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# POSTPARTUM DÖNEMDE BESLENME, STRES VE UYKU DURUMUNUN EMZİRME TUTUMUNA ETKİSİ

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**Giriş - Amaç:** Bu çalışmada, 0-6 ay arası bebeği olan annelerin beslenme, stres ve uyku durumunun emzirme tutumuna etkisi incelenmiştir.

**Yöntem - Gereçler:** Çalışmaya 330 anne dâhil edilmiştir. Aralık 2020 – Mart 2021 arasında annelere 3 bölümden oluşan çevrimiçi bir anket uygulanmıştır. Anket içeriğinde ilk bölümde sosyodemografik bilgiler, annelerin beslenme alışkanlıkları, besin tüketim sıklığı formu ile ikinci bölümde annelerin ve bebeklerin antropometrik verileri, gebelik, doğum ve emzirme dönemine ait bilgiler bulunmakta olup, son bölümde Doğum Sonu Stres Etkenleri Ölçeği (DSSSEÖ), Doğum Sonrası Uyku Kalitesi Ölçeği (DSUKÖ) ve Emzirme Tutumunu Değerlendirme Ölçeği (ETDÖ) ile araştırma verileri elde edilmiştir. Veriler NCSS programında analiz edilmiştir. Acıbadem Üniversitesi ve Acıbadem Sağlık Kuruluşları Tıbbi Araştırma Etik Kurulu (ATADEK) tarafından 2020-25/29 karar numarası etik kurul onayı alınmıştır.

**Bulgular:** Annelerin ve bebeklerin yaş ortalaması  $28,09 \pm 4,11$  yıl ve  $3,4 \pm 1,57$  aydır. Anneler genel olarak normal vücut ağırlığında olup (ortalama beden kütle indeksi (BKİ):  $23,3 \pm 4,02$  kg/m<sup>2</sup>), gebelik sürecinde ortalama  $14,57 \pm 5,4$  kg almışlardır. Annelerin doğum sonrası stres durumu ile uyku kalitesi arasında pozitif yönlü ilişki saptanmıştır ( $r=0,422$ ;  $p=0,001$ ). Annelerin emzirme tutumunu etkileyebilecek faktörler değerlendirildiğinde, BKİ değerleri ile anlamlı ilişki bulunamamış ( $p>0,05$ ) ancak doğum sonrası stres etkenleri ile negatif yönlü anlamlı ilişki bulunmuştur ( $r=-0,159$ ;  $p=0,004$ ). Emzirme tutumunda etkili olabilecek bir alt faktör olan bebek bakımına bağlı uyku problemleri arasında negatif yönlü anlamlı ilişki bulunmuştur ( $r=-0,109$ ;  $p=0,047$ ). Annelerin emzirme tutumu ile DSUKÖ alt faktörleri olan fiziksel semptomlara bağlı uyku problemleri ve iyi uyku kalitesi arasında anlamlı ilişki saptanmamıştır ( $p>0,05$ ).

**Sonuç:** Annelerin stres durumu emzirme tutumunu etkileyebilmektedir. Doğum öncesi ve doğum sonrası dönemde annelere emzirmeyi teşvik edici eğitimler verilmelidir.

**Anahtar Kelimeler:** Beslenme, Emzirme, Postpartum Dönem, Stres, Uyku

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# 18-65 YAŞ ARASI KİŞİLERDE SEZGİSEL YEME, KISITLI YEME DAVRANIŞI VE DUYGUSAL YEME DAVRANIŞLARI ARASINDAKİ İLİŞKİNİN DEĞERLENDİRİLMESİ

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**Giriş - Amaç:** Yeme bozukluklarının artışı, obezite ile birlikte ivme kazanmıştır ve artan mortalite ile ilişkilidir. Bu nedenle yeme bozukluklarının altında yatan mekanizmaları araştırmak ve çözüm yolları bulmak önem teşkil etmektedir. Duygusal yeme ve kısıtlı yeme davranışı gibi yeme davranışı kalıplarının yeme bozuklukları patofizyolojisinde birer faktör olduğu, sezgisel yemenin ise yeme bozukluklarının önlenmesi ve progresyonunun iyileştirilmesinde etkili olduğu vurgulanmaktadır. Bu nedenle bu çalışmanın amacı da sezgisel yeme, kısıtlı yeme davranışı ve duygusal yeme davranışları arasındaki ilişkiyi değerlendirmek ve tüm bu bileşenlerin yeme davranışı kalıpları içerisindeki yerini ifade etme amacıyla literatüre yeni bir çalışma kazandırmaktır.

**Yöntem - Gereçler:** Bu çalışma 26 Mart 2021-12 Nisan 2021 tarihleri arasında Google Formlar ile oluşturulan çevrimiçi anket ile 18-65 yaş arası katılımcılar üzerinde yürütülmüştür. Çalışmanın örneklem sayısı literatürdeki çalışmalar göz önünde bulundurularak G-Power programından yararlanılarak % 95 test gücü,  $\alpha=0.05$  yanılma payı ile 262 olarak hesaplanmış, çalışma sonunda 522 katılımcıya ulaşılmıştır. Çalışma için etik kurul izni ve katılımcıların onamı alınmıştır. Katılımcılara sosyodemografik özellikleri ve genel beslenme alışkanlıklarına ilişkin bir anket, sezgisel yeme durumlarını saptamak için Sezgisel Yeme Ölçeği-2 (SYÖ-2), kısıtlı yeme davranışları ve duygusal yeme durumlarını belirlemek için Hollanda Yeme Davranışı Anketi'nin (DEBQ) duygusal yeme ve kısıtlı yeme davranışları alt ölçekleri uygulanmıştır. Elde edilen verilerin istatistiksel analizleri IBM SPSS (IBM Corp., Windows için Versiyon 26.0) ile gerçekleştirilmiş, elde edilen kategorik veriler sayı ve yüzde, nicel değişkenler ortalama, standart sapma, minimum ve maksimum istatistikler ile özetlenmiş, bağımsız iki grup karşılaştırmaları t testi ile yapılmış ve nicel değişkenler arası ilişkiler ise Pearson Korelasyon katsayısı ile ölçülmüştür. Tüm analizlerde istatistiksel anlamlılık düzeyi % 5 olarak kabul edilmiştir.

**Bulgular:** Çalışmaya dahil edilen katılımcıların % 23,95'i erkek, % 76,05'i kadındır. Yaş ortalamaları  $30,33\pm 9,35$ 'dir. Beden Kütle İndeksi (BKİ) ortalamaları ise  $24,12\pm 4,62$  kg/m<sup>2</sup> olarak belirlenmiş olup katılımcıların % 59,2'si normal BKİ kategorisinde (18,5-24,9 kg/m<sup>2</sup>) yer almıştır. Tüm katılımcılara ait SYÖ-2 toplam puan ortalaması  $3,38\pm 0,66$ , DEBQ Kısıtlı Yeme Davranışı Alt Ölçeği toplam puan ortalaması  $2,79\pm 0,88$  ve DEBQ Duygusal Yeme Alt Ölçeği toplam puan ortalaması ise  $2,23\pm 1,19$  olarak saptanmıştır. Ölçek puanları cinsiyetler arasında karşılaştırıldığında DEBQ Kısıtlı Yeme Davranışı Alt Ölçeği ve Duygusal Yeme Alt Ölçeği için erkeklerin ortalamaları kadınların ortalamalarından istatistiksel açıdan anlamlı olarak düşük bulunmuştur ( $p<0,05$ ).

**Sonuç:** Çalışmada kısıtlı yeme davranışı ve duygusal yeme alt ölçekleri skorları, erkeklerde kadınlardan istatistiksel açıdan anlamlı olarak düşük bulunmuş ve bu bulgu kadınların erkeklere kıyasla kısıtlı yeme davranışı ve duygusal yeme açısından daha fazla risk altında olduğunu göstermiştir. Ayrıca bu bulgu, kısıtlı yeme davranışı ve duygusal yeme davranışlarının yeme bozukluklarının gelişimine olan katkısı düşünüldüğünde kadınların bu açıdan da daha fazla risk altında olduğunu göstermektedir. Ayrıca çalışmada SYÖ-2 toplam puanı ile DEBQ duygusal yeme puanı arasındaki negatif yönlü ilişki kadınlarda erkeklere kıyasla güçlü düzeyde bulunmuş, bu bulgu da duygusal yemenin sezgisel yeme uygulamaları açısından özellikle kadınlar için bir engel teşkil edebileceği fikrine destek sunmuştur. \*Bu çalışma, TÜBİTAK 2210-A Genel Yurt İçi Yüksek Lisans Burs Programı kapsamında desteklenmiştir.

**Anahtar Kelimeler:** Yeme Davranışı, Sezgisel Yeme, Kısıtlı Yeme Davranışı, Duygusal Yeme, Yeme Bozuklukları

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# YETİŞKİN BİREYLERDE HEDONİK AÇLIK DURUMLARININ SATIN ALMA DAVRANIŞLARINA ETKİSİNİN DEĞERLENDİRİLMESİ

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**Giriş - Amaç:** Fizyolojik bir ihtiyaç olmaksızın, besinlere karşı yeme ve besinden bir haz alma isteği ile bireyin iştahının açılmasını ve yeme davranışının görülmesi, hedonik açlık olarak tanımlanmaktadır. Bu çalışmanın amacı, yetişkin bireylerin hedonik açlık durumlarının satın alma davranışına etkisini değerlendirmektir.

**Yöntem - Gereçler:** Bu çalışma, 71 erkek (%32,6), 147 kadın (%67,4) olmak üzere çalışmaya katılmak üzere onam veren toplam 218 yetişkin birey ile yürütülmüştür. Çalışma verileri, çevrimiçi veri toplama formu aracılığı ile elde edilmiştir. Demografik özellikler, antropometrik ölçümler ve beslenme alışkanlıkları ile ilgili sorular sorulmuş ve hedonik açlık durumunun değerlendirilmesi amacıyla Besin Gücü Ölçeği (BGÖ) ve satın alma davranışlarının değerlendirilmesi amacıyla Hedonik ve Faydacı Tüketim Davranışı Ölçeği (HFTDÖ) uygulanmıştır. BGÖ, 15 maddeden oluşmakta ve her bir madde 1-5 puan arasında değerlendirilmektedir. Toplam puan, madde sayısına bölünmekte ve ortalama puanın  $>2,5$  olması hedonik açlık varlığını ve bireyin besinlerden etkilendiğini göstermektedir. HFTDÖ, ilk 32 maddesi hedonik tüketim davranışını, son 10 maddesi ise faydacı tüketim davranışını değerlendirmektedir ve hedonik tüketim ile faydacı tüketim arasında ters ilişki beklenmektedir. Verilerin değerlendirilmesinde SPSS 22.0 kullanılmıştır.

**Bulgular:** Kadınların yaş ortalaması  $28,3 \pm 10,5$  yıl, erkeklerin ise  $38,1 \pm 12,3$  yıldır ( $p=0,000$ ). Kadınların beden kütle indeksi ortalaması  $22,9 \pm 4,5$   $\text{kg/m}^2$  ve  $25,7 \pm 3,2$   $\text{kg/m}^2$ 'dir ( $p=0,000$ ) saptanmıştır. Kadınların %54,4'ü geliri ile giderinin eşit, %29,9'u gelirinin giderinden fazla, %15,7'si ise gelirinin giderinden az olduğunu belirtmiştir. Erkeklerde ise bu oranlar sırasıyla; %35,2; %49,3 ve %15,5'dir. BGÖ ölçeği toplam puanı kadınlarda  $3,0 \pm 0,8$ ; erkeklerde  $2,5 \pm 0,8$  bulunmuştur ( $p=0,000$ ) ve BGÖ'e göre kadınların %70,7'si ( $n=104$ ), erkeklerin %49,3'ü ( $n=35$ ) hedonik açlık durumuna sahiptir. Hedonik satın alma puanı kadınlarda  $93,2 \pm 32,0$ ; erkeklerde  $70,9 \pm 24,2$  ( $p=0,000$ ) ve faydacı satın alma puanı kadınlarda  $34,7 \pm 9,1$ ; erkeklerde  $35,2 \pm 9,8$  ( $p>0,000$ ) saptanmıştır. BGÖ toplam puanı ile faydacı tüketim davranışı puanı arasında korelasyon saptanmazken, hedonik tüketim davranış puanı arasında pozitif yönlü korelasyon belirlenmiştir ( $r=0,491$ ;  $p=0,000$ ).

**Sonuç:** Kadınlarda BGÖ'e göre hedonik açlık sıklığı ve hedonik tüketim davranış puanı, erkeklere göre daha yüksek saptanmıştır. Bireylerin hedonik açlık durumlarının toplam puanı arttıkça hedonik satın alma davranışları da artmaktadır. Faydacı satın alma davranışının ise cinsiyete göre farklılık göstermediği bulunmuştur.

**Anahtar Kelimeler:** Hedonik açlık, hedonik tüketim, faydacı tüketim

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# GEZEĞEN SAĞLIĞI VE SÜRDÜRÜLEBİLİR BESLENME KAVRAMI

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**Giriş - Amaç:** Sürdürülebilirlik, gelecek nesillerin çevresel, ekonomik ve sosyal yönlerini dengeleyecek şekilde ihtiyaçlarını karşılama yeteneğinden ödün vermeden günümüzün ihtiyaçlarını karşılama yeteneğidir. Sürdürülebilir beslenme; besleyici, sağlıklı, ekosistemi koruyucu, ulaşılabilir, ekonomik olarak erişilebilir, doğal kaynakları koruyan, gelecek nesillere saygı duyan beslenmedir. Bu çalışmanın amacı gezegen sağlığı ve sürdürülebilir beslenme kavramını incelemektir.

**Yöntem - Gereçler:** Web of Science, PubMed, Cochrane, Science Direct veri tabanları kullanılarak "Gezegen Sağlığı" ve "Sürdürülebilir beslenme" ve "Sürdürülebilirlik" anahtar kelimelerini içeren makaleler incelenmiştir.

**Bulgular:** Mevcut besin üretim yöntemleri, gezegenin sağlığı için risk oluşturmaktadır. Tarım sektörü küresel sera gazı emisyonlarının %16-27'sini oluşturmakta ve tatlı su kirliliği ile biyolojik çeşitlilik kaybının başlıca nedeni olmaktadır. Bu nedenle, gıda sistemlerini daha iyi sağlık ve çevresel sonuçlar sağlayacak şekilde yeniden düzenlemek, 21. yüzyılın en önemli küresel sorumlulukları arasındadır. Bu konuya destek olmak için EAT- Lancet Komisyonu, hem insanlar hem de gezegen için sağlıklı olan evrensel bir referans diyeti belirlemek, kronik hastalık risklerini en aza indirmek ve insan sağlığını en üst düzeye çıkarmak için çalışma başlatmıştır. İyileştirilmiş tarımsal üretim uygulamaları ve gıda israfı ve kaybının azaltılmasıyla birlikte Komisyon, bu diyetin 2050 yılında tahmini 10 milyar insanı küresel ısınmayı, kara sistemi değişikliğini, biyolojik çeşitlilik kaybını kısıtlayan gezegen sınırları içinde beslemeyi sağlayacağını düşünmektedir. Ulusal Halk Sağlığı sonuçlarının iyileştirilmesi ve nüfusun besin eksikliklerinin önlenmesi amacıyla ulaşılabilir için Topluma Özgü Beslenme Rehberleri geliştirilmektedir. Rehberlerde, beslenme kuralları öncelikle besin eksikliklerini önlemek için geliştirilmiş olup, bireyler için besin alımı tavsiyelerine odaklanılmıştır.

**Sonuç:** Bu rehberlere sürdürülebilir beslenme modelinin eklenebilmeli, topluma özgü gereksinimler değerlendirilerek, toplumun ekonomik koşullarına uygun, satın alım gücünün ve kültürel özellikler ile birlikte gelecek nesillerin refahının göz önünde bulundurulduğu, bireylerin besin ögesi ve enerji gereksinimlerini karşılayan, toplumun kolay öğrenerek beslenme davranış değişikliği sağlayabileceği sürdürülebilir beslenme modeli rehberi geliştirilmesi gerekmektedir.

**Anahtar Kelime:** Sürdürülebilir Beslenme; Beslenme Rehberleri; Gezegen Sağlığı

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# BESLENME İLE İLGİLİ BÖLÜMLERDE EĞİTİM GÖREN ÜNİVERSİTE ÖĞRENCİLERİNİN SÜRDÜRÜLEBİLİR BESLENME HAKKINDAKİ BİLGİ VE TUTUMLARI

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**Giriş - Amaç:** Bu çalışmada, beslenmeyle ilgili bölümlerde okuyan lisans öğrencilerinin sürdürülebilir beslenme hakkındaki bilgi ve tutumlarını değerlendirmek ve bölümler arasındaki farkları saptamak amaçlanmıştır.

**Yöntem - Gereçler:** Çalışmanın evrenini; 2020-2021 öğretim yılında Beslenme ve Diyetetik, Gastronomi ve Mutfak Sanatları, Gıda Mühendisliği ve Turizm İşletmeciliği bölümlerinde okuyan öğrenciler oluşturmaktadır. Örneklem seçiminde amaçsal örnekleme yöntemi kullanılmış, güç (power) analizi yapılarak her grup için minimum öğrenci sayısı 148 ve kayıplar göz önünde bulundurularak 720 öğrenciye ulaşılmaya hedeflenmiştir. Çalışma için Marmara Üniversitesi Sağlık Bilimleri Fakültesi Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu'ndan onay alınmış ve çalışma Aralık 2020 – Mayıs 2021 tarihleri arasında 59 devlet ve 20 vakıf üniversitesinde okuyan, online olarak ulaşılan 688 gönüllü öğrenci ile tamamlanmıştır. Anket formunda genel bilgileri, çevre ve çevre sorunlarına bakış açıları, sürdürülebilir beslenme ve sürdürülebilir projelere ilişkin sorular yer almaktadır. Elde edilen veriler SPSS 22.0 paket programında değerlendirilmiş; tüm analizlerde istatistiksel anlamlılık düzeyi p

**Bulgular:** Çalışmaya katılan öğrencilerin 173'ü (%25,1) Beslenme ve Diyetetik, 183'ü (%26,6) Gastronomi ve Mutfak Sanatları, 171'i (%24,9) Gıda Mühendisliği ve 161'i (%23,4) Turizm İşletmeciliği bölümünde okumakta olup, 153'ü (%22,2) erkek, 535'i (%77,8) kadın olduğu belirlenmiştir. Sürdürülebilir beslenme kavramını duyduğunu belirten öğrenci sıklığı en yüksek Beslenme ve Diyetetik (%90,2); en düşük Turizm İşletmeciliği (%49,1) bölümünde olmuştur. Beslenme ve Diyetetik öğrencileri sürdürülebilir beslenme kavramını bilme, sürdürülebilir beslenmenin önemi ve besin üretim süreçlerinin çevreye verdiği zararlara ilişkin bilgi düzeyi diğer bölümlere göre istatistiksel olarak anlamlı düzeyde daha yüksek bulunmuştur (p<0,05).

**Sonuç:** Gıda kaybı ve israfındaki artış gün geçtikçe daha büyük problemlere dönüşmektedir. Bu durum gıda güvenliği, yetersiz teknoloji, üretim, işleme, taşıma, depolama, hazırlama sürecindeki hatalar ve tüketici davranışlarından kaynaklanabilmektedir. Beslenme ile ilgili bölümlerde okuyan öğrenciler bu süreçlerdeki kayıpları önlemede etkili olacağından, farkındalığı yüksek, gerekli tutum ve davranışları benimsemiş bireyler olması önem taşımaktadır. Sürdürülebilir beslenmeye yönelik bilgilerin eğitim müfredatı içinde verilmesi ile bu bölümlerde okuyan öğrencilerin çalışma hayatında da çevresine model olacağı ve sektörlerine geleneksel, yenilikçi ve teknolojik girişimleri doğru entegre ederek sürdürülebilirlik açısından fark yaratacakları öngörülmektedir.

