



**T.C.
GAZİ UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES**

**Ph. D.
THESIS**

**SELF-CARE TENDENCIES AND THEIR PAIN-
RELIEVING EFFECTS IN PATIENTS WITH
ENDODONTIC PAIN**

HANDE BENGÜ

DEPARTMENT OF ENDODONTICS

JUNE 2025



**SELF-CARE TENDENCIES AND THEIR PAIN-RELIEVING EFFECTS IN
PATIENTS WITH ENDODONTIC PAIN**

Hande BENGÜ

**DOCTOR OF PHILOSOPHY
DEPARTMENT OF ENDODONTICS**

**GAZİ UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES**

JUNE 2025

SELF-CARE TENDENCIES AND THEIR PAIN RELIEVING EFFECTS IN PATIENTS
WITH ENDODONTIC PAIN

(Ph.D. Thesis)

Hande BENGÜ

GAZİ UNIVERSITY
GRADUATE SCHOOL OF HEALTH SCIENCES

June 2025

ABSTRACT

This study aimed to identify sociodemographic and dental factors predicting self-care behaviours in endodontic patients and evaluate the efficacy of various pain relief methods. A survey was conducted among patients with endodontic pain at Gazi University's endodontic clinic. Sociodemographic and clinical data were collected, and patients reported their use of self-care or formal care methods. Pain relief was assessed using a 5-point Likert scale. Data analysis employed multivariate logistic regression, Wilcoxon and Kruskal-Wallis tests, and Benjamini-Hochberg correction. Of 356 participants, 90% utilized self-care, either alone or combined with formal care. Maximum pain intensity, age, and dental clinic attendance patterns emerged as predictors of self-care behaviours, with pain and age being consistently significant across conditions ($P < ,05$ or $< ,10$). Alcohol application and intraoral cold treatment stood out among home remedies for pain relief ($P = ,001$). Professional-guided medication outperformed self-medication ($P < ,001$), except for NSAIDs, which were equally effective in both scenarios. Prior to seeking professional help, most patients employed various self-care strategies for toothache relief. Pain intensity and age were key factors influencing self-care choices. While formal care generally provided superior pain relief, certain home remedies showed limited efficacy. These findings underscore the prevalence of self-care in endodontic patients and highlight the need for professional guidance in pain management.

Science Code : 1015.1

Key Words: : Toothache, endodontics, home treatment, traditional medicine, public health, drug misuse

Page Number : 113

Supervisor : Prof. Dr. Güven KAYAOĞLU

ENDODONTİK AĞRILI HASTALARDA ÖZ-BAKIM EĞİLİMLERİ VE BUNLARIN AĞRIYI RAHATLATMA ETKİNLİKLERİ

(Doktora Tezi)

Hande BENGÜ

GAZİ ÜNİVERSİTESİ
SAĞLIK BİLİMLERİ ENSTİTÜSÜ

Haziran 2025

ÖZET

Giriş ve Amaç

Endodontik ağrı, dental pratikte önemli bir sorun olup, hastaları genellikle acil tedavi aramaya veya profesyonel yardım öncesinde öz-bakım uygulamalarına yönlendirmektedir. Diş ağrısı için profesyonel dental tedavi kabul edilmiş tedavi standardı olmasına rağmen, hastalar diş hekimine danışmadan önce veya danışmak yerine çeşitli öz-bakım yöntemlerine başvurabilmektedir. Bu öz-bakım davranışları, sosyo-kültürel geçmiş, ağrı yoğunluğu, dental tedavi konusundaki endişeler ve sağlık hizmetlerine erişim gibi faktörlerden etkilenebilmektedir.

Öz-bakım, semptomların yorumlanması ve tedavisi ile hastalık önleme dahil olmak üzere geniş bir uygulama yelpazesini kapsamaktadır. Dental ağrı bağlamında öz-bakım, ev tedavileri, kendi kendine ilaç kullanımı, arkadaşlardan veya akrabalarından tavsiye alma veya alternatif sağlık hizmetleri arayışı gibi uygulamaları içerebilir. Ev tedavileri, özellikle günlük ürünleri ve malzemeleri kullanan yöntemler, diş ağrısını gidermek isteyen kişiler arasında oldukça popülerdir. Diş ağrısı için basit bir çevrimiçi arama yapıldığında, tuzlu su gargaraları, karanfil yağı ve sarımsak uygulamaları gibi çeşitli ev tedavisi önerileri ile karşılaşılır.

Kendi kendine ilaç kullanımı, diş ağrısı çekenler tarafından sıklıkla ilk yardım olarak görülen öz-bakımın bir başka yaygın şeklidir. Geçici rahatlama sağlayabilse de uygunsuz kendi kendine ilaç kullanımı, antibiyotiklere karşı bakteriyel direnç gelişimi veya NSAİİ kullanımından kaynaklanan gastrointestinal komplikasyonlar gibi riskler taşımaktadır. Bu potansiyel risklere rağmen, birçok endodontik hasta, önceki deneyimlerine veya profesyonel olmayan kişilerden gelen tavsiyelere dayanarak kendi kendine ilaç kullanımına yönelmektedir.

Endodontik hastaların öz-bakım davranış modellerini anlamak birkaç açıdan önemlidir. İlk olarak, hastaların karar verme süreçleri ve sağlık arama davranışları hakkında içgörüler sağlar. Bu bilgi, daha etkili hasta eğitim stratejilerinin geliştirilmesine rehberlik edebilir. İkinci olarak, yaygın öz-bakım uygulamaları hakkında farkındalık, klinisyenleri bu uygulamalardan kaynaklanabilecek potansiyel komplikasyonlar veya etkileşimler konusunda uyararak, doğru teşhis ve tedavi planlamasına yardımcı olabilir. Ayrıca, bu alandaki araştırmalar, çeşitli öz-bakım yöntemlerinin etkinliği ve güvenliği hakkında ışık tutarak hem faydalı hem de potansiyel olarak zararlı uygulamaları belirleyebilir.

Bu çalışma, endodontik hastalarda öz-bakım yönelimlerini öngören sosyodemografik/dental faktörleri araştırmayı ve uygulanan öz-bakım yöntemlerinin ağrıyı gidermedeki etkinliğini

incelemeyi amaçlamaktadır. Bu yönlerin incelenmesiyle, endodontik ağrı yönetiminde halk sağlığı girişimlerine, hasta eğitim çabalarına ve klinik uygulamalara rehberlik edecek değerli içgörüler sağlanması hedeflenmektedir.

Teorik Çerçeve ve Literatür Taraması

Öz-bakım davranışlarını etkileyen çeşitli teorik modeller bulunmaktadır. Orem'in Öz-Bakım Eksikliği Teorisi, bireylerin kendilerine bakma kapasitesine ve sorumluluğuna sahip olduğunu, ancak öz-bakım ihtiyaçlarını karşılayamadıklarında profesyonel müdahalenin gerekli hale geldiğini öne sürmektedir. Sağlık İnanç Modeli ise, sağlığı teşvik eden davranışlara girme olasılığının, algılanan duyarlılık, şiddet, faydalar, engeller, harekete geçme ipuçları ve öz-yeterlilik gibi faktörlerden etkilendiğini önermektedir. Değişim Transteorik Modeli, bireylerin sağlık davranışlarını değiştirirken geçtikleri aşamaları tanımlarken, Sosyal Bilişsel Teori öz-yeterliliğin ve sonuç beklentilerinin sağlık davranışlarını şekillendirmedeki rolünü vurgulamaktadır.

Ağrı yönetimi modelleri, Kapı Kontrol Teorisi, Biyopsikososyal Model, Korku-Kaçınma Modeli, Nöromatriks Teorisi ve Bilişsel-Davranışsal Model dahil olmak üzere endodontik ağrı yönetimine yaklaşımları şekillendirmektedir. Bu modeller, bireyselleştirilmiş ve kapsamlı ağrı yönetimi stratejilerinin gerekliliğini vurgulamaktadır.

Dental acil durumlarda hasta davranışı, acil tedavi arama, bilgi arama, profesyonel tedaviyi geciktirme, kendi kendine ilaç kullanma, başa çıkma mekanizmaları geliştirme, önceki deneyimlerden etkilenme ve kültürel inançlardan etkilenme gibi çeşitli davranış kalıplarını içerir. Bu davranışları anlamak, dental acil durumlarda daha iyi hasta sonuçları için etkili stratejiler geliştirmeye yardımcı olabilir.

Sağlık davranışının Sosyo-Ekolojik Modeli, bireysel, kişilerarası, organizasyonel, topluluk ve kamu politikası dahil olmak üzere sağlık davranışlarını etkileyen çoklu etki seviyelerini içeren kapsamlı bir çerçeve sağlar. Bu model, endodontik ağrı yönetiminde öz-bakım davranışlarını ele almak için çok düzeyli müdahalelerin geliştirilmesinde önemlidir.

Endodontik ağrıda öz-bakım uygulamaları, farmakolojik yöntemler (reçetesiz ilaçlar), farmakolojik olmayan yöntemler (tuzlu su gargaraları, soğuk uygulama, karanfil) ve alternatif yaklaşımları içerir. Global prevalans çalışmaları, endodontik ağrı yaşayan hastaların büyük çoğunluğunun (%42-80) profesyonel tedavi aramadan önce bir tür öz-bakıma başvurduğunu göstermektedir.