**Anahtar Kelimeler:** Sürdürülebilir beslenme, gıda israfı ve kaybı, sürdürülebilir diyet modelleri, alternatif gıdalar

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# 10. ULUSAL SAĐLIKLI YAŞAM KONGRESİ

**KONFERANS BİLDİRİLERİ**

# The Effects of Nutrition, Stress and Sleep Status on Breastfeeding Attitude in the Postpartum Period

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## ABSTRACT

**Objective:** This study examined the impact of feeding, stress and sleep status of mothers with infants aged 0-6 months on breastfeeding attitudes.

**Material and Method:** In our study, our participants were 330 mothers. An online questionnaire consisting of 3 parts was administered to mothers between December 2020 and March 2021. In the first part of the questionnaire, sociodemographic information, mothers' eating habits and in the second part, anthropometric data of mothers and infants, information about pregnancy, birth and breastfeeding periods, in the last part, the Postpartum Stressors-Turkish (PPSS-TR), the Turkish Postpartum Sleep Quality (T-PSQS), and the Breastfeeding Attitude Evaluation Scale (BAES) research data were obtained. Our study was approved by Ethics Committee of Acıbadem Mehmet Ali Aydınlar University on 03.12.2020 with 2020-25/29 resolution number No. 2020/25.

**Results:** The mean age of mothers and infants was 28.09±4.11 years and 3.4±1.57 months, respectively. Mothers generally had normal body weight (mean body mass index (BMI): 25.48±4.29 kg/m<sup>2</sup>) and weight gained a mean of 14.57±5.4 kg during pregnancy. A positive correlation was found between mothers' postpartum stress status and sleep quality (r=0.422; p=0.001). When factors that may affect mothers' breastfeeding attitudes were evaluated, no significant relationship was found with BMI values (p>0.05), but a negative significant relationship was found with postpartum stress factors (r=-0.159; p=0.004). A negative and significant relationship was found between sleep problems related to infant care, which is a sub-factor that may be effective in breastfeeding behavior (r=-0.109; p=0.047). There was no significant relationship found between mothers' breastfeeding attitude and sleep problems due to physical symptoms, which are sub-factors of T-PSQS, and good sleep quality (p>0.05).

**Conclusion:** The stress status of the mothers affected the breastfeeding attitude. In the prenatal and postnatal period, mothers should be given training to encourage breastfeeding.

**Keywords:** Breastfeeding, nutrition, postpartum period, sleep, stress.

## Postpartum Dönemde Beslenme, Stres ve Uyku Durumunun Emzirme Tutumuna Etkisi

### ÖZET

**Amaç:** Bu çalışmada, 0-6 ay arası bebeği olan annelerin beslenme, stres ve uyku durumunun emzirme tutumuna etkisi incelenmiştir.

**Yöntem:** Çalışmaya 330 anne dâhil edilmiştir. Aralık 2020 – Mart 2021 arasında annelere 3 bölümden oluşan çevrimiçi bir anket uygulanmıştır. Anket içeriğinde ilk bölümde sosyodemografik bilgiler, annelerin beslenme alışkanlıkları, ikinci bölümde annelerin ve bebeklerin antropometrik verileri, gebelik, doğum ve emzirme dönemine ait bilgiler bulunmakta olup, son bölümde Doğum Sonu Stres Etkenleri Ölçeği (DSSEÖ), Doğum Sonrası Uyku Kalitesi Ölçeği (DSUKÖ) ve Emzirme Tutumunu Değerlendirme Ölçeği (ETDÖ) ile araştırma verileri elde edilmiştir. Veriler NCSS programında analiz edilmiştir. Araştırma için Acıbadem Üniversitesi ve Acıbadem Sağlık Kuruluşları Tıbbi Araştırma Etik Kurulu (ATADEK) tarafından 2020-25/29 karar numarası etik kurul onayı alınmıştır.

**Bulgular:** Annelerin ve bebeklerin yaş ortalaması sırasıyla 28,09±4,11 yıl ve 3,4±1,57 aydır. Anneler genel olarak normal vücut ağırlığında olup (ortalama beden kütle indeksi (BKİ): 25,48±4,29 kg/m<sup>2</sup>), gebelik sürecinde ortalama 14,57±5,4 kg almışlardır. Annelerin doğum sonrası stres durumu ile uyku kalitesi arasında pozitif yönlü ilişki saptanmıştır (r=0,422; p=0,001). Annelerin emzirme tutumunu etkileyebilecek faktörler değerlendirildiğinde, BKİ değerleri ile anlamlı ilişki bulunamamış (p>0,05) ancak doğum sonrası stres etkenleri ile negatif yönlü anlamlı ilişki bulunmuştur (r=-0,159; p=0,004). Emzirme tutumunda etkili olabilecek bir alt faktör olan bebek bakımına bağlı uyku problemleri arasında negatif yönlü anlamlı ilişki bulunmuştur (r=-0,109; p=0,047). Annelerin emzirme tutumu ile DSUKÖ alt faktörleri olan fiziksel semptomlara bağlı uyku problemleri ve iyi uyku kalitesi arasında anlamlı ilişki saptanmamıştır (p>0,05).

**Sonuç:** Annelerin stres durumu emzirme tutumunu etkileyebilmektedir. Doğum öncesi ve doğum sonrası dönemde annelere emzirmeyi teşvik edici eğitimler verilmelidir.

**Anahtar Sözcükler:** Beslenme, Emzirme, Postpartum Dönem, Stres, Uyku

The most natural and safest way to feed the infant is to breastfeed (1). The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend that the infant be fed exclusively with breast milk until the end of the 6th month. WHO emphasizes that continuing breastfeeding up to age 2 is an important part of nutrition (2). Breastfeeding improves the health of mother and infant. Gastrointestinal, respiratory and middle ear infections are less common in breastfed infants. It also reduces the risk of childhood obesity and diabetes. The breastfeeding mechanism supports the infant's sensory and cognitive development, increases the infant-mother bond and emotional well-being. The benefits of breastfeeding on the mother are enabling the length of time between pregnancies due to reduced risk of developing breast and ovarian cancer, increased postpartum weight loss and lactational amenorrhoea (3).

Throughout life, women go through many physiological phases. One of the most important phases is the postpartum period. During the postpartum period, mothers face many physical and psychological conditions, such as wounds on the nipple, fatigue, stress, and insomnia (1). Postpartum stress is the restriction or negative emotional state caused by the stress factor in the postpartum period and usually occurs within 6 weeks after birth. (4). Postpartum stress, depression and anxiety-like illnesses are common for mothers who have their first birth. Emotional or psychological problems affect the mother's attachment to the infant, the mother's relationship with the infant, and the infant's psychological development (5). In the last three months of pregnancy and after birth, mothers' sleep time is short and interrupted (6). The circadian rhythm is disrupted as a result of continued or recurrent intrinsic or external imbalance of the sleep wake rhythm. With this deterioration, the person experiences excessive sleepiness or insomnia (7). Circadian rhythm disorders seen after birth are associated with depression and social factors (8).

Infant feeding knowledge are important factors in determining the onset and duration of breastfeeding of psychosocial factors such as self-sufficiency, mother's attitude, impact of family and friends. The mother's positive attitude is an important indicator for starting breastfeeding and prolonging breastfeeding time. Mothers with higher education, knowledge, skills and experience about breastfeeding have higher attitudes towards breastfeeding (9). The aim of this research is to determine the effect of nutrition, stress and sleep status on breastfeeding attitude during the postpartum period.

## MATERIALS AND METHODS

The research was conducted as an online survey from December 2020 to March 2021. The research sample was 330 mothers older than 18 years with infants between 0-6 months. We used G-power analysis to determine sufficient sample volume. Mothers who wish to participate voluntarily were included in the study. Our study was approved by Ethics Committee of Acibadem Mehmet Ali Aydınlar University on 03.12.2020 with 2020-25/29 resolution number 2020/25.

Participants were sent online survey. The first part of the survey contained sociodemographic information and anthropometric data of mother and infant. The second part of the survey included questions included mother's nutrition habits, pregnancy, birth and breastfeeding period. The final part of the survey was formed with scales as Postpartum Stressors Scale-Turkish (PPSS-TR), Turkish Postpartum Sleep Quality Scale (T-PSQS), Breastfeeding Attitude Evaluation Scale.

### *Postpartum Stressors Scale-Turkish version (PPSS-TR)*

The PPSS was developed by Park et al. (2015). PPSS is used to determine the factors causing stress in mothers in the postpartum period (10). The Turkish Validity and Reliability of the PPSS –TR was conducted by Şahbaz et al. (2019) The scale consists of 9 items. The items of the scale are answered in 4-point Likert type as "not at all stressful" (1 point), "a little stressful" (2 points), "moderately stressful" (3 points), "very stressful" (4 points) (11).

### *Turkish Postpartum Sleep Quality Scale (T-PSQS)*

PSQS was developed by Yang et al. (2013) (12). Turkish Validity and Reliability of the scale was conducted by Boz et al. (2017). The scale includes 14 items intended to measure your sleep quality over the past two weeks during the end of postpartum period. The scale has 3 sub-dimensions: sleep problems due to infant care, sleep problems due to physical symptoms, and good sleep quality. T-PSQS items are scored on a 5-point Likert scale between 0-4 (0 never, 1 rarely, 2 sometimes, 3 often, 4 always). The lowest 0 points and the highest 56 points can be obtained from the scale. The increase in scale score suggests decrease sleep quality (13).

### *Breastfeeding Attitude Evaluation Scale*

The BAES was developed with mothers who gave birth in the gynecology clinics of 10 hospitals in Istanbul but sections about the evaluation of the scale were republished by Arslan (2015). The scale evaluates the dimensions

of the attitudes that guide the breastfeeding behaviors of mothers. BAES consists of 46 items. The items are scored as with the statements completely agree (4 point), agree (3 point), undecided (2 point), slightly agree (1 point), strongly disagree (0 point) (14).

### Statistical Analysis

Statistical analysis were determined with the NCSS program. Descriptive statistical methods (mean, standard deviation, median, frequency, percentage, minimum, maximum) were used while evaluating the study data. The compatibility of quantitative data with normal distribution was tested by Shapiro-Wilk testing and graphical reviews. Student-t testing was used in comparisons between two groups of quantitative variables that showed normal distribution. Comparisons between more than two groups of quantitative variables showing normal distribution used one-way variance analysis and Bonferroni corrective binary assessments. Kruskal-Wallis testing and Dunn-Bonferroni testing were used in more than two group comparisons of quantitative variables that showed no normal distribution, while Pearson correlation analysis was used in assessing quantitative interchanges. Statistical significance is considered  $p < 0.05$ .

## RESULTS

Mean age of mothers and infants was  $28.09 \pm 4.11$  years and  $3.4 \pm 1.57$  months respectively as shown in Table 1. Mothers generally had a normal BMI as mean BMI was  $25.48 \pm 4.29$  kg/m<sup>2</sup>. Gained weight during pregnancy was mean of  $14.57 \pm 5.4$  kg. Mean scores of total PPSS-TR, T-PSQS, and BAES were found as  $18.15 \pm 4.84$ ,  $23.43 \pm 7.49$ ,  $113.79 \pm 23.88$ , respectively. Mean scores of the T-PSQS "Baby Care Sleep Problems", Sleep Problems Due to Physical Symptoms and "Good Sleep Quality" sub-dimensions were  $12.57 \pm 4.87$ ,  $6.19 \pm 3.55$  and  $4.67 \pm 2.34$ , respectively.

**Table 1.** The mean age of mothers-infants and mean of scales

	Minimum	Maximum	Mean±SD
Mothers age	18	40	28.09±4.11
Infants month	0.17	6	3.4±1.57
Mothers BMI	15.78	44.82	25.48±4.29
Weight Gained During Pregnancy	0	37	14.57±5.4
PPSS-TR	8	31	18.15±4.84
T-PSQS	6	44	23.43±7.49
Sleep Problems Due to Infant Care	2	24	12.57±4.87
Sleep Problems Due to Physical Symptoms	0	18	6.19±3.55
Good Sleep Quality	0	12	4.67±2.34
BAES	0	184	113.79±23.88

In Table 2, PPSS-TR, T-PSQS and BAES scores according to demographic characteristics was shown. There was no significant difference was found according to the postpartum

stressors, sleep quality and breastfeeding attitudes of the mothers, as well as age groups, BMI classifications, number of individuals in the family, number of children in the family, educational status and employment status.. A significant relationship was found between the income status of mothers and postpartum stressors ( $p=0.004$ ). Stress levels with less than income expense was found to be significantly higher compared to mothers with more than income expense ( $p=0.003$ ).

Evaluation of the PPSS-TR, T-PSQS and BAES scores according to the characteristics of pregnancy, birth and breastfeeding periods were given in Table 3. It was determined that the sleep quality of the mothers who gave another nutrient before the birth of their child was worse than the mothers who did not give any other food ( $p=0.001$ ). The stress level of mothers who give nutrient other than breast milk is higher than mothers who do not give nutrient other than breast milk ( $p=0.011$ ). Breastfeeding attitudes of mothers who gave food other than breast milk were at a worse level than mothers who do not give anything other than breast milk ( $p=0.010$ ).

The evaluation of PPSS-TR, T-PSQS and BAES scores according to nutritional habits was shown in Table 4. There was no association found between mothers' meal numbers and meal skipping status and postpartum stressors, sleep quality and breastfeeding attitude. A difference was found between skipping meals and good sleep quality, which is a sub-dimension of the T-PSQS. Mothers who skipped meals were found to have better sleep quality than mothers who did not skip meals ( $p=0.001$ ).

The evaluation of the relationship between the scale scores of the mothers was given in Table 5. A positive correlation was found between postpartum stress factors of mothers and sleep problems related to infant care ( $r=0.475$ ;  $p=0.001$ ) and sleep problems due to physical symptoms ( $r=0.375$ ;  $p=0.001$ ), which are T-PSQS sub-dimensions. A negative significant relationship was found between the postpartum stressors of the mothers and the T-PSQS good sleep quality sub-dimension ( $r=-0.210$ ;  $p=0.001$ ). When the postpartum stress factors of the mothers were evaluated, a positive correlation was found between sleep quality ( $r=0.422$ ;  $p=0.001$ ). Postpartum stressors, which is one of the factors affecting mothers' breastfeeding attitudes had a negative correlation ( $r=-0.159$ ;  $p=0.004$ ). Sleep problems due to infant care, which is a sub-factor that may be effective in breastfeeding attitude ( $r=-0.109$ ;  $p=0.047$ ). There was no significant relationship was found between breastfeeding attitude and sleep problems related to physical symptoms, which are T-PSQS sub-factors, and good sleep quality ( $p > 0.05$ ).



**Table 2.** Evaluation of PPSS-TR, T-PSQS and BAES scores according to demographic characteristics

		PPSS-TR Total Score		Test Value	T-PSQS Total Score		Test Value	BAES Total Score		Test Value
		Min-Max (Median)	Mean±SD	p	Min-Max (Median)	Mean±SD	p	Min-Max (Median)	Mean±SD	p
<b>Age</b>	≤25 Age (n=89)	8-28 (18)	18.72±4.59	F:1.125	9-44 (23)	23.48±8.25	F:0.056	0-152 (112)	111.64±25.32	F:1.260
	26-30 Age (n=157)	9-31 (17)	17.91±4.85	<b>*0.339</b>	7-44 (23)	23.48±7.25	<b>*0.983</b>	27-184 (120)	116.46±22.63	<b>*0.288</b>
	31-35 Age (n=69)	8-27 (19)	18.32±4.96		6-43 (25)	23.42±7.14		24-146 (117)	111.1±23.15	
	>35 Age (n=15)	9-29 (16)	16.53±5.59		8-39 (21)	22.67±7.56		21-142 (109)	111±30.02	
<b>BMI</b>	Underweight (n=8)	12-23 (17)	17.00±4.24	$\chi^2$ :0.543	11-33 (26)	24.25±7.98	$\chi^2$ :2.032 <sup>c</sup>	100-131 (120.5)	117.38±10.77	$\chi^2$ :6.056
	Normal (n=150)	8-31 (18)	18.19±4.87	<b>*0.909</b>	6-44 (23)	24.00±8.03	<b>0.566</b>	0-178 (114)	113.04±21.79	<b>*0.109</b>
	Overweight (n=126)	9-31 (18)	18.17±5.01		8-43 (23)	23.02±6.61		29-184 (120)	117.74±21.19	
	Obese + Morbid obese (n=46)	9-27 (18)	18.17±4.45		10-43 (22.5)	22.57±7.94		21-154 (113)	104.83±34.64	
<b>Number of individuals in the family</b>	≤2 person (n=18)	10-31 (19)	19.5±5.46	F:0.984	11-44 (25.5)	24.44±9.21	F:0.337	80-149 (112)	110.72±18.23	F:2.702
	3 person (n=214)	8-31 (17.5)	17.94±4.73	<b>*0.375</b>	6-43 (23)	23.21±7.51	<b>*0.714</b>	24-184 (118)	116.02±21.72	<b>*0.069</b>
	≥4 person (n=98)	8-27 (18.5)	18.36±4.96		8-44 (24)	23.73±7.15		0-146 (115.5)	109.49±28.42	
<b>Number of children in the family</b>	1 child (n=240)	8-31 (18)	18.19±4.8	F:0.537	6-44 (23)	23.55±7.76	F:0.337	0-184 (117)	115.06±22.58	F:1.726
	2 child (n=62)	9-27 (18.5)	18.4±4.91	<b>*0.585</b>	8-39 (23)	23.26±7.09	<b>*0.714</b>	24-146 (115.5)	108.76±27.89	<b>*0.180</b>
	≥3 child (n=28)	8-27 (17)	17.29±5.13		10-34 (22.5)	22.86±6.1		21-146 (118.5)	114.11±24.56	
<b>Educational status</b>	Elementary (n=21)	11-23 (16)	16.52±3.31	F:1.264	9-38 (20)	22.1±8.89	F:0.650	24-149 (113)	111.48±27.69	F:2.293
	High school (n=77)	9-28 (18)	18.03±5	<b>*0.287</b>	6-44 (22)	22.77±8.4	<b>*0.583</b>	0-184 (115)	110.49±33.37	<b>*0.087</b>
	University (n=202)	8-31 (18)	18.22±4.81		7-44 (23)	23.69±7.15		39-167 (118)	116.28±18.94	
<b>Working Status</b>	Masters degree (n=30)	8-29 (19)	19.17±5.4		14-35 (24.5)	24.33±6.28		50-146 (108)	107.17±20.31	
	Working (n=158)	8-31 (18)	18.14±5.03	t:-0.044	6-44 (23)	22.91±7.15	t:-1.214	39-167 (118)	115.43±21.21	t:1.194
<b>Income status</b>	No working (n=172)	8-31 (18)	18.16±4.68	<b>*0.965</b>	9-44 (23)	23.91±7.78	<b>*0.226</b>	0-184 (115)	112.29±26.06	<b>*0.233</b>
	Income less than expenses (n=76)	10-31 (19)	19.59±4.99	F:5.708	9-44 (24)	24.62±8.94	F:1.378	0-178 (115.5)	112.75±29.12	F:2.976
	Income equal to expenses (n=161)	8-31 (18)	18.07±4.64	<b>*0.004**</b>	6-44 (23)	23.27±7.02	<b>*0.254</b>	21-184 (113)	111.93±24.85	<b>*0.054</b>
	Income more than expenses (n=93)	8-26 (16)	17.11±4.82		12-42 (23)	22.75±6.93		72-154 (121)	117.87±15.79	



**Table 3.** Evaluation of PPSS-TR, T-PSQS and BAES scores according to the characteristics of pregnancy, birth and breastfeeding periods

		PPSS-TR Total Score			Test Value	T-PSQS Total Score			Test Value	BAES Total Score			Test Value
		Min-Max (Median)	Mean±SD	p		Min-Max (Median)	Mean±SD	p		Min-Max (Median)	Mean±SD	p	
Taking vitamin/mineral supplements during pregnancy	Yes (n=293)	8-31 (18)	18.12±4.89	t:-	6-44 (23)	23.34±7.46	t:-	0-184 (117)	113.91±23.9	t:0.258			
	No (n=37)	8-27 (18)	18.41±4.44	0.338	10-42 (25)	24.16±7.79	0.628	24-146 (118)	112.84±23.95	<b>0.796</b>			
Delivery method	Normal (n=121)	8-31 (18)	18.1±4.78	t:-	9-44 (24)	23.58±7.57	t:0.268	0-167 (117)	113.27±23.85	t:-0.301			
	Cesarean (n=209)	8-31 (18)	18.18±4.89	<b>0.881</b>	6-44 (23)	23.35±7.46	<b>0.789</b>	21-184 (116)	114.1±23.94	<b>0.763</b>			
Infant's Gender	Girl (n=161)	8-29 (19)	18.24±4.92	t:0.332	9-43 (23)	23.64±7.1	t:0.488	24-184 (120)	116.08±22.18	t:1.703			
	Boy (n=169)	8-31 (17)	18.07±4.77	<b>0.740</b>	6-44 (23)	23.24±7.86	<b>0.626</b>	0-154 (114)	111.62±25.26	<b>0.089</b>			
Which child is your	First Child (n=244)	8-31 (18)	18.23±4.78	F:0.311	6-44 (23)	23.61±7.73	F:0.279	0-184 (117)	114.91±22.54	F:1.036			
	Second Child (n=57)	9-27 (18)	18.14±5	<b>0.733</b>	8-39 (22)	22.86±7.16	<b>0.757</b>	27-146 (116)	110.42±26.32	<b>0.356</b>			
	≥Third Child (n=29)	8-27 (17)	17.48±5.15		10-34 (23)	23.03±6.06		21-146 (117)	111±29.35				
The situation of giving a child other nutrition than breast milk as soon as born	Yes (n=82)	9-31 (19)	18.87±4.95	t:1.545	10-44 (25)	25.77±7.55	t:3.305	0-166 (112.5)	112.17±23.16	t:-0.710			
	No (n=248)	8-31 (18)	17.92±4.79	<b>0.123</b>	6-43 (22)	22.66±7.32	<b>0.001*</b>	21-184 (118)	114.33±24.13	<b>0.478</b>			
Giving nutrition other than breast milk	Yes (n=96)	8-31 (19)	19.21±4.74	t:2.562	11-43 (24)	24.48±7.65	t:1.629	28-166 (110.5)	108.53±21.11	t:-2.587			
	No (n=234)	8-31 (17)	17.72±4.82	<b>0.011*</b>	6-44 (23)	23±7.4	<b>0.104</b>	0-184 (120)	115.95±24.64	<b>0.010*</b>			
Reason for giving nutrition other than breast milk (n=96)	Insufficient milk-infant is not satiated (n=67)	10-31 (19)	19.82±4.62	t:1.953	12-43 (26)	25.25±7.39	t:1.518	28-147 (108)	106.48±21.15	t:-1.457			
	Other reasons (n=29)	8-29 (19)	17.79±4.78	<b>0.054</b>	11-42 (21)	22.69±8.07	<b>0.132</b>	74-166 (114)	113.28±20.61				
Use of breast milk enhancing products	Yes (n=172)	9-31 (18)	18.45±4.75	t:1.160	6-44 (24)	24.03±7.38	t:1.510	39-167 (112)	113.77±20.07	t:-0.016			
	No (n=158)	8-31 (18)	17.83±4.93	<b>0.247</b>	7-44 (22)	22.78±7.57	<b>0.132</b>	0-184 (120)	113.82±27.49	<b>0.987</b>			

**Table 4.** Evaluation of PPSS-TR, T-PSQS and BAES scores according to nutritional habits

		PPSS-TR Total Score			T-PSQS Total Score						BAES Total Score			Test Value
		Min-Max (Median)	Mean ±SD	p	Good Quality	Sleep	Test Value	Total Score	Test Value	Test Value	Mean±SD	p		
													Min-Max (Median)	
Number of meals	2 meals (n=127)	8-31 (18)	18.38±4.61	F:0.349	0-12 (4)	4.51±2.35	F:0.95	10-43 (23)	23.87±7.22	F:1.644	21-178 (116)	113.33±24.14	F:0.190	
	3 meals (n=134)	9-29 (18)	17.89±4.83	<b><i>a</i>0.705</b>	0-12 (4)	4.71±2.31	<b><i>a</i>0.552</b>	6-44 (24)	23.76±7.31	<b><i>a</i>0.195</b>	0-184 (120)	114.75±24.37	<b><i>a</i>0.827</b>	
	≥4 meals (n=69)	8-31 (18)	18.25±5.3		1-11 (5)	4.88±2.41		7-44 (22)	21.99±8.23		38-154 (112)	112.8±22.66		
Skip meal	Yes (n=276)	8-31 (18)	18.38±4.74	t:1.951	0-12 (4)	4.43±2.23	t:-4.29	6-44 (23)	23.48±7.55	t:0.266	0-184 (117)	113.47±25.12	t:-0.561	
	No (n=54)	9-26 (16.5)	16.98±5.23	<b><i>b</i>0.052</b>	1-12 (5.5)	5.89±2.55	4 <b><i>b</i>0.001**</b>	7-43 (22.5)	23.19±7.23	<b><i>b</i>0.791</b>	72-142 (117)	115.46±16.17	1 <b><i>b</i>0.575</b>	

**Table 5.** Evaluation of the relationship between scores of scales

	PPSS-TR Total Score		BAES Total Score	
	r	p	r	p
<b>PPSS-TR</b>	-	-	-0.159	<b>0.004**</b>
<b>T-PSQS</b>				
Sleep Problems Due to Infant Care	0.475	<b>0.001**</b>	-0.109	<b>0.047*</b>
Sleep Problems Due to Physical Symptoms	0.375	<b>0.001**</b>	-0.101	<b>0.067</b>
Good Sleep Quality	-0.210	<b>0.001**</b>	0.072	<b>0.193</b>
<b>Scale Total Score</b>	0.422	<b>0.001**</b>	-0.097	<b>0.080</b>

## DISCUSSION

While most of the mothers easily adapt to physiological, psychological and social changes in the postpartum period, some mothers are at risk in terms of psychological disorders (such as stress, anxiety, panic disorder and depression) (15). The incidence of psychological disorders in breastfeeding mothers is low (16). In a study by Didisen et al., mean age of women is  $28\pm 6$  years, 30.3% of women are university graduates, and 49.8% of mothers were housewives (17). In our study, the mean age of the women was  $28.09\pm 4.11$ , 61.2% of the mothers were university graduates and 52.1% of the mothers were housewives.

In a study with similar results, the mean PPSS-TR score was  $16.67\pm 5.74$  (11). Similarly, in our study, the mean PPSS-TR score was  $18.15\pm 4.84$ . In the study by Pranshanthi et al. (2020), there was no significant relationship was found between the perceived stress level of mothers in the postpartum period and age, number of children in the family, mother's education and working status (18). In our study, there was no significant relationship was found between the data on age groups, the number of individuals in the family, the number of children in the family, the education level of the parents, and the working status of the mother and the postpartum stressors ( $p>0.05$ ). In the systematic review it was determined that the stress level of women with  $BMI\geq 30$  kg/m<sup>2</sup> was higher than women with  $BMI\leq 30$  kg/m<sup>2</sup>, and also predicted that women with a  $BMI\geq 30$  kg/m<sup>2</sup> may had a low breastfeeding rate (19). In our study, there was no statistical difference was found between the BMI levels of the mothers and the postpartum stressors ( $p>0.05$ ).

In the study of Aksu et al. (2019), mean T-PSQS total score was  $33.57\pm 11.26$  (20). In our study, the mean T-PSQS total score was  $23.43\pm 7.49$ . Sleep quality of mothers participating in our study, Aksu et al. (2019) was at a good level according to the mothers participating in the study. In a study, older mothers were associated with poor sleep quality, there was no significant relationship between the number of individuals in the family and the education level of the mother and sleep quality (13). In this study, mothers aged 25 and under had better sleep quality than mothers aged 31-35 ( $p=0.038$ ). In a cohort study, data were collected at 8 weeks and 2 years postpartum, and at the postpartum's 8th week and 2nd year, women with insomnia symptoms showed a greater increase in body mass index than women without insomnia symptoms (21). In our study, there was no significant difference was

found between the BMI level of the mothers and the T-PSQS and its sub-dimensions ( $p>0.05$ ).

In a study conducted with mothers in the early postpartum period, mean BAES score was  $110.86\pm 18.14$  (22). And in another study, mean BAES score of the mothers was  $76.34\pm 18.81$  (23). In our study, mean BAES score of mothers in the postpartum period was found to be  $113.79\pm 23.88$ . In the studies, there was no relationship was found between age groups, family type, and the number of children in the family and BAES (22, 23). Similarly in our study, there was no relationship was found between age groups, family type, and the number of children in the family and BAES. In the cohort study by Chen et al. (2020), it was shown that the duration of breastfeeding was shorter in obese mothers than in mothers with normal BMI. Discontinuation rate of breastfeeding in the postpartum 2nd month was higher in mothers with obesity, and mothers with low BMI were associated with a shorter breastfeeding duration (24). In our study, there was no relationship was found between mothers' BMI level and breastfeeding attitude ( $p>0.05$ ). It may be due to the study's nature.

Sleep disorders, depression, perceived stress and breastfeeding may be linked to each other. Studies with sleep disorders of postpartum period, women with sleep disorders were associated with more stress and lower self-esteem in the postpartum 6-8th week (25) and postpartum sleep quality was positively associated with physical symptoms and perceived stress level. The fact that the physical symptoms and stress levels were lower in women in the postpartum period indicates that they have better sleep quality (26). Similarly, in our study, as the stress level of mothers increased, sleep quality decreased ( $r=0.422$ ;  $p=0.001$ ). Breastfeeding self-efficacy scores with depression and stress symptoms were found to be significantly lower, and there was no relationship between mothers' breastfeeding attitudes and stress symptoms (27). In another study, 788 mothers with infants aged 0-6 months found to be higher perceived stress levels, and their breastfeeding attitudes became negative (28). In our study, as the stress level of mothers increased, breastfeeding attitudes were found to be negative ( $r=-0.159$ ;  $p=0.004$ ). In an observational cohort study mothers with low sleep activity were less likely to start breastfeeding than mothers with high sleep activity. Mean sleep onset, time in bed, sleep duration, and sleep efficiency did not differ according to breastfeeding status at any time point (33rd week of gestation, 2nd, 6th and 16th weeks postpartum) (29).

Lactating and non-breastfeeding mothers did not differ in terms of the amount of time they spent in sleep, but lactating mothers were more awake at night (30). In our study, it was determined that the mother's positive breastfeeding attitude decreased the sleep problems due to infant care, which is the sub-dimension of T-PSQS ( $r = -0.109$ ;  $p = 0.047$ ). There was relationship was found between the other sub-dimensions of T-PSQS and the score obtained from the total scale and breastfeeding attitude ( $p > 0.05$ ).

## CONCLUSION

In the present study, impact of feeding, stress and sleep status on breastfeeding attitude of mothers with infants between 0-6 months. Stress levels of mothers affected breastfeeding attitude, while body mass index, nutrition habits and sleep status did not affect breastfeeding attitude. As a conclusion, we think that mothers should be given breastfeeding-promoting trainings and counselling services by medical staff during the prenatal and postnatal period. Social support of spouses, family members and family elders also may help to pass this period easy.

## DECLARATIONS

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**Ethics approval:** The protocol of the study was approved by the Ethical Committee of the Acibadem Mehmet Aydinlar University with the number of 2020-25/29.

**Authors' contributions:** Merve Sarı, Kezban Esen Karaca and Gizem Köse contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

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# Evaluation of the Effect of Hedonic Hunger on Purchasing Behavior in Adult Individuals

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## ABSTRACT

**Objective:** The aim of this study is to evaluate the effect of individuals' hedonic hunger status on their purchasing behaviors.

**Materials and Methods:** This cross-sectional study was conducted with 218 individuals, 147 females and 71 males, aged 18-65 years. Questions about demographic characteristics and eating habits, Power of the Food Scale (PFS), Hedonic and Utilitarian Purchasing Behavior Scale were applied via an online questionnaire. The study protocol was approved by the Ethical Committee of the Acıbadem Mehmet Aydınlar University with the number of 2021-17/10.

**Results:** PFS total score was determined as  $3.03 \pm 0.82$  in females and  $2.51 \pm 0.90$  in males ( $p < 0.05$ ). According to PFS, the frequency of hedonic hunger in females (70.7%) was higher than in males (49.3%) ( $p < 0.05$ ). Hedonic Consumption Behavior Scale (HCBS) total and subscale scores were higher in females than males ( $p < 0.05$ ). A positive correlation was found between PFS and HCBS scores in females and in males between PFS and HCBS and between PFS and Utilitarian Consumption Behaviors Scale scores ( $p < 0.05$ ).

**Conclusion:** Hedonic hunger and hedonic consumption behavior frequency were found to be higher and related to each other in females. It is believed that practices aimed at raising awareness in the consumption of food and non-food products and developing utilitarian purchasing behavior will contribute to weight control and sustainability.

**Keywords:** Nutrition, eating behavior, purchasing

## Yetişkin Bireylerde Hedonik Açlığın Satın Alma Davranışı Üzerindeki Etkisinin Değerlendirilmesi

### ÖZET

**Amaç:** Bu araştırmanın amacı, bireylerin hedonik beslenme durumlarının satın alma davranışları üzerindeki etkisini incelemektir.

**Gereç ve Yöntem:** Kesitsel tipteki bu araştırma, 18-65 yaş arası 147 kadın ve 71 erkek olmak üzere 218 birey ile yürütülmüştür. Bireylerin demografik özellikleri, beslenme alışkanlıkları ile ilgili sorular, Besin Gücü Ölçeği (BGÖ), Hedonik ve Faydacı Satın Alma Davranışı Ölçeği çevrimiçi anket yolu ile uygulanmıştır. Araştırma protokolü, Acıbadem Mehmet Aydınlar Üniversitesi Tıbbi Araştırma Etik Kurulu tarafından (sayı no: 2021-17/10) onaylanmıştır.

**Bulgular:** Bireylerin BGÖ toplam puanı kadınlarda  $3,03 \pm 0,82$ , erkeklerde  $2,51 \pm 0,90$  olarak belirlenmiştir ( $p < 0,05$ ). BGÖ'e göre kadınlarda (%70,7) hedonik açlık sıklığı, erkeklerden (%49,3) yüksektir ( $p < 0,05$ ). Kadınların Hedonik Tüketim Davranışları Ölçeği (HTDÖ) toplam ve alt boyut puanları, erkeklerden yüksektir ( $p < 0,05$ ). Kadınlarda BGÖ ile HTDÖ ve erkeklerde BGÖ ile HTDÖ ve BGÖ ile Faydacı Tüketim Davranışları Ölçeği puanları arasında pozitif korelasyon saptanmıştır ( $p < 0,05$ ).

**Sonuç:** Kadınlarda hedonik açlık durumunun ve hedonik satın alma davranışlarının daha fazla ve birbiri ile ilişkili olduğu belirlenmiştir. Gıda ve gıda dışı ürünlerin tüketiminde farkındalığı arttırmaya ve faydacı satın alma davranışının geliştirilmesine yönelik uygulamaların, ağırlık kontrolüne ve sürdürülebilirliğe katkı sağlayacağına inanılmaktadır.

**Anahtar Kelimeler:** Beslenme, beslenme davranışı, satın alma

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**H**unger is a condition that directs the individual to nutritional behavior and causes food consumption. Hunger and food intake are regulated by two different systems: homeostatic hunger and hedonic hunger (1). Homeostatic hunger is the consumption of food to meet the body's energy needs in case of negative energy balance. There is no attachment to the taste of the food, on the contrary, the need to eat is felt regardless of the taste. On the other hand, hedonic hunger is the appetite and consumption of food with the desire to eat and get pleasure from food, which does not develop within the body's needs (2).

In the modern world, the consumption of easily accessible, low-cost, delicious and high-energy foods is quite high. People tend to consume food in order to feel happy, to get away from the stress they experience while eating, and most importantly to get pleasure (3). This eating pattern, which is defined as hedonic eating, has been manifested as "stress-induced eating", "emotional eating", "food addiction" and "eating to feel good". Hedonic eating is the reason why an individual consumes a dessert after a satisfying meal (3, 4). Frequent consumption of such "delicious" and high-energy foods increases the risk of obesity, obesity-related comorbidities and non-communicable diseases (3).

Food consumption is not only related to taste but also to food availability. Technological developments, advertisements and marketing strategies affect consumption. Purchasing behaviors have gone beyond meeting the basic needs that individuals need to survive. Consumers' purchasing behavior is affected by internal and external factors such as psychological effects, socio-cultural variables, demographic differences and marketing techniques (5). Consumers make choices when purchasing products by being influenced by sensory features, that is, hedonism, and operational, that is, non-sensory, functional diversity features (6).

Decisions of consumers to purchase food and service or product are similar. Increasing diversity in food and non-food products, stimuli affecting consumption behaviors are under the influence of both hedonistic and utilitarian motives. The aim of this study is to evaluate the effect of hedonic hunger on the consumption behavior of adults.

## MATERIAL AND METHODS

This cross-sectional study was conducted with 218 adult individuals (147 female, 71 male) aged 19-65 who agreed to participate in the study between September and October 2021. Consent form was obtained from all individuals to participate in the study. Study data were collected through an electronic questionnaire. Ethical approval for the study was obtained from Ethical Committee of the Acıbadem Mehmet Aydınlar University with the number of 2021-17/10. The study was performed by obtaining the informed consent of the participants.

The data collection form consists of three parts: demographic characteristics, Power of the Food Scale (PFS) and Hedonic and Utilitarian Consumption Behavior Scale. In the first part, there are questions about demographic characteristics (including age, sex, marital status), health status, anthropometric information (height, weight) and smoking habits. The height and weight of individuals participating in the study were collected from their own statements. The body mass index (BMI) was calculated by dividing the body weight (kg) by the square of body height (m<sup>2</sup>) and BMI classification was assessed according to WHO (7).

PFS was applied to evaluate hedonic hunger status. PFS, which was developed by Cappelleri et al. (2009) with the aim of evaluating the effect of living in an environment with a large number of delicious foods on the psychological and hedonic hunger states of individuals, originally consisted of 21 items (8). PFS was adapted into Turkish by Akçil Ok and Hayzaran (2020) and was reduced to 15 items (9). The scale is in a 5-point Likert type, ranging from 1 (strongly disagree) to 5 (strongly agree) and consists of the subscales of food availability, food presence and food taste.

Hedonic and Utilitarian Consumption Behavior Scale was applied to evaluate the purchasing behaviors of individuals. The scale was developed by Coşkun and Marangoz (2019) to examine hedonic and utilitarian consumption behaviors, consists of 42 questions and is in the 5-point Likert type, which is in the range of "never" and "always" (10). Hedonic Consumption Behavior Scale (HCBS) consists of subscales of hedonic effect, hedonic adaptation, passivity state, impulsive tendency, identity projection,

while Utilitarian Consumption Behavior Scale (UCBS) has goal orientation and control orientation subscales.

### Statistical Analysis

Statistical analyses were performed using by SPSS (IBM Statistics 24) package software. To interpret the findings, frequency tables and descriptive statistics; to evaluate the relationships of two qualitative variables Pearson- $\chi^2$  matrix tables were used. Mann Whitney U test (Z-table value) to compare measurement values and Spearman correlation to evaluate correlation with two groups were utilized that do not display normal distribution. Correlation coefficients ( $r$ ) of 0.00–0.24 were evaluated as weak relationships, 0.25–0.49 as moderate, 0.50–0.74 as strong, and 0.75–1.00 as very strong. A  $p$ -value of less than 0.05 was considered statistically significant.