Öz-bakım davranışlarını etkileyen faktörler arasında yaş, cinsiyet, eğitim düzeyi, sosyoekonomik durum, istihdam durumu, ağrı yoğunluğu, ağrı süresi, önceki dental deneyimler, genel ağız sağlığı durumu, dental anksiyete, öz-yeterlilik, sağlık inançları, kültürel normlar, dental hizmetlere erişim, medya ve bilgi kaynakları, aile ve sosyal ağlar, sağlık politikaları ve çevresel faktörler yer alır.

Öz-bakım yöntemlerinin etkinliği açısından, farmakolojik yöntemler, özellikle NSAİİ'ler, endodontik ağrı için en etkili öz-bakım yaklaşımı olarak kabul edilmektedir. Non-farmakolojik yöntemler değişen derecelerde etkinlik gösterirken, bazı geleneksel tedavilerin güçlü bilimsel desteği bulunmamaktadır. Sadece öz-bakım uygulamalarına güvenmenin uzun vadeli sonuçları genellikle zayıftır, bu da endodontik ağrı yönetiminde zamanında profesyonel müdahalenin önemini vurgulamaktadır.

Gereç ve Yöntem

Bu çalışma, endodontik ağrısı olan hastaların öz-bakım eğilimlerini ve bu yöntemlerin ağrıyı hafifletmedeki etkinliğini kapsamlı bir şekilde araştırmak için tanımlayıcı, kesitsel bir anket tasarımı kullanmıştır. Çalışma, Kasım 2022 ile Temmuz 2023 arasında Gazi Üniversitesi

genel endodonti eğitim kliniğinde gerçekleştirilmiştir. Araştırma, öz-bakım uygulamalarını etkileyen sosyodemografik ve klinik faktörleri ve bu yöntemlerin ağrı yönetimindeki algılanan etkinliğini incelemeyi amaçlamıştır. Çalışma protokolü, Gazi Üniversitesi Diş Hekimliği Fakültesi Klinik Araştırma Etik Kurulu'ndan onay almış (karar no: GUDHKA EK. 2022.19/2; 06.10.2022) ve gözlemsel çalışmalar için STROBE kontrol listesine uygun olarak yürütülmüştür.

Uygun katılımcılar, primer endodontik tedavi gerektiren spontane ağrı ile başvuran hastaları içermekteydi. Anketçi yanlılığını en aza indirmek için, 0-10 Sayısal Derecelendirme Ölçeği (NRS) üzerinde ≥ 1 önceki ağrı yoğunluğu bildiren herhangi bir hasta çalışmaya dahil edilmiştir. Uygun örneklem yöntemi kullanılmış ve araştırmacılar tüm randevulu hastaları sistematik olarak sorgulamıştır.

Tüm katılımcılardan bilgilendirilmiş onam alınmış, böylece çalışmanın amacını, prosedürlerini ve herhangi bir sonuç olmaksızın istedikleri zaman çekilme haklarını anladıklarından emin olunmuştur.

Çalışma tasarımı hem farmakolojik hem de farmakolojik olmayan yaklaşımları kapsayan öz-bakım uygulamalarının kapsamlı bir incelemesine olanak sağlamıştır. Katılımcılardan, profesyonel tedavi aramadan önce hangi öz-bakım yöntemlerini kullandıklarını belirtmeleri istenmiş, böylece diş ağrısı yönetimindeki davranışlarına ilişkin kapsamlı bir genel bakış sağlanmıştır.

Veri toplama süreci, hasta demografisi, klinik öykü, öz-bakım ve formal bakım uygulamalarının çeşitli yönlerini kapsayan yapılandırılmış anketleri içermiştir. Bu yaklaşım, öz-bakım davranışlarını etkileyen faktörlerin ve bu yöntemlerin ağrıyı hafifletmedeki etkinliğinin ayrıntılı analizini kolaylaştırmıştır.

Bu çalışmanın kesitsel doğası, öz-bakım uygulamalarının belirli bir zaman noktasında anlık görüntüsünü sağlayarak, sosyodemografik değişkenler, klinik özellikler ve öz-bakım davranışları arasındaki korelasyonların incelenmesine olanak tanımıştır. Bununla birlikte, bu tasarımın nedensel çıkarımlara izin vermediğini, daha ziyade gelecekteki araştırma yönlerini bilgilendirebilecek kalıpları ve ilişkileri anlamak için bir temel sağladığını belirtmek önemlidir.

Yapılandırılmış anket, kapsamlı veri toplamaya olanak sağlayan birden fazla bölümden oluşmuştur:

1. **Sosyodemografik Veriler:** Bu bölüm, yaş, cinsiyet, eğitim düzeyi, hane geliri, medeni durum ve ikamet türü (kentsel veya kırsal) hakkında bilgi toplamıştır. Bu değişkenler, demografik faktörlerin öz-bakım davranışlarını nasıl etkilediğini anlamak için gereklidir.
2. **Klinik Veriler:** Katılımcılar, daha önce aldıkları tedaviler, başvuru öncesi ağrı süresi ve profesyonel müdahale öncesinde sayısal derecelendirme ölçeği (NRS) üzerinde deneyimledikleri maksimum ağrı seviyeleri dahil olmak üzere diş hikayeleri hakkında ayrıntılı bilgi sağlamıştır. Bu bilgi, klinik faktörlerin öz-bakım uygulamalarıyla nasıl ilişkili olduğunu değerlendirmek için kritik öneme sahiptir.
3. **Öz-Bakım Uygulamaları:** Hastalara, diş ağrısı yönetimi ile ilgili mevcut literatürden türetilen potansiyel öz-bakım yöntemlerinin kategorize edilmiş bir listesi sunulmuştur. Kendilerinden, profesyonel bakım aramadan önce ağrılarını gidermek için hangi yöntemleri kullandıklarını belirtmeleri istenmiştir.
4. **Formal Bakım Uygulamaları:** Bu bölüm, katılımcıların öz-bakım yöntemlerinden önce veya bunlarla birlikte aradıkları profesyonel müdahaleleri belgelemiştir. Diş hekimleri veya diğer sağlık profesyonelleri ile konsültasyonlar, reçeteli ilaçlar (örn. antibiyotikler, analjezikler) ve acil diş ziyaretleri dahil edilmiştir.
5. **Etkinlik Değerlendirmesi:** Her yöntemin ağrıyı hafifletmede ne kadar etkili olarak algılandığını değerlendirmek için, katılımcılar deneyimlerini “hiç rahatlatmadı” (0) ile “tamamen rahatlatdı” (4) arasında değişen 5 puanlık Likert ölçeği kullanarak

derecelendirmiştir. Bu derecelendirme sistemi, hastaların kullandığı çeşitli öz-bakım stratejilerinin etkinliğinin nicel analizine olanak sağlamıştır.

Endodontik ağrı yönetiminde öz-bakım eğilimlerini incelemek ve uygulanan yöntemlerin etkinliğini değerlendirmek için kapsamlı ve ilgili bir öz-bakım uygulamaları listesi geliştirilmiştir. Bu liste, mevcut literatürü gözden geçirerek, kültürel olarak uyarlanmış çeviriler yaparak ve 115 endodontik hasta örneğine danışarak oluşturulmuştur. Yeni rapor edilen yöntemler, en az iki farklı hasta tarafından bildirilmeleri durumunda listeye eklenmiştir.

İstatistiksel analizler, R İstatistiksel Yazılımı (sürüm 4.2.1) kullanılarak yapılmıştır. Faktörlerin öz-bakım uygulamaları üzerindeki etkisini değerlendirmek için çok değişkenli lojistik regresyon modelleri kurulmuştur. Aşağıdaki üç spesifik öz-bakım durumu test edilmiştir:

1. Kendi kendine ilaç kullanımı (Sa): Profesyonel rehberlik olmadan ağrı kesici için reçetesiz ilaçların herhangi bir kullanımı olarak tanımlanmıştır.
2. Ev tedavileri (Sb): Hastaların ağrılarını yönetmek için kullanabilecekleri tuzlu su gargaraları ve karanfil yağı uygulamaları gibi çeşitli farmakolojik olmayan yöntemleri içermektedir.
3. Diğer Öz-Bakım Uygulamaları (Sb VEYA Sc VEYA Sd): Bu kategori, ev tedavilerini (Sb), bir akraba veya arkadaşla konuşmayı (Sc) veya alternatif sağlık yöntemlerini (Sd) içererek, öz-bakım davranışlarının daha geniş bir anlayışını sağlamıştır.

Değişken seçimi, $p \leq ,10$ eşiği kullanılarak gerçekleştirilmiştir. Uygun modeli bulmak için geriye doğru adımsal regresyon yaklaşımı uygulanmış, en yüksek p değerine sahip değişkenin her iterasyonda sistematik olarak elenmesi süreci kullanılmıştır. Nihai indirgenmiş model, ya istatistiksel olarak anlamlı ($P < ,05$) ya da marjinal olarak anlamlı ($,05 < P < ,10$) olan değişkenleri korumuştur.