## RESULTS

The mean age of females ( $n:147$ , 67.4%) participating in the study was  $35.1 \pm 8.6$  years, and  $39.6 \pm 7.7$  years for males ( $n:71$ , 32.6%) ( $p < 0.001$ ). The frequency of marriage in males (56.3%) was higher than of females (25.2%) ( $p < 0.001$ ). While 58.2% of females were students, 70.4% of males were working ( $p < 0.001$ ). Mostly, females (54.4%) stated that their income was equal to their expenses, while males (49.3%) stated that their income was more than their expenses ( $p = 0.013$ ) (Table 1).

The mean BMI for females was  $22.9 \pm 4.5$  kg/m<sup>2</sup> while the mean was  $25.7 \pm 3.2$  kg/m<sup>2</sup> for males ( $p < 0.001$ ). According to BMI classification, most of females (63.3%) had normal weight, while males (42.3%) were overweight ( $p < 0.001$ ). As smoking status was determined, 72.8% of females reported not smoking, 60.6% of males reported smoking ( $p < 0.001$ ). 59.9% of females and 47.9% of males had two main meals ( $p = 0.039$ ) (Table 2).

While the mean of all subscales and total hedonic consumption scores of the females' HCBS was found to be higher than that of males' ( $p < 0.05$ ), there was no sex difference between the mean of subscales and total score of UCBS ( $p > 0.05$ ). The mean of PFS subscales and total score of females were higher than males' ( $p < 0.05$ ). 70.7% of females and 49.3% of males were found to have hedonic hunger (mean PFS score  $> 2.5$ ) ( $p < 0.05$ ) (Table 3).

The mean of HCBS total and all subscales' scores, UCBS total and control orientation subscale score of individuals who had hedonic hunger ( $n:139$ ) were higher than individuals without hedonic hunger ( $n:79$ ) ( $p < 0.05$ ) (Table 4).

In females, there was a moderate positive correlation between age and BMI ( $r = 0.360$ ;  $p < 0.001$ ). There was a weak negative correlation between PFS and age, and a weak positive correlation between PFS and BMI (respectively,  $r = -0.203$  and  $r = 0.226$ ;  $p < 0.05$ ). Also, HCBS had a weak negative correlation with age and a moderate positive correlation with PFS (respectively,  $r = -0.218$  and  $r = 0.390$ ;  $p < 0.05$ ). In males, there was a moderate negative correlation HCBS and age ( $r = -0.303$ ,  $p < 0.05$ ). PFS had a strong positive correlation with HCBS and a moderate positive correlation with UCBS (respectively,  $r = 0.552$  and  $r = 0.401$ ;  $p < 0.05$ ) (Table 5).

## DISCUSSION

Exposure to delicious foods and the formation of strong urges to consume these foods are defined as "hedonic hunger". Most individuals perform hedonic food intake even when they are not physiologically hungry. Also, individual differences may affect hedonic feeding behavior (11). Individuals can be influenced by their emotions while shopping. Products that affect and encourage consumption and give pleasure lead to hedonic purchasing. However, consumers do not always act with their emotions, some act rationally and make utilitarian consumption. While this type of consumer buys the products they have planned before, those who exhibit hedonic consumption behavior make sudden decisions to purchase. There are many factors among the behaviors that lead individuals to hedonic and utilitarian consumption (12).

In this study, which aimed to evaluate the relationship between hedonic hunger and consumption behaviors in adult individuals, the frequency of hedonic hunger was found to be higher in females (70.7%) than in males (49.3%) (Table 3). In another study, PFS total score and food availability and food presence subscale scores were found to be higher in females compared to males. This suggests that females are more prone to hedonic hunger than males (13). In another study, the difference between the sex was reported similarly (14).



**Table 1.** Evaluation of demographic characteristics

	Female (n=147)		Male (n=71)		Z**	p
	$\bar{x}\pm SS$	Median (min-max)	$\bar{x}\pm SS$	Median (min-max)		
<b>Age (year)</b>	28.3±10.5	23.0 (18.0-55.0)	38.1±12.3	38.0 (21.0-65.0)	-5.923	<0.001*
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	$\chi^{2***}$	<b>p</b>
<b>Education Level</b>						
Primary school and below	4	2.7	1	1.4		
High school	9	6.1	13	18.3		
Associate's/Bachelor's	66	44.9	14	19.7	17.602	0.001*
Postgraduate	68	46.3	43	60.6		
<b>Marital Status</b>						
Married	37	25.2	40	56.3		
Single	110	74.8	31	43.7	20.358	<0.001*
<b>Occupation</b>						
Student	85	58.2	11	15.5		
Working	36	24.7	50	70.4		
Unemployed	21	14.4	4	5.6	51.512	<0.001*
Retired	4	2.7	6	8.5		
<b>Income Status</b>						
Income more than expense	44	29.9	35	49.3		
Income equals expenses	80	54.4	25	35.2	8.623	0.013*
Income less than expenses	23	15.6	11	15.5		

\*p<0.05    \*\* Mann-Whitney U" test    \*\*\*Pearson- $\chi^2$

**Table 2:** Evaluation of anthropometric measurements, lifestyle and nutritional habits

	Female (n=147)		Male (n=71)		Z**	p
	$\bar{x}\pm SS$	Median (min-max)	$\bar{x}\pm SS$	Median (min-max)		
<b>BMI (kg/m<sup>2</sup>)</b>	22.9±4.5	21.9 (16.8-42.6)	25.7±3.2	25.1 (17.4-32.9)	-5.741	<0.001*
	n	%	n	%	$\chi^{2***}$	p
<b>BMI Classification</b>						
Underweight	18	12.2	2	2.8	27.506	<0.001*
Normal weight	93	63.3	29	40.8		
Overweight	19	12.9	30	42.3		
Obese	17	11.6	10	14.1		
<b>Smoking</b>						
Yes	40	27.2	43	60.6	22.588	<0.001*
No	107	72.8	28	39.4		
<b>Number of main meals</b>						
1	2	1.3	5	7.0	6.505	0.039*
2	88	59.9	34	47.9		
3	57	38.8	32	45.1		
<b>Number of snacks</b>						
Non-consuming	23	15.6	21	29.6	30.525	<0.001*
1	41	27.9	38	53.5		
2	66	44.9	10	14.1		
3	17	11.6	2	2.8		

\*p<0.05 \*\* Mann-Whitney U'' test \*\*\*Pearson- $\chi^2$

BMI: Body mass index

**Table 3:** Evaluation of PFS and Hedonic and Utilitarian Consumption Behavior Scale scores

	Female (n=147)		Male (n=71)		Z**	p
	$\bar{x}\pm SS$	Median (min-max)	$\bar{x}\pm SS$	Median (min-max)		
<b>Hedonic and Utilitarian Consumption Behavior Scale</b>						
Hedonic effect	25.0±7.5	26.0 (9.0-35.0)	18.3±7.1	17.0 (7.0-35.0)	-5.755	<0.001*
Hedonic adaptation	17.4±8.6	14.0 (7.0-35.0)	12.8±5.7	10.0 (7.0-35.0)	-3.735	<0.001*
Passivity scale	15.2±6.9	14.0 (6.0-30.0)	11.6±5.4	11.0 (6.0-29.0)	-3.750	<0.001*
Impulsive tendency	15.1±7.4	14.0 (6.0-30.0)	12.1±5.6	11.0 (6.0-30.0)	-2.714	0.007*
Identity projection	20.3±6.4	20.0 (7.0-30.0)	15.9±5.5	16.0 (6.0-30.0)	-4.506	<0.001*
<i>Total hedonic consumption</i>	93.2±32.0	88.0 (40.0-160.0)	70.9±24.2	69.0 (32.0-159.0)	-4.933	<0.001*
Goal orientation	16.8±5.6	18.0 (5.0-25.0)	17.3±5.6	19.0 (5.0-25.0)	-0.753	0.451
Control orientation	17.8±4.2	18.0 (5.0-25.0)	17.8±4.4	19.0 (9.0-25.0)	-0.130	0.897
<i>Total utilitarian consumption</i>	34.7±9.1	36.0 (14.0-50.0)	35.2±9.8	37.0 (14.0-50.0)	-0.518	0.604
<b>Power of Food Scale</b>						
Food availability	2.8±0.9	2.8 (1.0-5.0)	2.2±0.8	2.0 (1.0-4.7)	-3.925	<0.001*
Food presence	3.2±0.9	3.2 (1.0-5.0)	2.6±1.0	2.5 (1.0-5.0)	-4.123	<0.001*
Food taste	3.1±0.9	3.2 (1.0-5.0)	2.6±1.0	2.8 (1.0-4.8)	-3.102	0.002*
<i>Total PFS</i>	3.0±0.8	3.1 (1.5-5.0)	2.5±0.8	2.5 (1.1-4.3)	-4.038	<0.001*
<b>Hedonic hunger</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	$\chi^{2***}$	<b>p</b>
Yes	104	70.7	35	49.3	9.536	0.002*
No	43	29.3	36	50.7		

\*p<0.05 \*\* Mann-Whitney U<sup>††</sup> test \*\*\*Pearson- $\chi^2$  PFS: Power of the Food Scale

**Table 4:** Evaluation of Hedonic and Utilitarian Consumption Behavior Scale scores according to hedonic hunger status

	Hedonic Hunger (+) (n=139)		Hedonic Hunger (-) (n=79)		Z**	p
	$\bar{x}\pm SS$	Median (min-max)	$\bar{x}\pm SS$	Median (min-max)		
<b>Hedonic and Utilitarian Consumption Behavior Scale</b>						
Hedonic effect	25.7±6.7	26.0 (10.0-35.0)	17.8±7.6	16.0 (7.0-35.0)	-6.866	<0.001*
Hedonic adaptation	17.4±8.5	15.0 (7.0-35.0)	13.4±6.4	11.0 (7.0-35.0)	-3.341	0.001*
Passivity scale	15.5±6.8	14.0 (6.0-30.0)	11.5±5.6	10.0 (6.0-30.0)	-4.461	<0.001*
Impulsive tendency	15.7±7.3	15.0 (6.0-30.0)	11.3±5.4	11.0 (6.0-30.0)	-4.569	0.007*
Identity projection	20.8±5.9	21.0 (7.0-30.0)	15.4±5.9	15.0 (6.0-30.0)	-5.849	<0.001*
<i>Total hedonic consumption</i>	95.2±29.9	89.0 (47.0-160.0)	69.6±27.1	62.0 (32.0-160.0)	-6.341	<0.001*
Goal orientation	17.5±5.3	18.0 (5.0-25.0)	16.0±6.1	17.0 (5.0-25.0)	-1.768	0.077
Control orientation	18.4±4.0	19.0 (5.0-25.0)	16.9±4.5	17.0 (9.0-25.0)	-2.370	0.018*
<i>Total utilitarian consumption</i>	36.0±8.5	37.0 (14.0-50.0)	32.9±10.4	36.0 (14.0-50.0)	-2.036	0.042*

\*p<0.05 \*\* Mann-Whitney U<sup>o</sup> test \*\*\*Pearson- $\chi^2$

**Table 5:** Evaluation of correlation between some variables

		Female (n=147)				Male (n=71)			
		BMI	PFS	HCBS	UCBS	BMI	PFS	HCBS	UCBS
Age	r	0.360	-0.203	-0.218	0.048	0.173	-0.168	-0.303	0.131
	p	<0.001**	0.013*	0.008**	0.566	0.150	0.161	0.010*	0.276
BMI	r	1.000	0.226	-0.134	-0.034	1.000	-0.196	-0.039	-0.118
	p	-	0.006**	0.105	0.681	-	0.102	0.749	0.328
PFS	r		1.000	0.390	-0.054		1.000	0.552	0.401
	p		-	<0.001**	0.518		-	<0.001*	<0.001*
HCBS	r			1.000	-0.098			1.000	0.012
	p			-	0.238			-	0.919
UCBS	r				1.000				1.000
	p				-				-

\*p<0.05 \* Spearman correlation

BMI: Body mass index, PFS: Power of the Food Scale, HCBS: Hedonic Consumption Behavior Scale, UCBS: Utilitarian Consumption Behavior Scale

In the modern world, the nutritional environment has become obesogenic. It has been reported that hedonic nutrition increases the frequency of obesity (16). Understanding the mechanisms of physiological hunger and hedonic hunger in the obesogenic environment may help prevent obesity. In a study where females had a higher PFS score, the mean BMI of females was found to be lower than males, and the frequency of overweight was found to be higher in males (14). In this study, most of the females were normal weight, while the males were overweight. Chmurzynska et al. (2021) found PFS total score, food availability and food presence subscale scores were higher in individuals with BMI >25 kg/m<sup>2</sup> than in individuals with BMI <25 kg/m<sup>2</sup> (16). Also, in this study there was a positive correlation between PFS total score and BMI in women ( $r=0.226$ ;  $p<0.05$ ) (Table 5).

In a study, purchasing behaviors according to sex were evaluated and it was reported that men and women were affected differently from advertisements (5). Another study examined sex differences and hedonic consumption was concluded that females see shopping as a social need and make hedonic shopping compared to males and that shopping makes women happier than men (17). In this study, HCBS total and all subscale scores were also higher in females than in males (Table 3). In addition, it was determined that individuals with hedonic hunger were more inclined to hedonic consuming, but not to utilitarian consuming. At the same time, it has been stated that hedonic consumption affects the hedonic hunger of individuals (Table 4). In addition, a positive correlation was found between PFS total score and HCBS score in both sexes, and between PFS total score and UCBS only in men (Table 5).

Hedonic hunger and hedonic eating, which develops as a result of people's feelings towards foods and rewarding themselves with foods, can lead to negative consequences on weight control. People should watch themselves while consuming food, shopping, and whether there is a hedonic perception that can be experienced by analyzing their own behavior. When individuals move away from hedonic eating and control these impulses, their purchasing behaviors will be improved with more accurate hunger signals. It is predicted that directing individuals with hedonic hunger and hedonic purchasing behavior to utilitarian purchasing may have beneficial results in weight control.

## CONCLUSION

Understanding the relationship between nutrition and purchasing behaviors will facilitate the understanding of food and non-food consumption preferences and the management of weight control. Furthermore, it will contribute to sustainability in our rapidly depleting world. There is a need for further studies in this area, especially to support utilitarian consumption and sustainability in nutrition.

## DECLARATIONS

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*Authors' contributions:* Nihan Çakır Biçer and İpek Akburak contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

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# Sustainable Nutrition Knowledge and Attitudes of University Students Studying in Departments related to Nutrition

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## ABSTRACT

**Objective:** To evaluate the knowledge and attitudes of undergraduate students studying in nutrition-related departments concerning sustainable nutrition and determine the differences between the departments.

**Material and Methods:** The study population consisted of students studying in the departments of nutrition and dietetics, gastronomy and culinary arts, food engineering, and tourism management. The study was conducted with 688 volunteer students who completed an online questionnaire between December 2020 and May 2021. The approval of the ethics committee was obtained from the Non-Invasive Clinical Research Ethics Committee of Marmara University Faculty of Health Sciences with the number of 26.11.2020/76.

**Results:** The highest rate of students who know about sustainable nutrition was in the department of nutrition and dietetics (90.2%), and the lowest was in tourism management (49.1%). Making lists before shopping was mostly stated by the gastronomy and culinary arts students (60.7%), and a significant difference was found between the departments ( $p<0.05$ ). It was determined that the food engineering students constituted the group that most examined food labels, production place and method, and quality certificate, and avoided food waste ( $p<0.05$ ).

**Conclusion:** It was determined that the nutrition and dietetics students had more knowledge about nutritional value and diet models, food engineering students were interested in production processes and contents of foods, and gastronomy and culinary arts students were more active in food preparation processes and more open to new tastes. This shows that the sustainable nutrition-related attitudes of the students were in agreement with the fields in which they were studying, and their awareness of topics related to their own fields was high.

**Keywords:** Department, food, nutrition, student, sustainability, university

## Beslenme ile İlgili Bölümlerde Eğitim Gören Üniversite Öğrencilerinin Sürdürülebilir Beslenme Hakkındaki Bilgi ve Tutumları

### ÖZET

**Amaç:** Beslenme ile ilgili bölümlerde öğrenim gören lisans öğrencilerinin sürdürülebilir beslenmeye ilişkin bilgi ve tutumlarını değerlendirmek ve bölümler arasındaki farklılıkları belirlemektir

**Gereç ve Yöntem:** Araştırmanın evrenini beslenme ve diyetetik, gastronomi ve mutfak sanatları, gıda mühendisliği ve turizm işletmeciliği bölümlerinde okuyan öğrenciler oluşturmuştur. Araştırma, Aralık 2020-Mayıs 2021 tarihleri arasında online anket dolduran 688 gönüllü öğrenci ile gerçekleştirilmiştir. Etik kurul onayı Marmara Üniversitesi Sağlık Bilimleri Fakültesi Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu'ndan 26.11.2020/76 numarası ile alınmıştır.

**Bulgular:** Sürdürülebilir beslenme hakkında bilgi sahibi olan öğrencilerin oranı en yüksek (%90,2) beslenme ve diyetetik bölümünde, en düşük ise turizm işletmeciliği (%49,1) bölümündedir. Alışveriş öncesi liste yapma en çok gastronomi ve mutfak sanatları öğrencileri tarafından (%60,7) bildirilmiş ve bölümler arasında anlamlı farklılık bulunmuştur ( $p<0,05$ ). Gıda mühendisliği öğrencilerinin gıda etiketlerini, üretim yeri ve yöntemini, kalite belgesini en çok inceleyen ve gıda israfından en çok kaçınan grubu oluşturduğu belirlenmiştir ( $p<0,05$ ).

**Sonuç:** Beslenme ve diyetetik öğrencilerinin besin değeri ve diyet modelleri hakkında daha fazla bilgiye sahip oldukları, gıda mühendisliği öğrencilerinin gıdaların üretim süreçleri ve içerikleriyle ilgilendikleri, gastronomi ve mutfak sanatları öğrencilerinin yemek hazırlama süreçlerinde daha aktif ve yeni tatlara daha açık oldukları belirlenmiştir. Bu durum öğrencilerin sürdürülebilir beslenme ile ilgili tutumlarının öğrenim gördükleri alanlarla uyumlu olduğunu ve kendi alanlarıyla ilgili konulara yönelik farkındalıklarının yüksek olduğunu göstermiştir.

**Anahtar Kelimeler:** Besin, beslenme, bölüm, öğrenci, sürdürülebilirlik, üniversite

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The concept of sustainable nutrition was described by the Food and Agriculture Organization (FAO) in 2010 as maintaining food and nutrition security to ensure that current and future generations can lead a healthy life, having low environmental impacts, and being protective and respectful toward biodiversity and ecosystem. Additionally, sustainable nutrition refers to culturally acceptable, economically viable and accessible, nutritionally adequate, safe and healthy diets that use natural and human resources optimally (1). The current situation of diets and nutrition systems on a global scale is not suitable for sustainability and poses a health risk for all societies (1, 2).

While 1/3 of the food produced worldwide is wasted or lost, 48% of the land and 70% of clean water is used for agricultural production, which is also held responsible for 20-35% of global greenhouse gas emissions (2). The life cycle of food production consists of steps involving processing, transportation, distribution, and waste, each having an environmental impact. According to these steps, foods of animal origin cause more greenhouse gas emissions than the production of plant foods. It has been confirmed that reducing animal-derived food consumption is the main factor in reducing both the risk of chronic diseases and significantly reducing greenhouse gas emissions and water footprints. Individual choices have great power over the overall environmental impact associated with diet (3). Based on this, some countries have developed dietary guidelines that make sustainable dietary recommendations to reduce greenhouse gas emissions and limit environmental impacts (1). Sustainable diet models being mainly based on local and plant-based foods, seafood, and whole grains are important in preventing climate change and reducing carbon and water footprint (2). It has been observed that barriers to sustainable dietary behavior are lack of knowledge, complex expressions used in the field (such as low-carbon and plant-based), inability to make a connection between diet and environmental impact, and geographical and cultural differences (4).

The sustainable nutrition knowledge and attitudes of dietitians, dietitian candidates, and health sciences faculty students have been previously researched in the literature (5, 6). The current study aimed to investigate the knowledge and attitudes of university students studying in nutrition-related departments, who will work in various fields, related to nutrition and guide these fields in future.

## MATERIAL AND METHODS

### *Study Population and Design*

This cross-sectional descriptive study was conducted with university students between December 1, 2020 and May 28, 2021. Ethical approval was obtained from the Non-Invasive Clinical Research Ethics Committee of Marmara University Faculty of Health Sciences with the number of 26.11.2020/76. The study population consisted of students studying in the departments of nutrition and dietetics, food engineering, gastronomy and culinary arts, and tourism management in the 2020-2021 academic year. The participants from 59 different state universities and 20 different foundation universities completed the questionnaire and constituted the sample of the study. The students attending English preparatory programs and first-year students were not included in the sample. Since there were participants from four different departments in the study, a power analysis was used to determine the sample size, and the minimum number of participants per group was determined as 148 (4).

### *Data Collection and Evaluation*

An online questionnaire was used as a data collection tool. The questionnaire consisted of five sections that included general information about the participants, their perspectives on the environment and environmental problems, sustainable nutrition, sustainable projects, and food consumption. The questions were prepared by researchers using different sources in the literature (5, 7, 8).

### *Statistical Evaluation*

The analysis of the data was performed using the Statistical Package for the Social Sciences (SPSS), v 22.0. The normality of the data distribution was tested with the Kolmogorov-Smirnov test. The Kruskal-Wallis test was used to compare four independent and non-parametric groups, and the Mann-Whitney U test was used for inter-group differences. Statistical significance was accepted as  $p < 0.05$  in all analyses.

## RESULTS

A total of 688 university students, 535 (77.8%) female, participated in the study. The participants were studying in the departments of nutrition and dietetics (25.1%;  $n = 173$ ), gastronomy and culinary arts (26.6%;  $n = 183$ ), food engineering (24.9%;  $n = 171$ ), and tourism management (23.0%;  $n = 161$ ). The gender, age and undergraduate year of the students are shown in Table 1.



Among the participants, 90.2% (n = 156) of the nutrition and dietetics students, 76.0% (n = 139) of the gastronomy and culinary arts students, 62.6% (n = 107) of the food engineering students, and 49.1% (n=79) of the tourism management students had previous knowledge of sustainable nutrition concepts. There was a significant difference between the nutrition and dietetics students and those studying in the remaining departments in terms of the knowledge of sustainable nutrition ( $p < 0.05$ ). The concepts most included in the scope of sustainable nutrition by the students were promoting healthy life (79.5%), food accessibility (74.9%), and food safety (68.9%) in that order.

The participants studying in the nutrition and dietetics department constituted the majority of those who considered that sustainable nutrition contributed to the country's economy (75.2%), and a significant difference was found between the departments (nutrition and dietetics vs gastronomy and culinary arts,  $p = 0.029$ ; nutrition and dietetics vs food engineering,  $p = 0.008$ ; nutrition and dietetics vs tourism management,  $p = 0.002$ ). The nutrition and dietetics students (71.1%) were the most likely to think that food production methods would promote global warming due to increased greenhouse gas emissions, and a significant difference was found between the departments (nutrition and dietetics vs gastronomy and culinary arts,  $p < 0.001$ ; nutrition and dietetics vs food engineering,  $p < 0.001$ ; nutrition and dietetics vs tourism management,  $p = 0.002$ ). The students' attitudes to sustainable nutrition are given in Table 2.

It was determined that the gastronomy and culinary arts students made shopping lists most frequently (60.7%), and a significant difference was found between the departments (gastronomy and culinary arts vs nutrition and dietetics,  $p = 0.001$ ; gastronomy and culinary arts vs tourism management,  $p = 0.007$ ; nutrition and dietetics vs food engineering,  $p = 0.003$ ; food engineering vs tourism management,  $p = 0.016$ ). The tendency to shop according to the season was mostly observed among the nutrition and dietetics students (86.1%), and a significant difference was found between the departments (nutrition and dietetics vs tourism management,  $p < 0.001$ ; food engineering vs tourism management,  $p = 0.004$ ). The data on the students' attitudes to food shopping are shown in Table 3.

The food engineering students read the food label most frequently, and a statistically significant difference was found between the departments (food engineering vs nutrition and dietetics,  $p < 0.001$ ; food engineering vs gastronomy and culinary arts,  $p < 0.001$ ; food engineering vs tourism management,  $p < 0.001$ ; nutrition and dietetics vs tourism management,  $p = 0.007$ ). The food engineering

students (45.6%) constituted the group that most paid attention to buying local food, with significant differences being observed between the departments (food engineering vs nutrition and dietetics,  $p = 0.011$ ; food engineering vs gastronomy and culinary arts,  $p = 0.002$ ; food engineering and tourism management,  $p = 0.003$ ). More than half of the food engineering students (54.9%) prioritized environmentally friendly production, and the differences between the departments were significant (food engineering vs nutrition and dietetics,  $p = 0.001$ ; food engineering vs tourism management,  $p = 0.007$ ). The food engineering students (43.8%) also paid attention to the recyclable or reusable logos on packaging, and there was a significant difference between the nutrition and dietetics and food engineering departments ( $p = 0.003$ ). Table 4 presents the comparison of the data on the purchasing considerations of the students.

The majority of the food engineering students (90.6%) stated they avoided wasting food, and there were significant different differences between the departments (food engineering vs nutrition and dietetics,  $p = 0.003$ ; food engineering vs tourism management  $p = 0.004$ ).

The food engineering students (42.0%) most relied on foods produced in a laboratory with innovative food technologies, with significant differences being observed between the departments (nutrition and dietetics vs food engineering,  $p < 0.001$ ; gastronomy and culinary arts vs food engineering,  $p < 0.001$ ; food engineering vs tourism management,  $p < 0.001$ ). The gastronomy and culinary arts students (16.9%) and tourism management students (16.8%) most agreed with the idea of including edible insects in their diets in the near future, and significant differences was found between the departments (nutrition and dietetics vs. gastronomy and culinary arts,  $p = 0.002$ ; nutrition and dietetics vs food engineering,  $p = 0.037$ ; nutrition and dietetics vs tourism management,  $p = 0.024$ ).

The nutrition and dietetics students were determined to have higher knowledge levels than the food engineering and tourism management students in relation to all diet models (Mediterranean, new Nordic, vegetarian/vegan, DASH, double pyramid model, clean Baltic, and planetary), ( $p < 0.05$ ). In addition, there was a significant difference between the nutrition and dietetics students and the gastronomy and culinary arts students concerning the Mediterranean, vegetarian/vegan and DASH diets, and the double pyramid model ( $p < 0.05$ ).

**Table 1.** Participants' characteristics

Demographic Data	Nutrition and Dietetics (n = 173)		Gastronomy and Culinary Arts (n = 183)		Food Engineering (n = 171)		Tourism Management (n = 161)	
	n	%	n	%	n	%	n	%
	<b>Gender</b>							
Female	166	96.0	122	66.7	156	91.2	91	56.5
Male	7	4.0	61	33.3	15	8.8	70	43.5
<b>Age</b>								
18-22 years	152	87.8	150	82.0	123	71.9	90	55.9
23-28 years	19	11.0	25	13.6	44	25.8	61	37.9
≥29 years	2	1.2	8	4.4	4	2.3	10	6.2
<b>Grade year</b>								
Second	61	35.3	79	43.2	59	34.5	42	26.1
Third	35	20.2	71	38.8	44	25.7	46	28.6
Fourth	77	44.5	33	18.0	68	39.8	73	45.3

**Table 2.** Comparison of the students' attitudes toward sustainable nutrition

Statements about sustainable nutrition		Strongly disagree		Disagree		Neither agree nor disagree		Agree		Absolutely agree		p
		n	%	n	%	n	%	n	%	n	%	
<b>Sustainable nutrition contributes to the national economy</b>	Nutrition and dietetics (n = 173)	3	1.7	11	6.3	29	16.8	87	50.3	43	24.9	<.001
	Gastronomy and culinary arts (n = 183)	6	3.3	13	7.1	47	25.7	82	44.8	35	19.1	
	Food engineering (n = 171)	11	6.4	9	5.3	46	26.9	74	43.3	31	18.1	
	Tourism management (n = 161)	13	8.1	19	11.8	37	23.0	59	36.6	33	20.5	
<b>Food production processes cause global warming due to the increase in greenhouse gases</b>	Nutrition and dietetics (n = 173)	4	2.3	11	6.4	35	20.2	70	40.5	53	30.6	<.001
	Gastronomy and culinary arts (n = 183)	7	3.8	20	10.9	57	31.1	65	35.5	34	18.6	
	Food engineering (n = 171)	11	6.4	25	14.6	41	24.0	63	36.8	31	18.1	
	Tourism management (n = 161)	10	6.2	18	11.2	52	32.3	40	24.8	41	25.5	

**Table 3.** Comparison of the students' attitudes toward food shopping

Statements about food shopping.	Never		Rarely		Sometimes		Usually		Always		p	
	n	%	n	%	n	%	n	%	n	%		
<b>I make a shopping list before shopping</b>	Nutrition and dietetics (n = 173)	6	3.5	34	19.7	53	30.6	66	38.1	14	8.1	.001
	Gastronomy and culinary arts (n = 183)	13	7.1	23	12.6	36	19.7	60	32.7	51	27.9	
	Food engineering (n = 171)	7	4.1	19	11.1	44	25.7	68	39.8	33	19.3	
	Tourism management (n = 161)	6	3.7	34	21.1	50	31.1	44	27.3	27	16.8	
<b>I shop according to the season</b>	Nutrition and dietetics (n = 173)	0	0.0	3	1.7	21	12.1	109	63.0	40	23.1	.005
	Gastronomy and culinary arts (n = 183)	9	4.9	16	8.7	26	14.2	78	42.6	54	29.5	
	Food engineering (n = 171)	3	1.8	7	4.1	28	16.4	85	49.7	48	28.1	
	Tourism management (n = 161)	9	5.6	19	11.8	37	23.0	56	34.8	40	24.8	

**Table 4.** Comparison of the purchasing considerations of the students

Purchased products		Never		Rarely		Sometimes		Usually		Always		p*
		n	%	n	%	n	%	n	%	n	%	
<b>I examine the food label on the product</b>	Nutrition and dietetics (n = 173)	0	0.0	20	11.6	38	22.0	84	48.5	31	17.9	<.001
	Gastronomy and culinary arts (n = 183)	10	5.5	30	16.4	47	25.7	56	30.6	40	21.8	
	Food engineering (n = 171)	4	2.3	10	5.9	18	10.5	72	42.1	67	39.2	
	Tourism management (n = 161)	9	5.6	37	23.0	33	20.5	51	31.7	31	19.3	
<b>I make sure the product is local</b>	Nutrition and dietetics (n = 173)	11	6.4	37	21.4	65	37.6	48	27.7	12	6.9	<.001
	Gastronomy and culinary arts (n = 183)	28	15.3	29	15.8	66	36.1	41	22.4	19	10.4	
	Food engineering (n = 171)	10	5.8	23	13.5	60	35.1	52	30.4	26	15.2	
	Tourism management (n = 161)	20	12.4	33	20.5	54	33.5	39	24.2	15	9.3	
<b>I pay attention to the production being made in an environmentally friendly way</b>	Nutrition and dietetics (n = 173)	10	5.8	37	21.4	59	34.1	47	27.2	20	11.6	<.001
	Gastronomy and culinary arts (n = 183)	19	10.4	24	13.1	51	27.9	50	27.3	39	21.3	
	Food engineering (n = 171)	4	2.3	28	16.4	45	26.3	56	32.7	38	22.2	
	Tourism management (n = 161)	11	6.8	32	19.9	55	34.2	36	22.4	27	16.8	
<b>I pay attention to recyclable or reusable logos on packaging</b>	Nutrition and dietetics (n = 173)	22	12.7	43	24.9	53	30.6	43	24.9	12	6.9	.03
	Gastronomy and culinary arts (n=183)	3	1.6	6	3.3	22	12.0	71	38.8	81	44.3	
	Food engineering (n=171)	1	0.6	6	3.5	9	5.3	56	32.7	99	57.9	
	Tourism management (n=161)	0	0.0	12	7.5	22	13.7	58	36.0	69	42.9	

## DISCUSSION

To our knowledge, this is the first study conducted with undergraduate students studying in nutrition-related departments in Turkey to elicit their sustainable nutrition knowledge and attitudes in detail.

In a study conducted with university students in Istanbul (n = 889), it was found that 29.9% were health sciences students, and the frequency of those who were familiar with the concepts of sustainable nutrition was 58.2% (9). On the other hand, in the current study, the rate of students who had previously knowledge of sustainable nutrition was determined to be 69.9%. This difference is considered to be due to our participants studying in nutrition-related departments.

Kamenidou et al. investigated the sustainable food consumption behaviors of Generation Z university students (n = 252) studying in Greece and living away from home, scoring these behaviors from 1 (negative) to 7 (positive) according to the scale used. The authors reported that the average seasonal fruit and vegetable consumption of the participants was 5.46, the average of purchasing local food was 5.10, and these attitudes were occasional according to the scale (10). In the current study, the rate of participants with a seasonal shopping behavior was 74.1%, and a tendency toward positive behavior was observed, similar to the study of Kamenidou et al. (10). However, unlike the study of Kamenidou et al. (10), we determined that the preference for local food purchase was low at a rate of 36.6%. When we examined the purchasing attitudes of the students according to their departments, we determined that the nutrition and dietetics students attached more importance to seasonality (86.1%) while the food engineering students (45.6%) considered it more important to purchase local produce. This is consistent with the nutrition and dietetics students having more information about the month in which vegetables and fruits are abundant and the higher knowledge level of food engineering students concerning the production places of foods compared to the other departments.

In the literature, in a study examining university students' nutrition label reading habits, the rate of those reading food labels was reported to be 58.2% (n = 417), and 16.3% of the students received academic education concerning nutrition labels (11). In the current study, the percentage of participants reading food labels was determined to be 62.8% in the whole sample, and the students that most reported to read food labels were from the Food

Engineering department (81.3%). This can be attributed to the food engineering students being more familiar with the processes of food production and the contents of foods.

In a study by Alattar et al. examining the knowledge, attitudes and behaviors of 495 university students about food waste, 71% of the participants stated that they thought about the food they wasted, 70% took action to limit the amount of food they wasted, and only 5% were not worried about food waste (12). In another study, 60% of 253 university students in Germany considered minimizing food waste as "extremely important" and 30% as "important" (13). In the current study, the food engineering students constituted the group that most tried to avoid food waste (90.6%) and re-used leftover food (67.2%), and there was a significant difference compared to the remaining departments (food engineering vs nutrition and dietetics,  $p = 0.003$ ; food engineering vs tourism management,  $p = 0.004$ ; food engineering vs nutrition and dietetics,  $p = 0.021$ ; food engineering vs tourism management,  $p = 0.043$ ).

Students' attitudes on new trends in sustainable food consumption were investigated by Kamenidou et al., who reported that the students did not consider eating hybrid meat products, plant-based meat substitutes, or edible insects even in the distant future (10). In another study including university students (n = 474), 55.6% of students who had knowledge about insects and 43.7% of those who had nutritional knowledge stated that they would not consume insects due to their eating habits (14). In this study, the food engineering students (29.8%) were the most likely to consume artificial meat in the near future. This is probably due to their better understanding of laboratory techniques and food production processes compared to the other departments.

## CONCLUSION

The increase in food loss and waste is becoming a greater problem day by day. This may be caused by food safety, inadequate technology, and errors in production, processing, transportation, storage, preparation, and consumer behavior. Since students studying in departments related to nutrition will be effective in preventing losses in these processes, it is important that they have high awareness concerning sustainable nutrition and adopt favorable attitudes and behaviors. It is envisaged that with the inclusion of sustainable nutrition education in the curriculum, students studying in these departments can become a

model in terms of their attitude toward the environment in their working life and can make differences in sustainability by integrating traditional, innovative, and technological initiatives into their sectors. Since sustainability and sustainable nutrition remain a current issue in the literature and alternative foods are not fully included in the diet of Turkish society, further studies are needed in this area.

## DECLARATIONS

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**Conflicts of interest:** None of the authors has any conflict of interest to declare.

**Ethics approval:** The protocol of the study was approved by the Non-Invasive Clinical Research Ethics Committee of Marmara University Faculty of Health Sciences with the number of 26.11.2020/76.

**Authors' contributions:** Şule Aktaç, Simay Kundakçı, Serra Naz Kartal, and Başak Esmanur Sarıtaş equally contributed to the design and implementation of the research, analysis of the results and writing of the manuscript.

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# Evaluation of The Relationship Between COVID-19 Burnout and Hedonic Hunger in Adult Individuals

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## ABSTRACT

**Objective:** The objective of this study is to investigate the evaluation of the relationship between COVID-19 burnout and craving for overeating (hedonic hunger) in adults.

**Materials and Methods:** Ethical approval was received from Akdeniz University Faculty of Medicine Clinical Research Ethics Committee (2021/KAKE-652) to conduct this study. The study included 346 adults between the ages of 18 and 64. Information on general characteristics of the subjects, changes in their body weight and dietary habits during the pandemic, physical activity levels, hedonic hunger, and COVID-19 burnout were collected through a web-based questionnaire.

**Results:** The majority of the study subjects were women (74.3%). The mean age, body weight, height, and body mass index of the individuals were  $37.5 \pm 10.84$  years,  $69.97 \pm 16.27$  kg,  $167.1 \pm 8.71$  cm, and  $24.96 \pm 4.81$  kg/m<sup>2</sup>, respectively. It was determined that most of the subjects (81.2%) did not engage in an adequate level of physical activity during the pandemic. The power of food scale (PFS) mean score of the subjects was  $2.76 \pm 1.04$ , and their coronavirus burnout scale (COVID-19-BS) mean score was  $29.02 \pm 10.7$ . More than half of them (59.8%) had hedonic hunger, and their COVID-19-BS score was significantly higher than those without such condition ( $25.4 \pm 9.90$ ) ( $p < 0.01$ ). In addition, a moderate positive correlation was present between the COVID-19-BS scores of the subjects and their PFS scores ( $r = 0.354$ ,  $p < 0.01$ ). The mean COVID-19-BS score of subjects with inadequate physical activity ( $29.7 \pm 10.52$ ) was significantly higher than those with adequate physical activity ( $26.1 \pm 10.85$ ) ( $p = 0.014$ ).

**Conclusion:** It is believed that the subjects should be informed in detail about coping with the feeling of burnout, the importance of physical activity, and healthy nutrition during the pandemic.

**Keywords:** Burnout, COVID-19, eating behavior, pandemic

## Yetişkin Bireylerde Covid-19 Tükenmişliğinin Hedonik Açlık ile İlişkinin Değerlendirilmesi

### ÖZET

**Amaç:** Bu çalışmada yetişkin bireylerde COVID-19 tükenmişliğinin aşırı yeme isteğiyle (hedonik açlık) ile olan ilişkisinin değerlendirilmesi amaçlanmıştır.

**Gereç ve Yöntem:** Çalışmanın yapılabilmesi için etik kurul onayı Akdeniz Üniversitesi Tıp Fakültesi Klinik Araştırmalar Etik Kurulu'ndan (2021/KAKE-652) alınmıştır. Çalışmaya 18-64 yaş arası 346 yetişkin birey dahil edilmiştir. Bireylerin genel özellikleri, pandemi dönemindeki vücut ağırlığı ile beslenme alışkanlıkları değişimleri, fiziksel aktivite düzeyleri, hedonik açlık ve COVID-19 tükenmişliği ile ilgili bilgiler web tabanlı anket formu aracılığıyla toplanmıştır.