Ağrı rahatlatmasının analizi, pulpal durumlarına bakılmaksızın tüm hastaların verilerini kapsamıştır. İki grubu karşılaştırmak için parametrik olmayan Wilcoxon sıra toplamı testi kullanılmış, ikiden fazla grup karşılaştırılırken parametrik olmayan Kruskal-Wallis testi kullanılmış ve ardından çoklu test için Benjamini-Hochberg düzeltmesi kullanılarak post-hoc ikili karşılaştırmalar yapılmıştır. İstatistiksel anlamlılık eşiği $P < ,05$ olarak belirlenmiştir.

Bulgular

Başlangıçta uygunluk için taranan 999 hastadan 643'ü hariç tutulmuş, sonuçta 356 hastalık bir veri seti elde edilmiştir. Hastaların çoğunluğu ($n=339$) gözlem ortamına gelmeden önce öz-bakım kullanmış ve/veya formal bakım aramıştır. Dikkat çekici bir şekilde, hastaların %89,9'u öz-bakım yöntemlerini tek başına veya formal bakımla birlikte kullanmıştır.

Çok değişkenli analizlerde, maksimum ağrı en güçlü öngörücü değişken olarak ortaya çıkmıştır. Sonuçlar, potansiyel karıştırıcı faktörler olan yaş ve diş kliniğine gitme düzeni için ayarlanmıştır, çünkü bu faktörler doymuş modellerde marjinal veya istatistiksel olarak anlamlı bulunmuştur ($P < ,10$).

Ayrıntılı analizler, maksimum ağrı seviyesi, yaş ve diş kliniğine gitme düzeninin, öz-bakım yönelimlerini öngören değişkenler olduğunu göstermiştir; bunların ilk ikisi test edilen tüm koşullarda istatistiksel veya marjinal olarak anlamlı bulunmuştur ($P < ,05$ veya $< ,10$). Ev tedavileri arasında, alkol tüketimi veya lokal olarak alkol uygulaması ve hasta tarafından uygulanan ağız içi soğuk tedavisi, ağrıyı diğer yöntemlere göre anlamlı derecede daha fazla hafifletmiştir ($P = ,001$).

Bir sağlık profesyonelinin rehberliğinde ilaç tedavisi, kendi kendine ilaç tedavisinden daha etkili olmuştur ($P < ,001$). Bu bulgu, düzenli profesyonel diş bakımı almayanların ve şiddetli

ağrı deneyimleyenlerin öz-bakıma yönelme olasılığının daha yüksek olduğunu, ancak bu stratejilerin genellikle profesyonel müdahale kadar etkili olmadığını göstermiştir.

Tartışma

Endodontik ağrı ile ilgili öz-bakım yönelimlerinin incelenmesi, çeşitli önemli bulgular ortaya koymuştur. Öncelikle, hastaların büyük çoğunluğunun profesyonel tedavi aramadan önce bir tür öz-bakım stratejisi kullandığı tespit edilmiştir. Bu, dental literatürde daha önce rapor edilen yüksek öz-bakım prevalansı ile uyumludur. Örneğin, Tulip ve Palmer (2008) mesai dışı diş kliniğine başvuran hastaların %42'sinin ziyaretlerinden önce bir tür öz-bakım denediğini bulmuştur.

Öz-bakım eğilimlerini belirleyen faktörlerin analizi, birkaç önemli öngörücü değişkeni ortaya çıkarmıştır. Maksimum ağrı yoğunluğu, tüm öz-bakım kategorilerinde tutarlı bir şekilde en güçlü öngörücü olarak belirlenmiştir. Bu bulgu, ağrının bireyleri anında rahatlama aramaya motive ettiğini ve öz-bakım yöntemlerinin genellikle en kolay erişilebilir seçenek olduğunu düşündürebilir. Ayrıca, yaş ve diş kliniğine gitme düzeni de önemli öngörücüler olarak ortaya çıkmıştır. Genç hastalar ve düzenli dental tedavi almayanlarda, profesyonel diş hekimliği hizmetlerine başvurmadan önce öz-bakım yöntemlerine güvenme olasılığı daha yüksek bulunmuştur.

Çeşitli öz-bakım yöntemlerinin etkinliğine ilişkin bulgular da dikkat çekicidir. Nonsteroidal antiinflatuar ilaçlar (NSAİİ'ler) gibi reçetesiz satılan analjezikler, ağrı rahatlama sağlamada en etkili öz-bakım yöntemi olarak bulunmuştur. Bununla birlikte, profesyonel rehberlik ile kullanıldığında, ilaç tedavisi kendi kendine ilaç kullanımından daha etkili olmuştur. Bu, profesyonel gözetimin ve doğru doz tavsiyesinin, analjeziklerin etkinliğinde önemli bir faktör olduğunu göstermektedir.

Ev tedavilerinin etkinliği değişkenlik göstermiştir. Alkol tüketimi veya yerel olarak alkol uygulaması ve ağız içi soğuk tedavisi, diğer ev tedavilerine göre daha etkili bulunmuş olsa da, genel olarak ev tedavileri sınırlı etkinlik göstermiştir. Bu, birçok popüler ev tedavisinin bilimsel olarak ispatlanmamış veya sınırlı etkinliğe sahip olabileceğini göstermektedir.

Bu çalışmanın sonuçları, endodontik ağrı yönetiminde öz-bakım davranışlarını anlamak için teori temelli bir yaklaşımın önemini vurgulamaktadır. Sağlık İnanç Modeli ve Sosyoeolojik Model gibi teorik çerçeveler, hastaların ne zaman ve neden öz-bakım yöntemlerine başvurduklarını anlamamıza yardımcı olabilir. Örneğin, düşük diş hekimi ziyaret sıklığı olan hastaların öz-bakım yöntemlerine daha fazla güvenme olasılığı, dental hizmetlere erişim engelleri veya dental anksiyete gibi faktörlerin etkili olabileceğini göstermektedir.

Tıbbi perspektiften bakıldığında, bu çalışmanın bulguları endodontik ağrı için uygun öz-bakım rehberliğinin geliştirilmesinin önemini vurgulamaktadır. Hastaların çoğu profesyonel yardım almadan önce öz-bakım yöntemlerine başvurduğundan, klinisyenler bu davranışın farkında olmalı ve etkili, güvenli öz-bakım stratejileri hakkında rehberlik sağlamalıdır. Özellikle NSAİİ'lerin doğru kullanımı ve potansiyel riskler konusunda hasta eğitimi, öz-bakım uygulamalarının iyileştirilmesinde önemli olabilir.

Ayrıca, bu çalışmanın bulguları, formal bakımın öz-bakımdan daha etkili olduğunu göstermektedir. Bu, hastaları erken profesyonel müdahale aramaya teşvik etmenin önemini vurgulamaktadır. Zamanında profesyonel bakımın teşvik edilmesi, endodontik problemlerin ve ilişkili ağrının ilerlemesini önleyebilir.

Çalışmanın sınırlamaları arasında, katılımcıların daha önce gerçekleştirdikleri öz-bakım uygulamalarını hatırlama yeteneklerine bağlı olabilecek geri dönük raporlama doğası yer almaktadır. Ayrıca, kesitsel tasarım, öz-bakım davranışları ile sonuçları arasında nedensel ilişkiler kurmaya izin vermemektedir. Gelecekteki araştırmalar, bu ilişkileri daha iyi anlamak için boylamsal tasarımları düşünebilir.

Sonuç ve Öneriler

Bu çalışma, Türkiye’deki endodontik ağrı yaşayan hastaların öz-bakım uygulamalarındaki kritik eğilimleri ortaya koymaktadır. Verilerden üç temel bulgu öne çıkmıştır. Birincisi, öz-bakım bu popülasyonda neredeyse evrenseldir; katılımcıların %89,9’u fakültemiz kliniğine başvurmadan önce en az bir yöntem denemiştir. Bu yüksek oran, öz-bakımın Türkiye’de diş ağrısına karşı birinci basamak bir yanıt olarak köklü bir şekilde yerleşmiş olduğunu göstermektedir. Bu durum, kültürel normları ya da diş hekimine erişimdeki sistemsel engelleri yansıtır olabilir.

İkincisi, öz-bakım tercihleri ağrı şiddeti ve yaş gibi iki önemli değişkenle güçlü bir şekilde ilişkilidir. Genç yetişkinler muhtemelen daha yüksek sağlık okuryazarlığına ya da farklı ağrı tolerans eşiklerine sahip oldukları için, öz-bakımı benimseme oranlarında belirgin şekilde daha yüksektir. Ayrıca, ara sıra veya düzenli olarak diş hekimine giden bireylerin, ev çözümleri, bir akraba, arkadaş veya komşuya danışma ya da alternatif sağlık yöntemleri gibi en az bir öz-bakım yöntemine başvurma olasılığı daha yüksekti.