**Bulgular:** Çalışmaya katılan bireylerin çoğunluğunu kadınlar (%74,3) oluşturmaktadır. Bireylerin yaş, vücut ağırlığı, boy uzunluğu ve beden kütle indeksi ortalamaları sırasıyla  $37,5 \pm 10,84$  yıl,  $69,97 \pm 16,27$  kg,  $167,1 \pm 8,71$  cm ve  $24,96 \pm 4,81$  kg/m<sup>2</sup>'dir. Pandemi döneminde bireylerin çoğunluğunun (%81,2) fiziksel aktivite durumunun yetersiz olduğu görülmüştür. Bireylerin besin gücü ölçeği (BGÖ) skor ortalaması  $2,76 \pm 1,04$  ve koronovirüs tükenmişlik ölçeği (KTÖ) skoru  $29,02 \pm 10,7$  olarak bulunmuştur. Bireylerin yarıdan fazlasında (%59,8) hedonik açlığının olduğu ve hedonik açlığı olan bireylerin KTÖ ( $31,4 \pm 10,51$ ) puanının normal olan bireylere göre ( $25,4 \pm 9,90$ ) anlamlı düzeyde daha yüksek olduğu saptanmıştır ( $p < 0,01$ ). Ayrıca bireylerin KTÖ puanları ile BGÖ puanları arasında ise orta düzeyde pozitif ilişki tespit edilmiştir ( $r = 0,354$ ,  $p < 0,01$ ). Fiziksel aktivitesi yetersiz olan bireylerin KTÖ puanı ( $29,7 \pm 10,52$ ) ortalamasının fiziksel aktivitesi yeterli derecede aktif olanlardan ( $26,1 \pm 10,85$ ) anlamlı olarak daha yüksek olduğu görülmüştür ( $p = 0,014$ ).

**Sonuç:** Pandemi sürecinde bireylere tükenmişlik duygusu ile başa çıkma, aktivitenin önemi ve sağlıklı beslenme konusunda daha fazla bilgilendirme yapılmasının gerektiği düşünülmektedir.

**Anahtar Kelimeler:** Tükenmişlik, COVID-19, yeme davranışı, pandemi



Uncommon and unexpected acute events with a global effect can cause mood changes in behavioral, cognitive, and emotional abilities such as attention, memory, using information, helping others, social relations, extraversion, and performance (1). The COVID-19 pandemic measures have not only physiological but also psychological effects as they trigger emotions such as disruption of routine life, feeling of uncertainty, fear of being infected, thinking that you live in an unsafe area as well as the feelings of stress, fear, disappointment, and burnout (2). Burnout is defined in the literature as “the draining of physical resources, which leads to psychological exhaustion of the person”. In other words, it is a state of physical, emotional, and mental exhaustion resulting from prolonged exposure to emotionally challenging situations. It is thought that the COVID-19 pandemic has turned into an increasingly widespread burnout picture in the society (3, 4).

Today, food is abundant and readily available, which leads to eating not only for metabolic hunger (homeostatic hunger) but also for pleasure (5, 6). Regardless of the energy content, the desire to consume food for motivation is called “hedonic eating”. The urge to hedonic eating leads individuals to consume food even though their body does not need it. In most people, stress can result in changes in appetite, causing hedonic hunger, unlike homeostatic hunger, and an increase in food consumption (5).

Based on the hypothesis that the feeling of burnout caused by the COVID-19 pandemic in individuals may have an impact on eating behaviors, the aim of this study is to determine the relationship between COVID-19 burnout and the desire to overeat in adults aged 18-64 years.

## MATERIAL AND METHODS

### *Study Population and Design*

This cross-sectional study was conducted with adults aged 18-64 between August 2021 and September 2021 to determine their hedonic hunger and COVID-19 burnout status during the pandemic. In the study, the convenience sampling method was adopted, which is frequently used in online surveys and becoming increasingly widespread. It was aimed that the study sample consisted of at least 271 adults with a 10% margin of error from the sample

size of an unknown population (7). 362 people filled out the questionnaire created in the electronic environment, and after 16 with missing data in the survey were excluded, 346 individuals formed the sample of the study.

### *Data Collection*

The general characteristics of the subjects, changes in their body weight and dietary habits during the pandemic, their physical activity levels, hedonic hunger, and COVID-19 burnout statuses were collected electronically via the “Google Survey”. Their hedonic hunger (craving to overeat) was evaluated on the Power of Food Scale (PFS) and their COVID-19 burnout on the Coronavirus Burnout Scale (COVID-19-BS). Their body mass indexes (BMI) were calculated and evaluated using the body weight (kg)/height<sup>2</sup> (m<sup>2</sup>) formula based on the self-reported body weight and height values.

### *Instruments*

The COVID-19 Burnout Scale, which is used to determine the burnout status of individuals, is adapted from the Burnout Criterion-Short Version (8) and is a 5-point Likert-style scale consisting of 10 items. The score obtained from the scale will be between 10 and 50, indicating that the higher the score, the more severe the COVID-19-related burnout (9). The “Power of Food Scale” developed by Cappelleri et al. (10) is a 5-point Likert-style scale scored from 1 (strongly disagree) to 5 (strongly agree) used to evaluate the effect of living in environments with plenty of delicious foods on individuals’ psychological status and hedonic hunger. The original scale had 21 items; however, this number was reduced to 15 following the validity and reliability analysis. The scale has three sub-factors that measure responses to food situations: food availability, food present, and food tasted. The score that can be obtained from the scale ranges from 1 to 5, and a score of  $\geq 2.5$  indicates that the individual is more sensitive to the food environment and is psychologically controlled by food, that is, the presence of hedonic hunger (10).

A short physical activity form, which includes questions about the weekly frequency of vigorous and moderate physical activities, was used to define the physical activity levels of individuals. Those who scored 4 and above in the

questionnaire were evaluated as “adequately active”, and those who scored 0-3 as “inadequately active” (11).

### Data Analysis

The study data were evaluated in the SPSS 25.0 Statistics packaged software. Qualitative variables (categorical variables) were given in numbers (n) and percentages (%). Continuous variables (quantitative variables) obtained by measurement were shown in mean values and standard deviation. The conformity of the quantitative variables to normal distribution was assessed in the “Kolmogorov-Smirnov” test, and the Independent-t Test was used to compare the variables distributed normally. The relationship between the total scores of the COVID-19-BS and the PFS was defined in the Pearson correlation test. In all statistical analyses, the level of significance was accepted as  $p < 0.05$ .

## RESULTS

The demographic characteristics of the study subjects are shown in Table 1. The study was conducted on 346 people most of whom were women (74.3%). The subjects were aged from 18 to 65, with a mean age of  $37.5 \pm 10.84$  years. The mean values of their body weight, height, and body mass index were  $69.97 \pm 16.27$  kg,  $167.1 \pm 8.71$  cm, and  $24.96 \pm 4.81$  kg/m<sup>2</sup>, respectively.

The changes in their dietary habits, body weight, and appetite during the COVID-19 period are shown in Table 2. 43.6% of them reported that their eating habits changed negatively during the pandemic, 45.7% stated that their appetite increased, and nearly half of them (47.1%) gained weight. Before COVID-19, 54.0% of the subjects had three main meals and 41.9% had two snacks a day. However, the percentage of the former decreased to 50.6% and that of the latter to 38.4% after COVID-19. 32.4% of the subjects reported that they had two snacks while 31.8% had one snack before COVID-19. Nevertheless, after COVID-19, 35% of them started to have two snacks, and those who had three snacks (20.2%), and there was also an decrease in the number of those who had one snack (19.49%) (Data not shown in the table).

The data on the hedonic hunger, coronavirus burnout, and physical activity status of the subjects during the pandemic are summarized in Table 3. In the pandemic, most of them (81.2%) did not engage in an adequate level of physical activity. The mean PFS score of the subjects was  $2.76 \pm 1.04$ , and the COVID-19-BS score was  $29.02 \pm 10.7$ . The mean PFS total score and all sub-dimension scores were  $\geq 2.5$  points. Evaluation of the subjects’ hedonic hunger status revealed that more than half of them (59.8%) had hedonic hunger.

When hedonic hunger status and the mean score of COVID-19-BS were evaluated, it was observed that subjects with hedonic hunger had a significantly higher COVID-19-BS ( $31.4 \pm 10.51$ ) score than those without ( $25.4 \pm 9.90$ ) ( $p < 0.01$ ) (Table 4). In addition, a moderate, positive relationship was present between the COVID-19-BS scores of the subjects and their PFS scores ( $r = 0.354$ ,  $p < 0.01$ ) (Figure 1). Furthermore, evaluation of the physical activity status and the mean score of COVID-19-BS indicated that the mean score of COVID-19-BS ( $29.7 \pm 10.52$ ) of the subjects with inadequate physical activity levels was significantly higher compared to those with adequate physical activity levels ( $26.1 \pm 10.85$ ) ( $p = 0.014$ ) (Table 4).

## DISCUSSION

This study aimed to investigate the relationship between the feeling of burnout due to the COVID-19 pandemic and hedonic hunger and reveal the link between the former and the desire to overeat.

During the pandemic, studies have been conducted to evaluate burnout and depression, primarily focusing on the fear of COVID-19 in healthcare professionals (12-14). However, there are not enough studies analyzing the effect of COVID-19 on burnout in individuals in the general public who are not healthcare professionals. In addition, the literature provides no national or international studies that reveal the relationship between burnout and nutrition due to the negative psychological and emotional effects of the pandemic. The results of this study show that pandemic-related burnout triggers hedonic hunger, which is the consumption of food even though the body does not need it.

**Table 1:** Distribution of Demographic Characteristics

		Min-Max (Median)	X±SD
Age (years)		18-65 (38)	37.53±10.84
Body weight (kg)		41-138 (68)	69.97±16.27
Height (cm)		149-190 (166)	167.05±8.71
BMI (kg/m <sup>2</sup> )		14.88-48.47 (24.29)	24.96±4.81
		n	%
Gender	Female	257	74.3
	Male	89	25.7
Educational Level	Elementary school	2	0.6
	High school	31	9.0
	University	221	63.9
	Master's degree	92	26.5
Marital Status	Married	235	67.9
	Single	111	32.1
Working status	Working	247	71.4
	Not working	99	28.6

**Table 2:** Changes in Their Dietary Habits, Body Weight, and Appetite During the COVID-19 Period

		n	%
Changes in dietary habits	Positive changed	57	16.5
	Negative changed	151	46.6
	Not changed	138	39.9
Changes in appetite	Increased	158	45.7
	Decreased	33	9.5
	Not changed	155	44.8
Changes in body weight	Increased	163	47.1
	Decreased	49	14.2
	Not changed	134	38.7

**Table 3:** Hedonic hunger, coronavirus burnout, and physical activity status of the subjects during COVID-19 pandemic

		<b>X±SD</b>	
Power of Food Scale Total Score		2.76±1.04	
	Food available	2.53±1.09	
	Food present	2.96±1.19	
	Food tasted	2.88±1.09	
COVID-19 Burnout Scale Score		29.02±10.66	
		<b>n</b>	<b>%</b>
Power of Food Scale Score Evaluation	Normal	139	40.2
	Hedonic Hunger	207	59.8
Physical activity status of individuals during the COVID-19 period	Sufficiently active	65	18.8
	Insufficient active	281	81.2

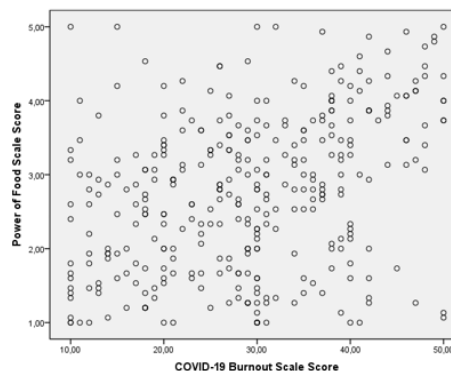
**Table 4:** COVID-19 Burnout Scale Scores According to Individuals' Hedonic Hunger and Physical Activity Status

<b>Power of Food Scale Score Evaluation</b>	<b>COVID-19 Burnout Scale Score (X±SD)</b>	<b>p</b>
Normal	31.4±10.51	<0.01*
Hedonic Hunger	25.4±9.90	
<b>Physical Activity Status</b>	<b>COVID-19 Burnout Scale Score (X±SD)</b>	<b>p</b>
Adequately Active	26.1±10.85	0.014*
Adequately Inactive	29.7±10.52	

\*Independent t-test, p&lt;0.05

Pandemics can have different psychological impacts on every part of society. Studies conducted on healthcare professionals who work hard, especially during the COVID-19 period, have shown that 30-60% of them experience burnout during this period (14, 15). This study suggested that the subjects had moderate COVID-19 burnout, although they were not healthcare professionals (COVID-19-BS score  $29.02 \pm 10.7$ ). The challenges brought by the COVID-19 pandemic have had unfavorable psychological effects, becoming a significant source of stress for both individuals and society. The pandemic continues to affect society negatively (16). As the pandemic affects our psychology, we may experience differences and changes in our emotional states. Our feelings that change during this period are mainly stress and anxiety. Studies show that many individuals experience increased anxiety and stress levels during the pandemic (17, 18). Emotional state influences what foods we consume, and the act of eating in times of stress and anxiety has developed as a common reflex. Therefore, it is well known that an increase in our anxiety and stress levels also affects our eating habits (19). In the literature, individuals reported that they consume food to satisfy their emotional hunger rather than physical (homeostatic) hunger during anxious and stressful times (20, 21). It is suggested that especially when we are sad, stressed, and anxious, food consumption increases as it is seen as an important psychological support in coping with these emotions (22, 23). 43.6% of the study subjects stated that their eating habits changed negatively during the COVID-19 period, while 45.7% reported an increase in their appetite. In addition, more than half of the subjects (59.8%) had hedonic hunger. Hedonic hunger is associated with an increase in appetite due to the taste, smell, and other sensory properties of food and the pleasure in consuming it (24). It can be deduced that the increase in appetite experienced by the majority of study subjects during the COVID-19 period is also due to hedonic hunger. Nowadays, it is suggested that the frequent and excessive consumption of delicious foods due to hedonic hunger causes non-communicable diseases, especially obesity (25). The mean body mass index of the subjects in this study was in the typical range ( $24.96 \pm 4.81$  kg/m<sup>2</sup>); however, nearly half of them (47.1%) stated that their body weight increased during the pandemic. Hedonic hunger increases the risk of obesity in individuals by causing an increase in appetite, thus in food intake, and eventually in body weight. It is thought that this may become more severe during the pandemic as the pandemic-related burnout may trigger hedonic hunger. This study suggests that COVID-19-related burnout is positively associated with hedonic hunger (Figure 1). Moreover, the burnout

scale score of the subjects with pandemic-related hedonic hunger ( $31.4 \pm 10.51$ ) is significantly higher than those without it ( $25.4 \pm 9.90$ ) (Table 4).



**Figure 1:** The Relationship between the Coronavirus Burnout Scale Score and the Power of Food Scale Score

The pandemic has made social isolation mandatory and limited the physical activity means of the general public (26). This study also showed that the majority of individuals (81.2%) had inadequate physical activity levels. However, contrary to the data of this study, it is reported that many have started to engage in physical activities to strengthen their immune system, improve their mental health, and reduce the unfavorable psychological effects of the measures applied during the pandemic (27). In addition, studies show that there is a negative relationship between physical activity and burnout and that regular physical activity reduces the feeling of burnout (28-30). The results of this study are in line with the literature. The mean COVID-19-BS score of those with inadequate physical activity levels ( $29.7 \pm 10.52$ ) is significantly higher than those with adequate physical activity levels ( $26.1 \pm 10.85$ ) (Table 4). Nevertheless, in Turkey, the general public has not yet reached the desired physical activity level. Therefore, it should be underlined that regular physical activity during the pandemic is critical for protection from COVID-19 and avoiding the feeling of burnout, which is among its psychological effects.

## CONCLUSION

Many factors such as the prolongation of the pandemic period, unemployment, restrictions, and economic difficulties cause a decrease in physical activity and an increase in stress levels in individuals. Moreover, the inability to cope with stress can lead to an upswing in the feeling of burnout and overeating. This study has revealed that as coronavirus burnout intensifies, hedonic hunger becomes more frequent, and physical activity level decreases.



As such, individuals should be informed in detail about coping with the feeling of burnout, the importance of activity and healthy eating during the pandemic process.

## DECLARATIONS

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# The Relationship Between Hedonic Hunger, Chronotype and Anhedonia in Adults

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## ABSTRACT

**Objective:** Although nutrition is quite complex, it is well known that be controlled by homeostatic and hedonic regulations. Anhedonia, on the other hand, is a symptom of depression, but is also associated with excessive and uncontrolled eating. Chronotype reflects individual differences in timing preference for daily activities and their underlying circadian rhythms, individuals who feel the best in the morning are morning, those who sleep late and those who feel best in the evening are evening chronotype. The aim of this study is to determine relationships between hedonic hunger, anhedonia levels and chronotypes of individuals.

**Method:** The study was conducted with 402 participants between the ages of 18-65, studying and working at İzmir Bakırçay University between December 2020 and March 2021. This research was carried out online with "Google Forms". In the applied questionnaire, along with the questions determining the sociodemographic characteristics and International Physical Activity Questionnaire (IPAQ), The Power of Food Scale (PFS), Morningness-Eveningness Questionnaire (MEQ), and the Snaith-Hamilton Pleasure Scale (SHAPS) were used. Ethics Committee Approval was taken from Acıbadem University and Acıbadem Healthcare Institutions Medical Research Ethics Committee with decision number 2020/25-24.

**Results:** Mean age of individuals with hedonic hunger (25.6±9.2 years) was lower than the mean age of individuals without hedonic hunger (31.9±12.4 years) (p=0.000). The rate of hedonic hunger in women was 79.6%, and the rate of hedonic hunger in men is 68.6% (p=0.014). The rate of being anhedonic was higher in males than females, and this was statistically significant (p=0.015). A linearly negative correlation was found between the chronotypes and the hedonic hunger (r=-0.238, p=0.000). Individuals were found to be more prone to eveningness chronotype as the level of hedonic hunger increased.

**Conclusion:** In this study, it was determined that hedonic hunger and chronotype were affected by each other, but this situation was not related to anhedonia. As a result, the state of having hedonic hunger should be evaluated by considering the chronotypes of the individuals. The chronotype of the individual, which is an important factor in minimizing hedonic hunger, should be tried to be regulated in order to ensure healthy food consumption.

**Keywords:** Hunger, Anhedonia, Hedonic Hunger, Chronotype, Circadian Rhythm

## Yetişkin Bireylerde Hedonik Açlık, Kronotip ve Anhedoni İlişkisi

### ÖZET

**Amaç:** Beslenmenin nasıl programlandığı oldukça karmaşık olsa da, homeostatik ve hedonik düzenlemeler ile kontrol edildiği bilinmektedir. Anhedoni ise depresyonun bir semptomu olmakla beraber, aşırı ve kontrolsüz yeme ile de ilişkilidir. Kronotip, günlük aktiviteleri ve bunların altında yatan sirkadiyen ritimleri zamanlama tercihindeki bireysel farklılıkları yansıtmakta olup, sabah saatlerinde kendilerini en iyi şekilde hissedenen bireyler sabahçı, geç uyumayı ve akşam saatlerinde kendilerini en iyi şekilde hissedenen ise akşamcı kronotiptir. Bu çalışmada amaç, yetişkin bireylerin hedonik açlık, anhedoni düzeyleri ve kronotipleri arasındaki ilişkiyi belirlemektir.

**Yöntem:** Çalışma, Aralık 2020-Mart 2021 tarihleri arasında, İzmir Bakırçay Üniversitesi'nde okuyan ve çalışan 18-65 yaş arası 402 katılımcı ile çevrimiçi olarak uygulanan anket, içeriğinde katılımcıların sosyodemografik özelliklerini ve beslenme alışkanlıklarını belirleyen sorularla birlikte; Uluslararası Fiziksel Aktivite Anketi (IPAQ), Besin Gücü Ölçeği (BGÖ), Sabahçı-Akşamcı Anketi (SAA), Snaith-Hamilton Hoşnutluk Değerlendirme Ölçeği (SHHDÖ) kullanılmıştır. Araştırmanın Etik Kurul Onayı 03.12.2020 tarihinde Acıbadem Üniversitesi ve Acıbadem Sağlık Kuruluşları Tıbbi Araştırma Etik Kurulu'ndan 2020/25 sayılı, 2020/25-24 karar numarası ile alınmıştır.

**Bulgular:** Hedonik açlığı sahip olan bireylerin yaş ortalamasının (25,6±9,2 yıl), hedonik açlığa sahip olmayan bireylerin yaş ortalamasına (31,9±12,4 yıl) göre daha düşük olduğu belirlenmiştir (p=0,000). Kadınlarda (%79,6) erkeklere (%68,6) göre hedonik açlık görülme oranı anlamlı olarak daha yüksektir (p=0,014). Erkek bireylerde kadınlara göre anhedonik olma oranı daha fazladır (p=0,015). Bireylerin kronotip durumu ile hedonik açlık durumu arasında doğrusal negatif yönde anlamlı bir ilişki tespit edilmiştir (r=-0,238, p=0,000). Hedonik açlık düzeyi arttıkça bireylerin akşam kronotipine daha yakın oldukları saptanmıştır.

**Sonuç:** Bu çalışmada, hedonik açlık ile kronotipin birbirlerinden etkilendiği ancak bu durumun anhedoniyle ilişkili olmadığı belirlenmiştir. Sonuç olarak, hedonik açlığa sahip olma durumu bireylerin kronotipleri de göz önüne alınarak değerlendirilmelidir. Hedonik açlığı minimuma indirmek için önemli bir etken olan bireyin kronotipi sağlıklı besin tüketiminin sağlanabilmesi için düzenlenmeye çalışmalıdır.

**Anahtar Sözcükler:** Açlık, Anhedoni, Hedonik Açlık, Kronotip, Sirkadiyen Ritim

One of the reasons for the health problems seen in today's societies is the consumption of bad foods. Especially the easy and cheap access to delicious foods triggers a pleasure-based food consumption in addition to the need for calories (1). Although how nutrition is programmed is quite complex, food intake is controlled by homeostatic regulation for energy balance and by hedonic regulation for pleasure (2). Hunger that is independent of taste is called "homeostatic hunger" because there is an energy deficit in the absence of food for at least 8 hours. Hedonic hunger is an impulse that causes the consumption of delicious foods for pleasure rather than the feeling of hunger caused by energy deficit (1,2).

Food intake is rhythmic and it has been reported that the individual's food intake times may be affected by the chronotypes expressed as personal preferences of daily activities (3). Chronotypes of individuals are divided into three categories as morningness, middle and eveningness. The chronotypes of individuals are determined as morningness and eveningness chronotypes according to the times when they feel most productive and best. It has been reported that individuals with the eveningness chronotype tend to have more unhealthy behaviors (4). In addition, individuals with morningness chronotype generally have a healthier lifestyle compared to eveningness chronotypes, and studies have shown that they have higher life satisfaction (4,5). Anhedonia is an important symptom of depression; it is also associated with excessive and uncontrolled eating (6). This suggests that anhedonic individuals can use foods to increase their level of pleasure.

In this study, it was aimed to determine the hedonic hunger, anhedonia levels and chronotypes of adult individuals and to evaluate the relationship between them.

## MATERIALS AND METHODS

This study was carried out on 402 participants between the ages of 18-65 who voluntarily agreed to participate in the study and studied or worked at İzmir Bakırçay University between December 2020 and March 2021. The sample size of the study was found to be at least 378 people with the G-Power power analysis program. Individuals who received psychiatric treatment and/or medication, and who took a special diet due to their illness were excluded from the study. This research was carried out online with "Google Forms" and the study started with the approval of the "Informed Voluntary Consent Form for Scientific Research". In the first part of the questionnaire, a questionnaire consisting of 11 questions determining the

sociodemographic characteristics of the individuals participating in the research was applied, and in the second part, a questionnaire consisting of 6 questions to question the nutritional habits of the individuals. In the third part of the questionnaire, the short version of the International Physical Activity Questionnaire (IPAQ) was used to determine the physical activity levels of individuals (7). In the fourth part of the questionnaire, The Power of Food Scale (PFS) was used to determine the hedonic hunger levels of individuals (8). In the fifth part of the questionnaire, the Morningness-Eveningness Questionnaire (MEQ) was used to determine the chronotypes of individuals (9). Finally, in the sixth part of the questionnaire, the Snaith-Hamilton Pleasure Scale (SHAPS), which determines the anhedonia levels according to the pleasure levels of the individuals, was used (10). In order to carry out the study, "Ethics Committee Approval" was obtained from Acibadem University and Acibadem Healthcare Institutions Medical Research Ethics Committee (ATADEK) on 03.12.2020 with the decision numbered as 2020/25-24. In addition, institutional permission was obtained from İzmir Bakırçay University in order to collect the data of the research.

At the end of the research, the data obtained through the questionnaire were evaluated in the Statistical Package for the Social Sciences (SPSS) version 22.0 statistical package program. Number, percentage, mean value and standard deviation were used for descriptive statistics in statistical analysis. Pearson Chi-Square, Mann-Whitney U, Student t, One Way ANOVA analyzes were used to compare the hedonic hunger, chronotype and anhedonia status according to the sociodemographic characteristics, chronic disease status, smoking, alcohol and dietary habits, and physical activity levels of the participants. If the One Way ANOVA test statistic result was found to be significant, the Post hoc test was used to identify the groups that caused the difference. Pearson correlation analysis was used to determine whether there was a relationship between hedonic hunger and anhedonia and chronotype status. In statistical analyses, p-values less than 0.05 were considered significant.

## RESULTS

Of the individuals participating in the research, 265 (65.9%) were female and 137 (34.1%) were male. The mean age of the participants was  $27.1 \pm 10.4$  years. When body mass indexes were evaluated according to the WHO classification, 10.2% of the participants were underweight, 59.7% were normal, 23.6% were overweight and 6.5% were obese. In addition, 69.4% of the participants



skip meals. Of the participants who skip meals, 62.7% do not consume lunch, 33.7% do not consume morning meals and 3.6% do not consume evening meals. 87.1% of the participants want to snack between meals. It was determined that the participants who consumed snacks preferred mostly fruit with 51.1%, and dairy products such as milk, yogurt, ayran and kefir the least with 0.6%. The mean MET score of the participants was found to be  $903.9 \pm 1495.4$  MET-minutes, and 59.2% of the individuals were classified as inactive, 33.3% as minimally active and 7.5% as very active. (Table 1).

The relationship between hedonic hunger status of individuals and sex is given in Table 2. The rate of hedonic hunger was observed to be higher in women (79.6%,  $n=211$ ) than in men (68.6%,  $n=94$ ), and a statistically significant difference was found between the groups ( $p=0.014$ ). When the relationship between the sex of the participants and their anhedonia status is examined; it was observed that the rate of being anhedonic was higher in males (10.9%,  $n=15$ ). A statistically significant difference was found between the groups ( $p=0.015$ ) (Table 2).

The mean age of the participants without hedonic hunger ( $31.9 \pm 12.4$  years) compared to those with hedonic hunger ( $25.6 \pm 9.2$  years) ( $p=0.000$ ); The mean age of the participants with morningness chronotype ( $31.9 \pm 1.2$  years) was significantly higher than the participants with middle and eveningness chronotype ( $26.2 \pm 0.6$  years,  $23.8 \pm 0.9$  years, respectively) ( $p=0.000$ ) (Table 3).

It was observed that the rate of weakness (underweight) was higher in those with the eveningness type chronotype, and the obesity rate was higher in those with the morningness type chronotype, which is statistically significant ( $p=0.003$ ). It was observed that the rate of hedonic hunger among the participants who had a snack between meals was significantly higher than those who did not snack between meals, and the rate of snacking between meals was significantly higher in those with the eveningness type chronotype than those with the middle and morningness type chronotype; not shown in the tables ( $p=0.018$ ).

The relationship between hedonic hunger and chronotype status of individuals is given in Table 4. It was observed that there was a linear negative significant relationship between the participants' chronotype total score and hedonic hunger total score ( $r=-0.238$   $p=0.000$ ), and between the chronotype total score and hedonic hunger subgroup

scores (Food Availability, Food Present, Food Tasted). ( $r=-0.154$ ,  $p=0.002$ ;  $r=-0.218$ ,  $p=0.000$ ;  $r=-0.270$ ,  $p=0.000$ ).

There was no statistically significant relationship between the participants' hedonic hunger and anhedonia; not shown in the tables ( $p>0.05$ ). No statistically significant correlation was found between the anhedonia status and chronotypes of the participants, it was not shown in the tables ( $p>0.05$ ).

## DISCUSSION

In our study, 65.9% of the participants were women and 34.1% were men. In similar studies on chronotype, hedonic hunger and/or anhedonia, female participants were more common than male participants, as in our study (11-12). Of the individuals participating in our study, 10.2% were underweight, 59.7% were normal, 23.6% were slightly overweight and 6.5% were obese. In a study on chronotype, eating behavior and depression, it was determined that 12% of individuals were underweight, 68.2% were normal, 15.7% were slightly obese and 3.9% were obese and the body mass index distributions of this study are similar to the distribution in our study (13). In our study, 69.4% of the participants skipped meals. In Şarahman's study on hedonic hunger, similar to our study, most of the participants (73.7%) skip meals (14).

It is thought that many factors such as age, sex and BMI may affect hedonic hunger (11-14). In our study, hedonic hunger was observed in 79.6% of women and 68.6% of men. The rate of hedonic hunger was higher in female participants, and the difference between hedonic hunger states by sex was statistically significant. In studies, hedonic hunger was found to be higher in women than in men, and this difference between the sexes was found to be statistically significant (27,28). In a study conducted by Lowe et al. with 466 university students between the ages of 18-42, it was found that the mean PFS score was higher in women than in men, albeit with a small difference, but this difference between them was not statistically significant (15). In a study by Schüz et al. examining the eating habits of 53 participants aged 18-60 through social media advertisements, the PFS scores were found to be slightly higher in women than in men, but this difference was not statistically significant (17). When all these studies are examined, it can be seen that women have more hedonic hunger than men. Although the levels of estradiol, which is one of the sex hormones that are effective on the homeostatic control of nutrition, are higher in women than in men and provide partially less hunger and longer satiety, women may be more affected by environmental food cues because of higher hedonic hunger levels in women (17).

**Table 1.** Sociodemographic Characteristics, Nutritional Habits and Physical Activity (n=402)

Age (years) $\bar{X}\pm SS$	Participants	
	27.1 ± 10.4	
	n	%
<b>Sex</b>		
Woman	265	65.9
Man	137	34.1
<b>Body Mass Index</b>		
< 18.5 kg/m <sup>2</sup> underweight	41	10.2
18.5-24.9 kg/m <sup>2</sup> normal	240	59.7
25-29.9 kg/m <sup>2</sup> overweight	95	23.6
≥ 30 kg/m <sup>2</sup> obese	26	6.5
<b>Meal Skip Status</b>		
Yes	279	69.4
No	123	30.6
<b>Which Meal is Skipped the Most?</b>		
Breakfast	94	33.7
Lunch	175	62.7
Dinner	10	3.6
<b>Between-Meal Snack Status</b>		
Yes	350	87.1
No	52	12.9
<b>Snacks</b>		
Fruits	179	51.1
Biscuits, Crackers, etc.	116	33.1
Wafers, Chocolate, etc.	157	44.9
Confectionery	50	14.3
Cheese-bread-style snacks	61	17.4
Nuts	154	44
Hot beverages such as tea, coffee.	4	1.1
Herbal tea		
Dairy products such as milk, yogurt.	2	0.6
Ayran, kefir		
<b>Total MET Score <math>\bar{X}\pm SS</math></b>	903.9±1495.4	
	n	%
<b>Physical Activity Level</b>		
Inactive	238	59.2
Minimal Active	134	33.3
Very Active	30	7.5

**Table 2.** Relationship between Hedonic Hunger and Anhedonia Conditions and Sex

	<b>Women</b>	<b>Men</b>	<b>p</b>
	<b>n (%)</b>	<b>n (%)</b>	
<b>Hedonic Hunger</b>			<b>0.014*</b>
Available	211 (%79.6)	94(%68.6)	
None	54 (%20.4)	43(31.4)	
<b>Anhedonia</b>			<b>0.015**</b>
Not anhedonic	253 (%95.5)	12 (%4.5)	
Anhedonic	122 (%89.1)	15 (%10.9)	

\* Pearson Chi-Square test was used. The column percentage is taken.

\*\* Pearson Chi-Square test was used. Row percentage is taken.

**Table 3.** Relationship between Hedonic Hunger and Chronotype Conditions and Age

	<b>Age (years) <math>\bar{X}\pm SS</math></b>	<b>p</b>
<b>Hedonic Hunger</b>		<b>0.000*</b>
Available	25.6±9.2	
None	31.9±12.4	
<b>Chronotype</b>		<b>0.000*</b>
Morningness	31.9±1.2	
Middle Type	26.2±0.6	
Eveningness	23.8±0.9	

\* One Way Anova test was used.

**Table 4.** The Relationship between Hedonic Hunger and Chronotype Status of Participants

	<b>Chronotype Total Score</b>	
	<b>r</b>	<b>p</b>
<b>Hedonic Hunger Total Score</b>	-0.238	<b>0.000</b>
<b>Hedonic Hunger Subgroup 1: Food Availability</b>	-0.154	<b>0.002</b>
<b>Hedonic Hunger Subgroup 2: Food Present</b>	-0.218	<b>0.000</b>
<b>Hedonic Hunger Subgroup 3: Food Tasted</b>	-0.270	<b>0.000</b>

\* Pearson correlation analysis was used.

In the Turkish adaptation study of the Snaith Hamilton Pleasure Scale Clinician Administered Form (SHAPS-C), no difference was found in the total scores of the scale according to sex (33). Again, in a study conducted with 697 adult participants between the ages of 18-82, no relationship was found between the level of anhedonia and sex (34). In another study examining the participants in three groups as non-anhedonic, acute anhedonic and chronic anhedonic, no difference was found between the groups in the levels of anhedonia according to sex (35). In the development study of the Snaith-Hamilton Pleasure Scale, no significant relationship was found between scale scores and sex (18). In the Chinese adaptation study of the Snaith-Hamilton Pleasure Scale by Zhang et al., men in the healthy group were found to be more anhedonic than women (19). In this study, too, in support of Zhang et al. and Yang et al. (18,19), the rate of being anhedonic was higher in men (10.9%) compared to women (4.5%), and a statistically significant difference was found between the level of satisfaction by sex.

In some studies, hedonic hunger is higher in the younger age group than in the older age group, and this difference is statistically significant (2,14). In our study, the mean age of individuals with hedonic hunger was  $25.6 \pm 9.2$  years, and the mean age of those without hedonic hunger was  $31.9 \pm 12.4$  years. The mean age of those with hedonic hunger was lower than those without hedonic hunger, and this difference was statistically significant. In a study conducted by Kremer et al. on 46 elderly and 36 young individuals, losses in taste-smell and sensitivity to trigeminal stimuli, as well as reductions in chewing efficiency were observed in the elderly compared to young people on average. In addition, it has been determined that adding a flavor enhancer, texture change and irritant nutrient in the elderly causes an increase in food liking (20). When all these are examined, it is thought that hedonic hunger may decrease due to loss of taste and smell as age progresses.

In a population-based study investigating health behaviors, health-related quality of life, and sleep across chronotypes, subjects with the eveningness chronotype were significantly younger than 2,976 participants (21). Many studies support that those with the eveningness chronotype are younger individuals (5,22,23). In this study, supporting the literature, the mean age of the participants with morningness chronotype was found to be significantly higher than the participants with the middle and eveningness chronotype, and a statistically significant difference was found between the groups in terms of

the mean age of the participants.. However, there are different results in the literature. In some studies conducted on university students, no significant difference was observed between age and chronotype (24,25). The reason why these studies are different from our study and other studies supporting our study may be that they were conducted on individuals from the same age group.

In a study evaluating the differences in BMI and eating behaviors of obese and overweight individuals with and without anhedonic during an intervention study for weight loss, anhedonia was associated with uncontrolled eating, emotional eating, and overeating (6). Again, in a study by Davis et al., it was found that individuals with anhedonia may try to use foods to increase their level of pleasure (26). In a study conducted on rats and mice, it has been found that those exposed to a high-fat diet have depression with more anhedonia, the elimination of these foods increases stress, and the tendency to high-fat foods increases with increasing stress, so this situation is a vicious circle (27). In this study, a linear positive relationship was observed between hedonic hunger and anhedonia status, and it was determined that those with high hedonic hunger levels were more prone to being anhedonic. However, this situation is not statistically significant. There are some studies in the literature that show the opposite of all these studies. In a study conducted in adolescents, low levels of anhedonia were associated with an increase in hedonic hunger (11). The reason why these studies differ from the general literature may be that they were conducted on mice, rats or individuals of different age groups.

In a study conducted on a large sample, it was found that individuals with the eveningness chronotype had 1.3 times higher rate of stress-related eating and had more difficulty in controlling the amount of food eaten (54). A study on rats reported that sucrose uptake and preference were rhythmic, with higher intake at night. It has also been shown that hedonic feeding behaviors can be controlled by brain circadian clocks (28). When this study was compared with similar studies in the literature, it was observed that there was a linear negative correlation between hedonic hunger and chronotype status, and it was determined that individuals with high hedonic hunger levels were prone to eveningness.

In a study conducted by Maukonen et al. in 1097 adults with a 7-year follow-up period, it was determined that evening-hungry individuals are more prone to depression (29). In a study with a large sample, a relationship was

determined between having an eveningness chronotype and severe depressive symptoms (30). In a meta-analysis by Au et al., being coast to the eveningness chronotype was found to be associated with severe mood symptoms (5). In this study, in accordance with the literature, it was observed that there was a linear negative relationship between anhedonia status and chronotype status, and it was determined that individuals with high anhedonia levels were prone to eveningness. However, this situation is not statistically significant.

## CONCLUSION

In this study, which was conducted to evaluate the relationship between adult individuals by determining hedonic hunger, anhedonia levels and chronotypes; it was determined that hedonic hunger and chronotype were affected by each other, but chronotype and hedonic hunger were not associated with anhedonia. Relationship between anhedonia, chronotype and hedonic hunger, which is one of the main criteria of depression, was investigated, but no relationship was found between anhedonia and these factors, except for the relationship between chronotype and hedonic hunger. In future studies, not only anhedonia but also major depression can be discussed in all its lines and its relationship with hedonic hunger and chronotype can be examined again.

Limitations of this study; due to the Covid-19 epidemic, it may be that the anthropometric measurements of the study were accepted according to the declaration and carried out in a limited universe.

## DECLARATIONS

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**Conflicts of interest:** None of the authors has any conflict of interest to declare.

**Ethics approval:** The protocol of the study was approved by the Ethical Committee of the Acıbadem Mehmet Aydınlar University with the number of 2020/25-24.

**Authors' contributions:** Ece Işık, Kezban Esen Karaca and Gizem Köse contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

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# The Validity and Reliability Study of the Turkish Adaptation of the Feeding Practices and Structure Questionnaire

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## ABSTRACT

**Objective:** To evaluate the validity and reliability of the Turkish adaptation of the Feeding Practices and Structure Questionnaire.