Üçüncüsü, yöntemlerin etkinliği arasında önemli farklılıklar gözlenmiştir. Profesyonel rehberlik altında kullanılan ilaçlar en yüksek ağrı rahatlamasını sağlarken, evde uygulanan bazı yöntemler (örneğin ağız içi soğuk uygulama ve topikal alkol kullanımı) ölçülebilir düzeyde etkili bulunmuştur. Bunun aksine sarımsak uygulaması gibi yöntemler etkisiz kalmıştır. Özellikle NSAİİ’lerin (non-steroid anti-inflamatuar ilaçlar) etkinliği profesyonel ve kendi kendine kullanım arasında farklılık göstermemiştir; bu da dozaj yönergelerine uyulduğu sürece bu ilaçların güvenle kendi kendine kullanılabileceğini düşündürmektedir. Öz-bakımın yaygınlığı, öngörücü faktörleri ve çeşitli yöntemlerin etkinliği hakkındaki bulgular, klinisyenlere, araştırmacılara ve politika yapıcılara aşağıdaki şekillerde rehberlik edebilir

1. Hastaların çoğu profesyonel yardım aramadan önce çeşitli öz-bakım stratejilerini denediğinden, klinisyenler rutin olarak hastaların öz-bakım geçmişini sorgulamalıdır. Bu tür bir sorgulama, yanlış kullanım veya potansiyel olumsuz etkileşimler gibi uyarı işaretlerini tanımlamaya yardımcı olabilir ve tedavi planlarını bilgilendirebilir.
2. Maksimum ağrı ve yaş, çeşitli öz-bakım yönelimlerinin güçlü öngörücüleri olduğundan, bu faktörler risk altındaki hastaları belirlemek ve hedefli müdahaleler geliştirmek için kullanılabilir. Özellikle yüksek ağrı düzeyleri bildiren genç hastalar, uygun öz-bakım uygulamaları ve zamanında profesyonel bakım arama konusunda ek rehberlik alabilir.
3. Genel olarak formal bakım öz-bakımdan daha etkili olduğundan, hastaları erken profesyonel değerlendirme aramaya teşvik etmek, başarılı endodontik ağrı yönetiminin önemli bir bileşenidir. Ancak, profesyonel değerlendirme beklerken, hastalar etkili ve güvenli geçici rahatlama stratejileri hakkında bilgilendirilmelidir.
4. Reçetesiz satılan NSAİİ’ler gibi farmakolojik yöntemlerin ev tedavilerinden daha etkili olduğu bulunduğundan, hastalar bu ilaçların (profesyonel rehberlik ile) diş ağrısı için uygun olduğu konusunda bilgilendirilmelidir. Bununla birlikte, bu tavsiyeler uygun dozaj bilgileri ve potansiyel kontrendikasyonlarla birleştirilmelidir.
5. Ev tedavileri genellikle sınırlı etkinlik gösterdiğinden, hastalar popüler ancak bilimsel olarak desteklenmeyen yöntemlere aşırı güvenmeme konusunda uyarılmalıdır. Klinisyenler, öz-bakım hakkında bilgi verirken kanıta dayalı uygulamaları vurgulamalıdır.
6. Gelecekteki araştırmalar, öz-bakım davranışlarının uzun vadeli sonuçlarını ve hasta eğitim müdahalelerinin bu davranışları nasıl etkileyebileceğini araştırmalıdır. Boylamsal çalışmalar, çeşitli hasta demografileri ve klinik senaryolarda öz-bakım davranışlarının evrimini takip etmek için değerli olabilir.
7. Dijital sağlık araçlarının ve tele-sağlık diş hekimliğinin artan yaygınlığı göz önüne alındığında, gelecekteki araştırmalar bu teknolojilerin endodontik ağrı için uygun öz-bakım

uygulamalarını ve zamanında profesyonel bakım arama davranışlarını nasıl destekleyebileceğini araştırmalıdır.

8. Kültürel faktörlerin öz-bakım davranışlarını etkilediği bilindiğinden, kültürel olarak duyarlı hasta eğitim malzemelerinin ve müdahalelerinin geliştirilmesi, çeşitli hasta popülasyonlarında iyileştirilmiş ağrı yönetimi sonuçlarının teşvik edilmesinde değerli olabilir.

Sonuç olarak, endodontik ağrı ile ilgili öz-bakım davranışlarının kapsamlı anlayışı, hasta sonuçlarını iyileştirmek ve potansiyel komplikasyonları azaltmak için stratejilerin geliştirilmesine rehberlik edebilir. Bu çalışmanın bulguları, endodontik ağrı yönetiminde hem öz-bakım hem de profesyonel bakımın rolünü optimize etmek için hasta eğitimi, klinik uygulama ve gelecekteki araştırma çabalarını bilgilendirmelidir.



Bilim Kodu : 1015.1

Anahtar Kelimeler : Diş ağrısı; endodonti; ev tedavisi; geleneksel tıp; halk sağlığı; uygunsuz ilaç kullanımı

Sayfa Adedi : 113

Danışman : Prof. Dr. Güven KAYAOĞLU

ACKNOWLEDGEMENTS

I would like to extend my deepest gratitude to several individuals whose contributions have been invaluable throughout my academic journey.

First and foremost, I am indebted to my thesis advisor, Prof. Dr. Güven KAYAOĞLU, whose guidance and mentorship have shaped my researcher identity. His wisdom and expertise have been instrumental in my growth as a scholar, and I am grateful for the opportunity to have learned from him.

I also wish to express my sincere appreciation to Doc. Dr. Mügem Aslı EKİCİ, whose dedication and passion for the clinical aspects of my studies were inspiring. Her tireless efforts have enriched my research.

I remember Bülent ALTUNKAYNAK, our statistician, who sadly passed away during our research. His contributions to shaping my thesis were invaluable, and I honour his memory by acknowledging his impact on my work.

I am deeply grateful to Özlem İLK, whose expertise in statistical analysis was instrumental in the development and refinement of this thesis. Her professionalism and dedication ensured the integrity and precision of the aspects of this study.

I am thankful for the support provided by Prof. Dr. Bağdagül HELVACIOĞLU KIVANÇ and Prof. Dr. Özgür TOPUZ, who served as department chairs during my study period.

I extend my appreciation to my fellow researchers and the personnel, nurses at the Endodontics Department, whose collaboration and assistance were essential to the success of my research. Their professionalism and dedication to our shared goals have been truly appreciated.

My family Mehmet BENGÜ, Tuncay BENGÜ, and Ayşegül BENGÜ and Pixel deserve special recognition for their unwavering support throughout my life and academic journey. Their love and encouragement have been a source of strength, and I am grateful for their presence in my life.

To Anders Jan DAHL, I express my heartfelt gratitude for being a source of support and encouragement. Your unwavering presence in my life has made all the difference.

Lastly, I thank my friends İrem BÜYÜKATEŞ, Mert ARAL, Seda ARAL, Aybüke ARPACILAR, and Gündüz Can GÜRLEK for their enduring support and fellowship. Their friendship has been a vital part of my journey, and I am grateful for their presence in my life.

CONTENTS

	Page
ETHICAL STATEMENT.....	v
ABSTRACT.....	iv
ÖZET	v
ACKNOWLEDGEMENTS.....	xii
CONTENTS.....	xiii
LIST OF TABLES.....	xv
LIST OF FIGURES	xvi
SYMBOLS AND ABBREVIATIONS.....	xvii
1. INTRODUCTION.....	1
2. GENERAL INFORMATION	3
2.1. Theoretical Models and Behavioural Frameworks in Dental Self-Care.....	3
2.1.1. Self-care theory in dental health	3
2.1.2. Pain management models.....	6
2.1.3. Patient behaviour in dental emergencies	8
2.1.4. Socio-ecological model of health behaviour.....	11
2.2. Self-Care Practices in Endodontic Pain.....	14
2.2.1. Types of self-care methods for endodontic pain	15
2.2.2. Prevalence of self-care practices in endodontic pain	23
2.2.3. Factors influencing self-care behaviours	24
2.2.4. Effectiveness of self-care methods.....	27
2.2.5. Risks and benefits of self-care in endodontic pain.....	32
3. MATERIALS AND METHODOLOGY	37
3.1. Study Design.....	37
3.2. Establishing the List of Self-Care Applications	40
3.3. Questionnaire.....	41

	Page
3.3.1. Sociodemographic and clinical data.....	42
3.3.2. Categorized list of self- and formal care methods	43
3.3.3. Pain Relief Rating Scale.....	45
3.4. Statistical Analyses	46
3.4.1. Model search	46
3.4.2. Pain relief	47
4. FINDINGS	49
4.1. Model Analysis.....	51
4.2. Pain Relief Analysis	57
5. DISCUSSION	69
5.1. Prevalence of Self-Care Practices.....	69
5.2. Factors Influencing Self-Care Behaviours.....	70
5.3. Effectiveness of Self-Care Methods	72
5.4. Risks and Benefits of Self-Care.....	75
5.5. Implications for Clinical Practice	77
5.6. Limitations of the Study	79
6. CONCLUSION AND SUGGESTIONS	81
REFERENCES	83
ATTACHMENTS.....	91
ATTACHMENT-1. Informed Voluntary Consent Form.....	92
ATTACHMENT-2. Survey Questions	93
ATTACHMENT-3. Ethics Committee Approval Document	97
ATTACHMENT-4. Published Article.....	101
RESUME	113

LIST OF TABLES

Tables	Page
Table 4.1. Descriptive sociodemographic and dental variables.....	49
Table 4.2. Univariate statistical results using logistic regression with the dependent variable self-medication (Sa)	52
Table 4.3. Univariate statistical results using logistic regression with the dependent variable home remedies (Sb).....	53
Table 4.4. Univariate statistical results using logistic regression with the dependent variables: application of home remedies OR speaking with a relative, friend, or neighbour OR application of alternate healthcare (Sb OR Sc OR Sd, respectively)	55
Table 4.5. The final (reduced) multivariate combined models for the 3 tested self-care conditions, and their accuracy performances at different threshold values....	56
Table 4.6. Summary of the number of patients applying a care method and their descriptive pain relief scores.....	57
Table 4.7. Detailed presentation of the number of patients applying a specific care method and their descriptive pain relief scores.....	59
Table 4.8. Number of symptomatic irreversible pulpitis (SIP) patients applying a specific care method and their descriptive pain relief scores.....	61

LIST OF FIGURES

Figures	Page
Figure 3.1. The flowchart of the study.....	38
Figure 3.2. Applications list.....	44
Figure 4.1. Statistical comparisons of pain relief regardless of the pulpal status; the symbol “»” indicates both the presence and direction of statistical significance ($\alpha = 0.05$ for all analyses)	65
Figure 4.2. Statistical comparisons of pain relief methods in patients with symptomatic irreversible pulpitis (SIP)	66



SYMBOLS AND ABBREVIATIONS

The symbols and abbreviations used in this study are presented below, along with their explanations.