**Material and methods:** This study was conducted with 314 parents of preschool children aged 2-5 years. The Feeding Practices and Structure Questionnaire, the Parental Feeding Style Questionnaire, and a demographic questionnaire were applied to the parents. The anthropometric characteristics of the parents were evaluated using body mass index, and the z-score values of the children were evaluated with the WHO Anthro Plus program. While examining the validity and reliability of the adapted questionnaire, content validity, internal validity, external validity, Cronbach's alpha reliability coefficient, and test-retest reliability were analyzed. Item-person separation and item-person mean square fit statistics were assessed with the Rasch analysis. The protocol of the study was approved by the Ethics Committee of Marmara University Health Sciences Institute with the number of 2019-36 dated February 18, 2019.

**Results:** The content validity index of the questionnaire was over 0.80 for all items, and Cronbach's alpha coefficient was 0.74. A significant difference was found for all items in the test-retest analysis ( $p < 0.01$ ). According to the Rasch analysis, the person separation index was 1.57 and the item separation index was 11.93; the data showed very high item reliability (0.99), while individual reliability (0.71) was very low.

**Conclusion:** This study showed that the Feeding Practices and Structure Questionnaire was reliable but not valid due to the characteristics of the sample.

**Keywords:** Feeding practices, preschool, parent, validity, reliability

## Besleme Uygulamaları ve Yapısı Anketi Türkçe Geçerlik ve Güvenilirlik Çalışması

### ÖZET

**Amaç:** Bu çalışma Besleme Uygulamaları ve Yapısı Anketi'nin Türkçe geçerlilik ve güvenilirliğini değerlendirmek amacıyla yapılmıştır.

**Gereç ve Yöntem:** Bu çalışma 2-5 yaş aralığında okul öncesi dönem çocuğu olan 314 ebeveyn ile yürütülmüştür. Ebeveynlere Besleme Uygulamaları ve Yapısı Anketi, Ebeveyn Besleme Tarzı Anketi ve demografik anket formu uygulanmıştır. Ebeveynlere ait antropometrik özellikler beden kütle indeksi, çocuklar için ise z skoru değerleri WHO Anthro Plus programı ile değerlendirilmiştir. Anketin geçerlik güvenilirliği değerlendirilirken kapsam geçerliği, iç geçerlik, dış geçerlik, Cronbach alfa güvenilirlik katsayısı ve test-tekrar test güvenilirliği incelenmiştir. Rasch analizi ile madde-kışı ayrımı ve madde-kışı ortalama kare uyum istatistikleri değerlendirilmiştir. Çalışmanın protokolü Marmara Üniversitesi Sağlık Bilimleri Enstitüsü Etik Kurulu tarafından 18 Şubat 2019 tarih ve 2019-36 sayı ile onaylandı.

**Bulgular:** Anketin kapsam geçerlik indeksi tüm maddeler için 0,80'inin üzerinde, Cronbach alfa katsayısı 0,74 olarak bulunmuştur. Test-tekrar test analizinde tüm maddeler için anlamlı farklılık saptanmıştır ( $p < 0,01$ ). Rasch analizine göre kişi ayırma indeksi 1,57, madde ayırma indeksi ise 11,93 olarak bulunmuştur. Rasch analizine göre veriler çok yüksek madde güvenilirliği (0,99) gösterirken, kişi güvenilirliğinin (0,71) oldukça düşük olduğu belirlenmiştir.

**Sonuç:** Bu çalışma, Besleme Uygulamaları ve Yapısı Anketi'nin güvenilir olduğunu, örneklem nedeniyle geçerli olmadığını göstermiştir.

**Anahtar sözcükler:** Besleme uygulamaları, okul öncesi, ebeveyn, geçerlik, güvenilirlik

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Children need to obtain healthy eating habits in the preschool period. In addition to preventing acute nutrition-related diseases and growth problems, healthy eating habits prevent also protect against obesity, diabetes, cardiovascular disease, and stroke resulting from the long-term effects of unhealthy diets (1,2).

The basis of eating habits is formed in childhood and eating behaviors acquired in this early period continue in later years (3). Parents influence their children's nutrition status with their eating behaviors, attitudes, and beliefs concerning foods (4). Many studies show that the basis of habits acquired in the early period is formed in the family. For this reason, studies have defined the effects of parents on child nutrition as parental feeding practices (5).

When the scales developed to determine the feeding practices of the parents are examined, it is seen that there is no scale designed specifically for the preschool age group. The scales that are available target pre-school and school-age children together (6).

This study was a questionnaire adaptation study conducted to determine the validity and reliability of the Turkish version of the Feeding Practices and Structure Questionnaire administered to the parents of children aged 2-5 years. This questionnaire is used to assess feeding practices that could affect children's ability to self-regulate their energy intake.

## MATERIAL AND METHODS

### *Study population and design*

The research was carried out in kindergartens in Üsküdar, Beşiktaş and Fatih in Istanbul, Turkey between February 2019 and March 2020. The parents were randomly selected by interviewing the teachers of the kindergartens affiliated with the Turkish Ministry of National Education. The research was concluded with the participation of 314 parents.

While determining the sample size, the guidelines published on scale development and adaptation studies were examined, and it was decided that 10 people should be recruited for each scale item (7). Since the questionnaire consisted of 27 items, the study was planned to be conducted with at least 270 individuals.

Ethical approval was obtained from the Health Sciences Institute of Marmara University with the protocol number 2019-36 dated February 18, 2019. Informed consent was

obtained from all the parents of the participants included in the study. The research was conducted in accordance with the principles set forth in the Declaration of Helsinki, 2008.

### *Data collecting tools*

**Demographic questionnaire:** In this form, the sex, age, marital status and educational status of the parents, parental height-body weight, and the total number of children in the family were questioned. Regarding the child, the number of children and height-body weight information were collected. Children's height and body weight information based on the parents' statements was used for the calculation of body mass index (BMI). The z-scores for weight-for-age, height-for-age, and BMI-for-age were evaluated. The z-scores were calculated as described in the Anthro Plus program of the World Health Organization (WHO, 2020) and classified as follows:  $<-2$  standard deviation (SD), thin;  $\geq-2$  SD- $<2$  SD, normal; and  $\geq 2$  SD, obese.

**Feeding Practices and Structure Questionnaire:** The original questionnaire was developed by Jansen et al. in Australia, 2014. The Feeding Practices and Structure Questionnaire aims to assess children's feeding practices that could affect their ability to self-regulate their energy intake (8). The questionnaire consists of 28 items and eight constructs, of which four are related to feeding practices and the remaining four are related to structure-related feeding practices. The constructs related to feeding practices are reward for behavior (four items), reward for eating (four items), persuasive feeding (five items), and overt restriction (four items). The constructs concerning structure-related feeding practices are covert restriction (four items), structured meal setting (three items), structured meal timing (three items), and family meal setting (one item). Since the item linked to family meal setting was removed from the original scale, it was not included in the current study. Item 3 was also excluded since its translation was complicated and caused confusion.

**Parental Feeding Style Questionnaire:** This instrument evaluates control, emotional feeding, conditional feeding, oppressive feeding methods and also examines the relationship between the BMI of the parent and the child (9). The questionnaire was developed by Wardle et al. and adapted into Turkish by Özçetin et al. (2010) (10).

### *Language Adaptation and Validation of the Questionnaire*

After written permission was obtained from the scale developers and language adaptation was performed

according to the scale adaptation steps of WHO (7), the scale was translated into Turkish by three people who are fluent in both Turkish and English languages.

After the translation of the questionnaire was completed, opinions and suggestions were received from five different experts concerning whether the Turkish translation was understandable and appropriate. Item 3 was excluded from the study because it was difficult to understand. The original and translated versions of the questionnaire were sent to the experts together. The scale was re-evaluated according to the opinions and suggestions received for each item in the questionnaire and necessary adjustments were made to the items. After the questionnaire was translated back to English and all stages were completed, the Turkish version was finalized for use in the study.

#### *Statistical Evaluation of Data*

SPSS v. 23 was used for the statistical analyses of the research data, and the Rasch analysis was conducted using Winsteps v. 3.85. As descriptive statistics for demographic characteristics, mean and standard deviation values were calculated and frequency tables were constructed.

The content validity of the questionnaire was evaluated, while the internal validity was evaluated, the comparison of the upper and lower group averages of 27%, and the similar scale validity method was used when evaluating the external validity. While evaluating the internal validity of the questionnaire, the content validity analysis was undertaken, and the 27% lower and upper group averages were compared with the t-test. The external validity of the questionnaire was evaluated with the similar scale comparison method. For similar scale validity, the intra-class correlation coefficient (ICC) was calculated. The Rasch analysis was used in the validity and reliability analysis of the questionnaire. In the Rasch analysis, the mean values of 0.60 and 1.40 were accepted when the compliance tests were performed for item difficulty levels, and individual ability levels were assessed.

Cronbach's alpha coefficient and test-retest reliability were used in the reliability analysis of the scale. While performing Cronbach's alpha analysis, a value of  $\geq 0.70$  was taken as a reference. The paired t-test was used for the test-retest assessment. A p value of  $< 0.05$  was accepted as the significance value.

## RESULTS

### *Descriptive findings of the participants*

The descriptive characteristics of the parents and children are given in Table 1. It was determined that 91.4% (n = 287) of the parents were the mothers of the participant children, and 98.4% of the parents were married. When the educational status was examined, most of the parents (66.2%) had graduated from university.

The mean age was  $37.2 \pm 3.3$  years for the mothers,  $35.1 \pm 3.6$  years for the fathers, and  $3.4 \pm 0.7$  years for the children. When the total number of the children of the parents and the birth order of the participant children were questioned, it was determined that the majority (58%) of the parents had one child, and the child participating in the study was mostly their first (75.5%).

### *Findings on the validity of the adapted scale*

Content, internal criterion and similar scale validity analyses were performed. The acceptable level in content validity was accepted as 0.80 and above. Accordingly, the content validity scale for all items was found to be above 0.80.

The difference between the lower and upper group means was evaluated for internal criterion validity. The data of the first and last 85 participants, who constituted 27% of the 314-person group, were evaluated to determine their differences in the independent-samples t-test for each item and examine their averages. As a result, a statistically significant difference was found for all items ( $p < 0.05$ ).

ICC was used to evaluate similar scale validity. The ICC value was found to be 0.689, indicating that the scale was moderately reliable.

### *Findings on the reliability of adapted scale*

Internal consistency and test-retest reliability were used for the reliability analysis. Internal consistency was evaluated by performing Cronbach's alpha analysis for each construct of the scale (Table 2). Cronbach's alpha coefficients of the scale constructs were 0.795 for reward for behavior, 0.797 for reward for eating, 0.600 for persuasive feeding, 0.563 for overt restriction, 0.844 for covert restriction, 0.310 for structured meal setting, and -0.227 for structured meal timing. Cronbach's alpha coefficient of the scale was found to be 0.740.

**Table 1:** Descriptive characteristics of the parents

Variable		n	%
Sex	Female	287	91.4
	Male	27	8.6
Marital status	Married	309	98.4
	Single	5	1.6
Education status	Primary school	7	2.2
	High school	43	13.8
	University	208	66.2
	Master	56	17.8
Total number of children	1	182	58.0
	2	107	34.0
	3	21	6.7
	4	4	1.3
Birth order of the child participating in the study	First	237	75.5
	Second	58	18.5
	Third	15	4.8
	Fourth	4	1.3

**Table 2:** Internal consistency reliability coefficients

Constructs	Cronbach's alpha value
Reward for behavior	0.795
Reward for eating	0.797
Persuasive feeding	0.705
Overt restriction	0.563
Covert restriction	0.844
Structured meal setting	0.310
Structured meal timing	-0.227
Total	0.740

According to the Cronbach alpha analysis, the constructs of reward for behavior, reward for eating, persuasive feeding and covert restriction were found to be at a reliable and acceptable level. There was no significant change in the reliability value when any item was removed from the constructs of reward for behavior, reward for eating and covert restriction. However, when Item 2 was removed from the persuasive feeding construct, the reliability coefficient of this construct increased from 0.705 to 0.715. The reliability level of the overt restriction construct was found to be very low. However, when the items of this construct were removed, the level of reliability did not change. Cronbach's alpha value for the structured meal setting construct was very low at 0.310. When Item 14 was removed, the reliability of the construct increased from 0.310 to 0.650. Cronbach's alpha reliability coefficient for the structured meal timing construct was calculated as -0.227, indicating that the items under this construct did not tend to measure the same variable and internal consistency was extremely poor.

The retest was carried out with 103 parents approximately four weeks after the first test. When test-retest reliability was examined with the paired t-test, there was a significant difference between the means of the values measured at two different times ( $p = 0.001$ ).

#### *Evaluation of the validity and reliability of the adapted scale with the Rasch analysis*

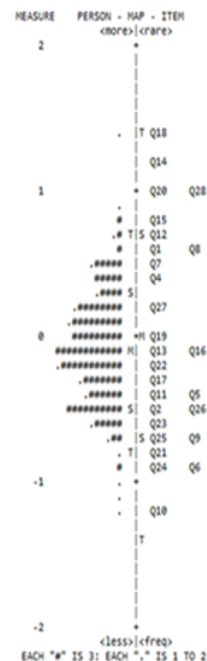
The Rasch analysis was used to evaluate the validity and reliability of the Turkish adaptation of the questionnaire. In principle, the Rasch analysis evaluates two parameters independent of each other: the persons and the items to which the scale is applied.

#### **Item/person separation**

According to the Rasch analysis, item/person separation was calculated in two indices: item person separation index and reliability. An acceptable value of  $>2.00$  was taken for both individual and item separation (11). The person separation index was found to be 1.57, and thus it was below 2.00. The item separation index was determined as 11.93, being above 2.00.

The acceptable range of separation reliability values is 0-1. However, to be considered significant, it must be at least 0.50 (12). The data showed very high item reliability (0.99) in the Rasch analysis. The person reliability value was very low (0.71), indicating a very unreliable person pattern. Therefore, it is considered that the questions in the questionnaire were not clearly understood by the individuals participating in the study.

Figure 1 shows the distribution of the individual ability level of the adapted scale according to the item difficulties. The values on the left of # indicate the ability of the individuals to answer the questions, and the values on the right indicate the difficulty level of the items (12). Accordingly, while Item 18 had the least negative impact on feeding practices, Item 10 was found to have the most negative effect on feeding practices.



**Figure 1:** Person ability/item difficulty level map of the Turkish version of the Feeding Practices and Structure Questionnaire

#### **Mean square fit statistics**

In the Rasch analysis, the mean square agreement value for the 27 items was found to be 1.02 (0), and the mean square agreement value for non-conformity was found to be 1.02 (0). Since the expected value for both values is 1.00, the items were considered to be compatible.

#### **Root Mean Square Error of Approximation – RMSEA**

According to the Rasch analysis, the RMSEA value was found to be 0.06, showing that the model had a good fit ( $<0.10$ ).

#### **Balloon graphic**

In Figure 2 and Figure 3, it is seen that the items are clustered and in harmony with each other.

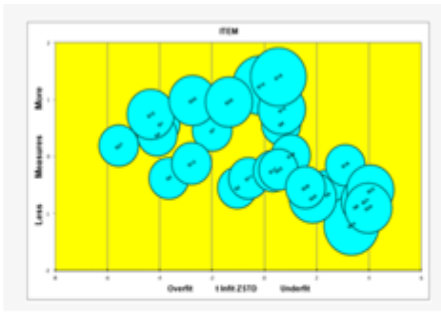


Figure 2: Representation of the infit mean square values

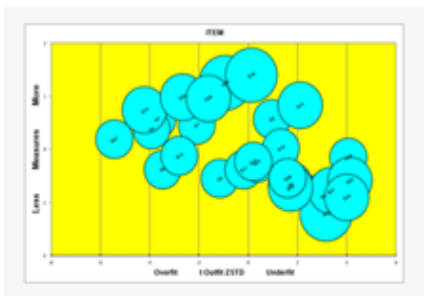


Figure 3: Representation of the outfit mean square values

## DISCUSSION

### *Evaluation of the adapted scale in terms of validity and reliability*

Scale adaptation studies include not only the translation of the scale into a different language and using it but also performing the validity and reliability analysis of the translated version (13). Intercultural scale adaptation is a set of systematic studies that require attention in adapting a scale developed in a different language into Turkish (14). The original Feeding Practices and Structure Questionnaire consisted of 28 items. However, during the adaptation process, Item 3 was considered to be not intelligible due to the confusing expression, and therefore it was not included in the Turkish version.

Cronbach's alpha coefficient and test-retest analyses were used to evaluate the reliability of the adapted scale. Cronbach's alpha, which is the internal consistency reliability coefficient, was calculated for the entire questionnaire and its constructs. The general accepted value for Cronbach's alpha is above 0.70 (13). The Cronbach alpha

value for the adapted scale was found to be 0.740, and therefore it was generally reliable. In the analyses performed for each construct, when the items with a Cronbach's alpha coefficient below the acceptable value were excluded, there was no significant increase in Cronbach's alpha values. Although it is suggested that item-total score correlations should not be negative and should not be below 0.20, there is no definite rule concerning the removal of these items from the scale (15). Since there was no significant change in Cronbach's alpha value when the items were removed, we decided not to exclude these items from the questionnaire despite the low correlation.

In the evaluation performed according to the Rasch analysis, although the item reliability of the data was at a very high level, individual reliability was very low. These results showed that the questionnaire could be administered to a similar group with the same item difficulty level; however, the applicability of a similar scale to the same group was low.

### *Evaluation of the adapted scale in terms of some variables*

Parents influence the nutritional status of children not only through genetic transmission but also through the environment they create for their children. The level of knowledge, attitudes, and practices of both parents play a decisive role in preventing malnutrition and determining the nutritional status of children (16). The availability of food at home is affected by many factors (17). Preventing or restricting children's access to unhealthy snacks by parents are some of the restrictive feeding practices (18). In the current study, when the responses given to Item 23 (How often do you avoid buying and bringing home snacks, such as candy and potato chips?) were examined, 82% of the mothers responded as always, while 22.2% of the fathers responded as always and 44.4% as often. Concerning Item 24 (How often do you not buy the food you want to prevent your child from reaching it?), 37.3% of the mothers responded as always and 36.9% as often, while 48.1% of the fathers responded as always and 22.2% as often. With these questions, the parents' attitudes toward unhealthy foods and the frequency of having unhealthy food at home were questioned. Their responses showed that the parents avoided having unhealthy foods at home.

The use of food as a reward for preschool children, whose nutrition habits and taste preferences are still developing, is another feeding practice applied by parents (19). In the current study, when the responses given to Item 3 [How



often do you encourage your child to eat something by using the nutrients as a reward during the main meal (for example, if you finish your vegetables, you will get some fruit)?] were examined, 27.8% of the mothers responded as always whereas 44% of the fathers responded as sometimes. In relation to Item 19 (I reward my child with something to eat when he behaves well), 66.9% of the mothers and 55.6% of the fathers responded as never. Although the reward method is used frequently as also reported in a previous study (19), our results also showed that restrictions were applied more than rewards.

## CONCLUSION

In this study, the Turkish adaptation of the Feeding Practices and Structure Questionnaire was determined to be reliable; however, it is not possible to state that it was valid due to the characteristics of the sample according to the Rasch analysis examining participants' responses to items by associating them with the difficulty level of each item. The balloon chart showed that the individuals could not clearly distinguish between the constructs and the items were not clearly clustered under each construct. Similarly, the person separation index was 1.57, which is below the acceptable value of  $>2$ , and individual reliability was found to be weak at 0.71.

## DECLARATIONS

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**Conflicts of interest:** None of the authors has any conflict of interest to declare.

**Ethics approval:** The protocol of the study was approved by the Ethics Committee of Marmara University Health Sciences Institute with the number of 2019-36 dated February 18, 2019.

**Authors' contributions:** Ece Moral Yılmaz and Şule Aktaç equally contributed to the design and implementation of the research, analysis of the results and writing of the manuscript.

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