Symbols	Explanations
α	Alpha
$>$	Greater than
$<$	Less than
$\leq$	Less than or equal to
$=$	Equal to
$\geq$	Greater than or equal to
$\pm$	Plus-minus; indicates variability
%	Percentage
§	Section symbol; also used as a footnote marker in tables
†	Dagger; used as a footnote symbol to indicate additional notes in tables or figures
‡	Double dagger; used as a tertiary footnote symbol in tables or figures
»	Indicates both the presence and direction of statistical significance

Abbreviations	Explanations
AAE	American Association of Endodontists
AAP	Acute Apical Periodontitis
API	Active Pharmaceutical
ASA	American Society of Anesthesiologists
B-H Test	Benjamini-Hochberg Correction for Post-hoc Comparisons
CI	Confidence Interval

Abbreviations	Explanations
Cont.	Continuous
COX	Cyclooxygenase
e.g.	Exempli Gratia (Latin); For Example
F	Formal Care
Fa	Professional Services
Fb	Medication Use by Prescription or Professional Advice
Fb1	Formal Use of Prescription Medicine (Systemic)
Fb2	Formal Use of OTC Medicine (Systemic)
Fb3	Formal Use of Antibiotic + Analgesic Combination
Fb4	Formal Use of OTC Medicine (Local, Topical)
H-L Test	Hosmer-Lemeshow Test
IAP	Irreversible Acute Pulpitis
k	Number of Independent Variables
K-W Test	Kruskal-Wallis Test
LI4	Hegu (Acupuncture Point)
Max	Maximum
Min	Minimum
mg	Milligrams
n	Sample Size
N/A	Not Applicable / Not Available
NNT	Number Needed to Treat
NRS	Numerical Rating Scale
NSAID	Nonsteroidal Anti-Inflammatory Drug
OR	Odds Ratio
OTC	Over the Counter (Medications)
P	Probability Value (Used in Statistical Testing)
p	Sample Size
S	Self-Care
Sa	Self-Medication
Sa1	Self-Medication with Prescription Medicine
Sa2	Self-Medication with OTC Medicine

Abbreviations	Explanations
Sa3	Self-medication with Antibiotic + Analgesic Combination
Sa4	Self-Medication with OTC Medicine (Local, Topical)
Sb	Home Remedies
Sb1	OTC Dental Products
Sb10	Brushing the Tooth
Sb11	Placing Cold/Warm Compresses on The Jaw
Sb12	Applying External Pressure to The Jaw
Sb2	Rinsing with a Natural Oral Solution
Sb3	Using Cold Compresses or Rinses
Sb4	Placing Aspirin or Another Analgesic on The Affected Area
Sb5	Massaging the Gums
Sb6	Drinking Alcohol/Liquor or Applying It to The Tooth Topically
Sb7	Applying Spices or Their Oils/Teas
Sb8	Putting Olives on the Tooth
Sb9	Putting Toothpaste on the Tooth
Sc	Speaking with a Relative, Friend, or Neighbour
Sd	Alternative Healthcare
SEM	Socio-Ecological Model
SIP	Symptomatic Irreversible Pulpitis
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology
TRPV-1	Transient Receptor Potential Vanilloid-1 (Capsaicin Receptor)
Wilcox. Test	Wilcoxon Rank Sum Test with Continuity Correction

1. INTRODUCTION

Endodontic pain is a significant concern in dental practice, often prompting patients to seek immediate care or engage in self-care practices. While professional dental treatment is the accepted standard of care for tooth pain, patients may resort to various self-care methods before or instead of consulting a dentist. These self-care behaviours can be influenced by factors such as socio-cultural background, pain intensity, concerns about dental treatment, and access to healthcare.

Self-care encompasses a wide range of practices, including interpretation and treatment of symptoms, as well as disease prevention. In the context of dental pain, self-care may involve home remedies, self-medication, seeking advice from friends or relatives, or alternative healthcare. Home remedies, which typically utilize everyday products and ingredients, are particularly popular among people seeking relief from tooth pain. A simple online search for toothache remedies predominantly returns various home remedy recommendations such as saltwater rinses, clove oil, and garlic applications.

Self-medication is another common form of self-care, often regarded as first-aid by dental pain sufferers. While it can provide temporary relief, inappropriate self-medication carries risks such as the development of bacterial resistance to antibiotics or gastrointestinal complications from NSAID use. Despite these potential risks, many endodontic patients turn to self-medication based on previous experiences or recommendations from non-professionals.

Understanding the patterns of self-care behaviours in endodontic patients is crucial for several reasons. Firstly, it provides insights into patient decision-making processes and health-seeking behaviours. This knowledge can inform the development of more effective patient education strategies. Secondly, awareness of prevalent self-care practices can alert clinicians to potential complications or interactions that might arise from these practices, aiding in accurate diagnosis and treatment planning. Moreover, research in this area can help determine which self-care methods are helpful and which may pose risks, allowing both beneficial and potentially harmful practices to be identified.

This study aims to investigate the sociodemographic and dental factors that predict self-care orientations in endodontic patients and to explore the effectiveness of various self-care methods in relieving pain. By examining these aspects, we hope to contribute valuable insights to guide public health initiatives, patient education efforts, and clinical practice in managing endodontic pain.



2. GENERAL INFORMATION

Under this chapter, general information related to endodontic pain and self-care tendencies has been presented to provide a foundational understanding for the study.

2.1. Theoretical Models and Behavioural Frameworks in Dental Self-Care

Self-care in dental health refers to the practices and behaviours that individuals engage in to maintain their oral health and manage dental issues without direct professional intervention. This concept is rooted in broader health care theories and has been adapted to the specific context of oral health, including endodontic pain management.

2.1.1. Self-care theory in dental health

Several key theoretical frameworks and concepts are relevant to understanding self-care in dental health:

Orem's self-care deficit theory

Originally developed for nursing, this theory can be applied to dental health. It posits that individuals have the capacity and responsibility to care for themselves, but when they are unable to meet their self-care needs, professional intervention becomes necessary (Orem, 2001). In the context of endodontic pain, this theory may explain why patients might attempt self-care methods before seeking professional help.

Health belief model

Proposed by Rosenstock, Strecher and Becker (1988), this model suggests that individuals' likelihood of engaging in health-promoting behaviours is influenced by:

- a) Perceived susceptibility to dental problems
- b) Perceived severity of dental issues
- c) Perceived benefits of self-care actions

- d) Perceived barriers to taking action
- e) Cues to action (internal or external triggers)
- f) Self-efficacy (belief in one's ability to successfully perform an action)

Research has shown that these factors significantly influence individuals' oral health behaviours and their decisions to seek professional dental care (Buglar, White and Robinson 2010).

Transtheoretical model of change

Studied by Prochaska and Velicer (1997), this model describes the stages individuals go through when changing health behaviours:

- a) Precontemplation
- b) Contemplation
- c) Preparation
- d) Action
- e) Maintenance
- f) Termination

Understanding these stages can help dental professionals tailor interventions to promote better self-care practices among patients (Tillis, Stach, Cross-Poline, Annan, Astroth and Wolfe, 2003).

Social cognitive theory

Proposed by Bandura (1989), this theory emphasizes the role of self-efficacy and outcome expectations in shaping health behaviours. In dental self-care, this theory highlights the importance of:

- a) Observational learning (for example [e.g.], learning proper brushing techniques)
- b) Reinforcement (positive outcomes from good oral hygiene)
- c) Self-efficacy in performing dental self-care tasks (Bandura, 1977)

Oral health literacy

This concept is crucial in dental self-care. It involves the ability to obtain, process, and understand basic oral health information and services needed to make appropriate health decisions (Horowitz and Kleinman, 2008). Higher levels of oral health literacy have been associated with better self-care practices and oral health outcomes. For example, individuals with higher oral health literacy are more likely to engage in preventive behaviours and seek timely professional care for dental issues (Lee, Divaris, Baker, Rozier and Vann Jr, 2012).

Preventive behaviours

Self-care theory in dental health emphasizes the importance of preventive behaviours such as regular brushing, flossing, and dental check-ups. These behaviours are fundamental to maintaining oral health and preventing dental issues that could lead to endodontic pain. Research has shown that individuals who consistently engage in these preventive behaviours have better oral health outcomes and are less likely to experience severe dental pain (Broadbent, Zeng, Foster Page, Baker, Ramrakha and Thomson, 2016).

Cultural influences

Cultural beliefs and practices can significantly influence dental self-care behaviours. This is an important consideration in developing culturally sensitive oral health interventions. For instance, traditional remedies for tooth pain vary across cultures and may impact how individuals approach self-care for endodontic pain. Understanding these cultural influences is crucial for developing effective self-care strategies and professional interventions (Butani, Weintraub and Barker 2008).

Technology and self-care

The increasing availability of oral health information online and through mobile apps is changing how people engage in dental self-care. Digital platforms provide easy access to oral health information and self-care strategies, which can influence how individuals manage dental pain, including endodontic pain. However, the quality and accuracy of this

information can vary, highlighting the importance of digital health literacy (Nouri, Adler-Milstein, Thao, Acharya, Barr-Walker, Sarkar and Lyles, 2020).

Socioeconomic factors

Access to dental care resources and education level can impact an individual's ability to engage in effective dental self-care. Socioeconomic disparities can affect access to oral health information, preventive care, and professional treatment for endodontic pain. These factors can influence self-care behaviours and outcomes in dental health (Watt, Heilmann, Listl and Peres, 2016).

2.1.2. Pain management models

Pain management models provide frameworks for understanding and addressing pain, including endodontic pain. These models are crucial for developing effective strategies for both self-care and professional interventions in endodontic pain management. Several key models are relevant to understanding how patients approach self-care for endodontic pain. These models are presented below.

Gate control theory of pain

Proposed by Melzack and Wall in 1965, this theory suggests that pain perception is modulated by a “gate” in the spinal cord that can be opened or closed by various factors. In the context of endodontic pain, this theory helps explain why certain self-care interventions (e.g., applying cold or pressure) might temporarily relieve pain by “closing the gate” (Bender, 2000). This understanding can inform patient education about effective self-care strategies for managing endodontic pain.

Biopsychosocial model of pain

This model, introduced by George Engel in 1977, emphasizes the interplay between biological, psychological, and social factors in pain experience (Gatchel, Peng, Peters, Fuchs and Turk, 2007). For endodontic pain, this model highlights the importance of considering not just the physical causes of pain, but also the patient's psychological state and social

context when understanding their self-care behaviours (Nixdorf, Law, Look, Rindal, Durand, Kang, Agee, Fellows, Gordan, Gilbert and National Dental PBRN Collaborative Group, 2012). For example, a patient's cultural background or social support system may influence their choice of self-care methods for endodontic pain.

Fear-avoidance model

Developed by Lethem, Slade, Troup and Bentley, (1983) and later refined by Vlaeyen and Linton (2000), this model explains how fear of pain can lead to avoidance behaviours, potentially exacerbating pain and disability. In endodontics, this model can help understand why some patients delay seeking professional treatment and rely on self-care methods, potentially worsening their condition (Khan, Ahmed, Blakeway, Skapinakis, Nihoyannopoulos, Macleod, Sevdalis, Ashrafi, Platt, Darzi and Athanasiou, 2011). Understanding this model can guide interventions to encourage timely professional care alongside appropriate self-care practices.

Neuromatrix theory of pain

Proposed by Melzack in 1999, this theory suggests that pain is a multidimensional experience produced by characteristic “neurosignature” patterns of nerve impulses generated by a widely distributed neural network in the brain. This theory is relevant to understanding chronic endodontic pain and why pain might persist even after apparent successful treatment or self-care attempts (Bender, 2000). It underscores the complexity of pain perception and the need for comprehensive pain management strategies.

Self-efficacy theory and transtheoretical model of change

As explained in section 2.1.1, patients' self-efficacy and behaviour change stages influence pain management strategies.

Understanding these models is crucial for developing comprehensive pain management strategies in endodontics. They highlight the complex, multifaceted nature of pain and the need for individualized approaches that consider biological, psychological, and social factors in both self-care and professional interventions for endodontic pain.

For example, the Gate Control Theory might inform the recommendation of specific self-care methods like cold application or over-the-counter analgesics in managing acute endodontic pain (Keiser and Hargreaves, 2002). The Biopsychosocial Model could guide the development of patient education programs that address not just the physical aspects of endodontic pain, but also patients' beliefs and social support systems, potentially improving the effectiveness of self-care practices.

2.1.3. Patient behaviour in dental emergencies

Understanding patient behaviour during dental emergencies is crucial for developing effective self-care strategies and improving professional interventions. Dental emergencies, including severe endodontic pain, often elicit unique behavioural responses from patients that can significantly impact their treatment outcomes and overall dental health.

Immediate response to pain

When patients experience severe endodontic pain, their immediate response often involves seeking rapid relief. This urgency can lead to various self-care behaviours, some of which may be beneficial while others could be potentially harmful. A study by Tulip and Palmer (2008) found that 42% of patients attending an out-of-hours dental clinic had attempted some form of self-care before their visit. These self-care attempts often include over-the-counter analgesics, home remedies, and in some cases, inappropriate use of antibiotics.

Information seeking behaviour

In the digital age, patients often turn to online resources for information about their dental pain before seeking professional help. Heavilin et al. (2011) analysed public Twitter posts and found that many individuals share their dental pain experiences and seek advice online. This behaviour can lead to both positive outcomes, such as increased awareness of the need for professional care, and negative consequences, such as delayed treatment or misguided self-care attempts.

Delay in seeking professional care

One of the most significant behavioural patterns observed in dental emergencies is the delay in seeking professional care. Cohen, Bonito, Akin, Manski, Macek, Edwards and Cornelius (2008) reported that patients with dental pain often visit physicians or emergency departments before consulting a dentist. This delay can be attributed to various factors, including:

- a) Dental anxiety: Armfield, Stewart and Spencer (2007) found that individuals with high dental fear are more likely to delay or avoid dental visits, even in emergency situations.
- b) Financial concerns: Patel, Miner and Miner (2012) identified cost as a major barrier to seeking emergency dental care, particularly among uninsured individuals.
- c) Perception of the problem's severity: Patients may underestimate the seriousness of their condition, leading to delayed care-seeking (Cohen, Harris, Bonito, Manski, Macek, Edwards and Cornelius, 2007).

Self-medication practices

Self-medication is a common behaviour among patients experiencing dental emergencies. Jain, Bhaskar, Gupta, Agali, Yadav and Khurana (2016) conducted a study on self-medication practices in dental patients and found that analgesics were the most commonly used drugs, followed by antibiotics. This behaviour can lead to potential risks, including:

- a) Masking symptoms without addressing the underlying cause
- b) Development of antibiotic resistance due to inappropriate use
- c) Adverse drug reactions or interactions

Coping mechanisms

Patients employ various coping mechanisms when dealing with dental emergencies. Stoller, Gilbert, Pyle and Duncan (2001) identified several strategies used by individuals to manage toothache pain, including:

- a) Cognitive strategies (e.g., distraction, positive self-talk)

- b) Behavioural approaches (e.g., applying cold or heat, modifying diet)
- c) Social support seeking (e.g., consulting family or friends)

Impact of previous experiences

Studies indicate that dental anxiety and fear, often stemming from negative past experiences, are significant factors in delaying dental appointments. For example, a study (Public Health England, 2019) found that 43% of patients attending an emergency dental clinic cited fear or nervousness as reasons for delaying care. Additionally, patients who experience dissatisfaction with emergency dental services may be less likely to seek professional help promptly in the future (Balkaran, Osoba and Rafeek, 2014).

Cultural influences

Cultural beliefs and practices play a significant role in shaping patient behaviour during dental emergencies as mentioned in section 2.1.1.

Socioeconomic factors

Socioeconomic status significantly impacts patient behaviour in dental emergencies as we mentioned in section 2.1.1. A study by Cohen, Bonito, Eicheldinger, Manski, Macek, Edwards and Khanna (2011) found that individuals with lower income and education levels were more likely to use emergency departments for dental problems rather than seeking care from a dentist. This behaviour often results in suboptimal care and increased healthcare costs.

Gender differences

Research has shown gender differences in behaviour during dental emergencies. Heft, Meng, Bradley and Lang (2007) reported that women were more likely than men to seek professional care for orofacial pain, including dental emergencies. Understanding these gender-based differences can help in tailoring public health interventions and patient education strategies.

Influence of social networks

Social networks, both offline and online, play a crucial role in shaping patient behaviour during dental emergencies. Details can be found in section 2.1.3.

2.1.4. Socio-ecological model of health behaviour

The Socio-Ecological Model (SEM) provides a comprehensive framework for understanding the multiple levels of influence on health behaviours, including self-care practices in dental health. This model is particularly relevant when examining self-care tendencies and pain-relieving behaviours in patients with endodontic pain. The SEM posits that individual behaviour is shaped by the interplay of personal, social, and environmental factors (McLeroy, Bibeau, Steckler and Glanz 1988). The model typically consists of five nested levels of influence. These models are presented below.

Individual level

This level includes personal factors such as knowledge, attitudes, beliefs, and biological traits that influence an individual's self-care behaviours in response to endodontic pain.

- **Knowledge:** Patients' understanding of proper oral hygiene practices and pain management techniques can significantly impact their self-care behaviours. A study by Afonso-Souza, Nadanovsky, Chor, Faerstein, Werneck and Lopes (2007) found that individuals with higher oral health literacy were more likely to engage in positive self-care practices.
- **Attitudes and Beliefs:** Personal beliefs about the effectiveness of self-care methods can influence their adoption. For instance, Armfield and Heaton (2013) reported that individuals who believed in the efficacy of over-the-counter pain medications were more likely to use them for dental pain relief.
- **Past Experiences:** Previous encounters with dental pain or treatments can shape future self-care behaviours. Patients who have had negative experiences may be more likely to avoid professional care and rely on self-care methods (Cohen, Fiske and Newton, 2000).
- **Biological Factors:** Individual pain thresholds and physiological responses to pain can influence self-care choices. Fillingim, King, Ribeiro-Dasilva, Rahim-Williams and Riley

III (2009) found that genetic factors contribute to variations in pain perception, which may affect how individuals respond to and manage endodontic pain.

Interpersonal level

This level encompasses the immediate social network, including family, friends, and peers, which can influence an individual's dental self-care practices.

- **Family Influence:** Family members' attitudes towards dental care can significantly impact an individual's self-care behaviours. A study by Duijster, de Jong-Lenters, Verrips and van Loveren (2015) demonstrated that parental oral health beliefs and practices were strong predictors of children's oral health behaviours.
- **Peer Influence:** Social networks can play a role in shaping self-care practices. Bashiru and Anthony (2014) found that adolescents' dental visits were influenced by their peers' attitudes towards dental care.
- **Social Support:** The availability of social support can affect how individuals manage endodontic pain. Patients with strong social support networks may be more likely to seek professional care rather than relying solely on self-care methods (Marshman, Porritt, Dyer, Wyborn, Godson and Baker, 2012).

Organizational level

This level includes the settings where people spend their time, such as workplaces, schools, and healthcare facilities, which can influence dental self-care behaviours.

- **Workplace Policies:** Organizational policies regarding time off for dental care can impact individuals' ability to seek professional treatment for endodontic pain. Petersen, Bourgeois, Ogawa, Estupinan-Day and Ndiaye (2008) highlighted the importance of workplace health promotion programs in improving oral health behaviours.
- **School-Based Programs:** Educational institutions can play a crucial role in shaping oral health behaviours. A systematic review by Gambhir, Sohi, Nanda, Sawhney and Setia, (2013) found that school-based oral health education programs were effective in improving oral health knowledge and behaviours.

- Healthcare System: The structure and accessibility of dental care services can influence self-care practices. Details can be found in section 2.1.3.

Community level

This level refers to the characteristics of the communities in which individuals live, including cultural norms, socioeconomic conditions, and available resources.

- Cultural Norms: Community beliefs and practices regarding dental health can significantly influence individual behaviours. Details have been discussed in section 2.1.1.
- Socioeconomic Factors: Community-level socioeconomic status can impact access to dental care and self-care resources. More detailed information has been provided in section 2.1.1 and 2.1.3.
- Community Resources: The availability of dental health resources within a community can influence self-care practices. Communities with limited access to dental care facilities may see higher rates of self-care for dental pain management (Vargas and Arevalo, 2009).

Public policy level

This outermost level includes local, state, and national policies and laws that regulate or support healthy actions and practices related to dental care.

- Healthcare Policies: National healthcare policies can significantly impact access to dental care and, consequently, self-care practices. For instance, the inclusion of dental care in national health insurance schemes can increase professional care utilization and potentially reduce reliance on self-care methods for endodontic pain (Listl, Galloway, Mossey and Marcenes, 2015).
- Oral Health Promotion Policies: Government initiatives aimed at promoting oral health can influence self-care behaviours. A study by Petersen and Kwan (2011) highlighted the effectiveness of national oral health promotion programs in improving population-level oral health behaviours.

- Regulation of Dental Products: Policies regulating the availability and marketing of over-the-counter dental products can impact self-care choices. For example, regulations on the sale of analgesics can influence how individuals manage endodontic pain at home (Becker and Phero, 2005).

Interventions that target multiple levels of the socio-ecological model are likely to be more effective in promoting appropriate self-care practices and timely professional care-seeking behaviours. For instance, a multi-level intervention can be seen below.

- Individual level: Educating patients about proper pain management techniques and the importance of timely professional care for endodontic issues.
- Interpersonal level: Engaging family members in oral health education to create a supportive environment for positive dental behaviours.
- Organizational level: Implementing workplace policies that facilitate access to dental care.
- Community level: Developing culturally sensitive oral health promotion programs.
- Policy level: Advocating for improved dental care coverage in national health insurance schemes.

By addressing factors at each level of the socio-ecological model, healthcare providers and policymakers can create a more supportive environment for positive dental self-care behaviours and improve overall oral health outcomes.

2.2. Self-Care Practices in Endodontic Pain

Under this chapter, various aspects of self-care practices in endodontic pain have been presented, including their types, prevalence, influencing factors, effectiveness, and associated risks and benefits.

2.2.1. Types of self-care methods for endodontic pain

Pharmacological methods

Pharmacological methods are among the most common self-care approaches used by patients experiencing endodontic pain. These methods involve the use of medications to manage pain and inflammation associated with dental pulp or periapical tissue disorders. The primary categories of pharmacological self-care methods include over-the-counter (OTC) medications, prescription medications (often left over from previous treatments), and topical treatments.

Over-the-counter (OTC) medications

OTC medications are the most accessible and frequently used pharmacological method for self-care in endodontic pain. The main types of OTC medications used include:

Nonsteroidal anti-inflammatory drugs (NSAIDs)

NSAIDs are the most commonly used and effective OTC medications for endodontic pain relief. Their efficacy is attributed to their ability to inhibit Cyclooxygenase (COX) enzymes, thereby reducing prostaglandin synthesis and inflammation (Moore, Ziegler, Lipman, Aminoshariae, Carrasco-Labra and Mariotti, 2018).

- a) **Ibuprofen:** Ibuprofen is often considered the gold standard for dental pain relief due to its favourable balance of efficacy and safety. A systematic review by Moore, Wiffen, Derry, Maguire, Roy and Tyrrell (2015) found that ibuprofen 400 mg provided effective pain relief in 50% of patients with moderate to severe dental pain, compared to 20% with placebo.

Mechanism of action: Ibuprofen inhibits both COX-1 and COX-2 enzymes, reducing prostaglandin synthesis. This action not only alleviates pain but also reduces inflammation in the affected area (Rainsford, 2009).

Dosage and timing: For dental pain, the recommended dose is typically 400-600 mg every 6-8 hours, not exceeding 2400 mg per day (Becker and Phero, 2005). The onset of action is usually within 20-30 minutes, with peak effects at 1-2 hours (Hersh, Kane, O'Neil, Kenna, Katz, Golubic and Moore, 2011).

Safety profile: While generally safe, ibuprofen can cause gastrointestinal side effects and should be used with caution in patients with a history of ulcers or bleeding disorders (Ong, Lirk, Tan and Seymour, 2007).

- b) Naproxen: Naproxen provides longer-lasting pain relief compared to ibuprofen due to its longer half-life.

Mechanism of action: Like ibuprofen, naproxen inhibits COX enzymes, but its longer half-life allows for less frequent dosing.

Dosage: The typical dose for dental pain is 500 mg initially, followed by 250 mg every 6-8 hours as needed (Cooper, Desjardins, Brain, Paredes-Diaz, Troullos, Centofanti and An, 2019).

Acetaminophen (paracetamol)

While not an anti-inflammatory, acetaminophen is frequently used for its pain-relieving and fever-reducing properties.

Mechanism of action: Unlike NSAIDs, acetaminophen's exact mechanism is not fully understood. It is believed to work centrally by inhibiting prostaglandin synthesis in the central nervous system and modulating descending serotonergic pathways (Graham, Davies, Day, Mohamudally and Scott, 2013).

Dosage: The recommended dose for adults is 500-1000 mg every 4-6 hours, not exceeding 4000 mg per day. However, recent guidelines have suggested lowering the maximum daily dose to 3000 mg to reduce the risk of hepatotoxicity (Heard, Bui, Mlynarchek, Green, Bond, Clark, Kozer, Koff and Dart, 2014).

Safety profile: Acetaminophen is often considered a safer alternative for those who cannot take NSAIDs due to gastrointestinal concerns or other contraindications. However, it carries a risk of hepatotoxicity, especially at high doses or in patients with liver disease or alcohol abuse (Yoon, Babar, Choudhary, Kutner and Pyrsopoulos, 2016).

Combination products

Some OTC products combine different active ingredients, such as ibuprofen and acetaminophen, for enhanced pain relief.

Rationale: The combination of analgesics with different mechanisms of action can provide additive or even synergistic pain relief while potentially reducing the risk of side effects associated with higher doses of a single agent.

Dosage: Typical combination products contain 200 mg ibuprofen and 500 mg acetaminophen per dose, taken every 6-8 hours as needed (Moore et al., 2015).

Safety considerations: While combination products can offer improved efficacy, they also require careful consideration of potential side effects and drug interactions. Patients should be advised to adhere strictly to recommended dosages and not to combine these products with other NSAIDs or acetaminophen-containing medications (Derry, Derry and Moore, 2013).

Aspirin

While less commonly recommended due to its potential for gastric irritation and bleeding risk, aspirin can still be effective for dental pain.

Mechanism of action: Aspirin irreversibly inhibits COX enzymes, reducing prostaglandin synthesis and providing analgesic and anti-inflammatory effects (Vane and Botting, 2003).

Dosage: The typical dose for dental pain is 325-650 mg every 4-6 hours, not exceeding 4000 mg per day (Hersh et al., 2011).

Safety considerations: Aspirin should not be used in children due to the risk of Reye's syndrome. It should also be avoided in patients with bleeding disorders or those taking anticoagulants (Hersh, Moore and Ross, 2000).

Non-pharmacological methods

Non-pharmacological methods are an important component of self-care strategies for managing endodontic pain. These methods do not involve the use of medications and can be broadly categorized into physical interventions, home remedies, dietary modifications, and behavioural approaches. Many patients turn to these methods either as a first line of defense or in conjunction with pharmacological methods.

Saltwater rinses

Saltwater rinses are one of the most common non-pharmacological self-care methods used for endodontic pain.

Mechanism of action: Saltwater rinses can help reduce inflammation through osmotic effects, drawing out excess fluid from inflamed tissues. They may also have mild antimicrobial properties (Huynh, Everts, Leethanakul, Pavasant and Ampornaramveth 2016).

Cold application

Applying cold to the affected area is another common self-care method for endodontic pain.

Mechanism of action: Cold application can reduce pain through several mechanisms:

- a) Vasoconstriction, which reduces blood flow and inflammation
- b) Slowing of nerve conduction velocity, reducing pain signal transmission
- c) Reduction of metabolic activity in the affected area, potentially slowing the inflammatory process (Malanga, Yan and Stark, 2015)

Warm compresses

Some patients find relief from warm compresses, especially in cases of chronic endodontic pain.

Mechanism of action: Warm compresses can increase blood flow to the area, potentially helping to remove inflammatory mediators and promote healing. They may also provide pain relief through gate control mechanisms (Malanga et al., 2015).

Elevation of the head

Elevating the head, especially while sleeping, is often recommended as a self-care method for endodontic pain.

Mechanism of action: Elevation may help reduce blood pressure in the affected area, potentially decreasing pain and swelling (Bender, 2000).

Clove oil

Clove oil is a traditional remedy that some patients use for dental pain relief.

Mechanism of action: Clove oil contains eugenol, which has analgesic and anti-inflammatory properties. It acts as a Transient Receptor Potential Vanilloid-1 (TRPV-1) channel antagonist, which is involved in pain sensation (Chung and Oh, 2013).

Garlic

Garlic is another traditional remedy sometimes used for dental pain.

Mechanism of action: Garlic contains allicin, which has antimicrobial properties and may help reduce inflammation (Bayan, Koulivand and Gorji, 2014).

Ginger

Ginger has been used in traditional medicine for various types of pain, including dental pain.

Mechanism of action: Ginger contains compounds like gingerols and shogaols, which have anti-inflammatory and analgesic properties (Mashhadi, Ghiasvand, Askari, Hariri, Darvishi and Mofid, 2013).

Tea tree oil

Tea tree oil is known for its antimicrobial properties and is sometimes used for dental pain.

Mechanism of action: Tea tree oil has antimicrobial and anti-inflammatory properties that may help reduce pain and infection (Carson, Hammer and Riley, 2006).

Peppermint tea bags

Cooled peppermint tea bags are sometimes applied to the affected area for pain relief.

Mechanism of action: Peppermint contains menthol, which has a mild numbing effect and can provide temporary pain relief (McKay and Blumberg, 2006).

Turmeric

Turmeric paste is sometimes applied to the affected area for its potential pain-relieving properties.

Mechanism of action: Turmeric contains curcumin, which has anti-inflammatory and antioxidant properties (Hewlings and Kalman, 2017).

Oil pulling

Oil pulling, typically with coconut oil, is an ancient Ayurvedic practice sometimes used for oral health and pain management.

Mechanism of action: Oil pulling may help reduce oral bacteria and inflammation, potentially providing some pain relief (Peedikayil, Sreenivasan and Narayanan, 2015).

Dietary modifications

Many patients modify their diet to manage endodontic pain.

Approach: This may include avoiding hot or cold foods and beverages, reducing sugar intake, and consuming softer foods to minimize irritation to the affected tooth (Nixdorf, Law, Lindquist, Reams, Cole, Kanter, Nguyen, Harris and National Dental PBRN Collaborative Group, 2016).

Behavioural techniques

Various behavioural techniques can be employed as non-pharmacological methods for managing endodontic pain.

- a) Relaxation techniques: Deep breathing exercises and progressive muscle relaxation can help reduce anxiety and tension associated with dental pain (Appukuttan, 2016).
- b) Distraction: Engaging in activities that divert attention from the pain can be helpful. This could include listening to music, watching movies, or practicing mindfulness meditation (Morosko and Simmons, 1966).
- c) Cognitive restructuring: This involves identifying and challenging negative thoughts about pain, which can help reduce anxiety and improve pain tolerance (Wide Boman, Carlsson, Westin and Hakeberg, 2013).

Herbal mouthwashes

Some patients use herbal mouthwashes containing ingredients like chamomile or echinacea. Mechanism of action: These herbs may have anti-inflammatory and antimicrobial properties that could help reduce pain and inflammation (Ramos-e-Silva, Ferreira, Bibas and Carneiro, 2018).

Alternative approaches

Alternative approaches to managing endodontic pain include various non-conventional methods that patients may use for self-care. These approaches often stem from traditional

medicine practices, cultural beliefs, or emerging alternative therapies. While some of these methods may provide relief for certain patients, it's important to note that scientific evidence supporting their efficacy is often limited compared to conventional pharmacological approaches.

Acupressure

Acupressure is a traditional Chinese medicine technique that involves applying pressure to specific points on the body.

Mechanism of action: Acupressure is believed to work by stimulating specific points on the body to release endorphins and alter pain perception (Chen and Wang, 2014).

Homeopathy

Homeopathy is an alternative medical practice that uses highly diluted substances to stimulate healing responses in the body.

Mindfulness and meditation

These practices focus on mental techniques to manage pain perception.

Mechanism of action: Mindfulness and meditation may help reduce pain by altering pain perception and reducing stress and anxiety associated with pain (Zeidan, Grant, Brown, McHaffie and Coghill, 2012).

Prayer or spiritual practices

Some individuals may turn to prayer or other spiritual practices as a means of coping with pain (Wachholtz and Pearce, 2009).

2.2.2. Prevalence of self-care practices in endodontic pain

Self-care practices are common among patients experiencing endodontic pain, often serving as the first line of action before seeking professional dental care. Understanding the prevalence of these practices is crucial for developing effective patient education strategies and improving overall dental care outcomes.

Global prevalence

Studies have consistently shown that a significant majority of patients engage in some form of self-care when experiencing endodontic pain. A systematic review by Pak and White (2011) found that the prevalence of preoperative pain in patients seeking endodontic treatment ranged from 54% to 80%. This high prevalence underscores the importance of understanding self-care behaviours in endodontic pain management.

Cohen et al. (2007) found that 57% of patients with dental pain used NSAIDs as a self-care method, with ibuprofen being the most used NSAID.

A more recent study by Jain et al. (2016) in India reported an even higher prevalence, with 71,4% of patients using self-medication for dental pain. This study also found that analgesics were the most used drugs, followed by antibiotics.

Regional variations

The prevalence of self-care practices can vary significantly across different regions and countries:

1. **Developing vs. Developed Countries:** A comparative study by Vargas and Arevalo (2009) reported higher prevalence of self-care practices in developing countries (68%) compared to developed countries (41%), possibly due to differences in healthcare accessibility.
2. **Urban vs. Rural:** Arcury, Savoca, Anderson, Chen, Gilbert, Bell, Leng, Reynolds and Quandt (2012) found that rural populations in the United States had a higher prevalence of using home remedies for dental pain (52%) compared to urban populations (37%). This difference was attributed to limited access to professional dental care in rural areas.

3. Cultural Influences: Details can be found in section 2.1.1.
4. Geographical Differences: A study in Nigeria by Anyanechi and Saheeb (2015) found that 84,5% of patients practiced self-medication before seeking professional dental care, which is significantly higher than rates reported in many Western countries.
5. Economic Factors: Details can be found in section 2.1.3.

2.2.3. Factors influencing self-care behaviours

Self-care behaviours in endodontic pain are influenced by a complex interplay of various factors. Understanding these factors is crucial for developing effective interventions and improving patient outcomes.

Demographic factors influencing prevalence

Several demographic factors have been found to influence the prevalence of self-care practices in endodontic pain:

1. Age: Cohen et al. (2007) found that younger patients (18-34 years) were more likely to engage in self-care practices compared to older age groups.
2. Gender: In addition to the information given in section 2.1.3 on gender's effect, other studies have also reported gender differences in self-care behaviours. For instance, Pau, Croucher and Marcenés (2003) found that women were more likely than men to engage in self-care practices for dental pain. However, a study by Oberoi, Dhingra, Sharma and Sardana (2015) in India found that self-medication for dental pain was more prevalent among males.
3. Socioeconomic Status: As well as the information in sections 2.1.1 and 2.1.3, the study by Pau et al. (2003) reported also that individuals from lower socioeconomic backgrounds were more likely to rely on self-care methods, possibly due to limited access to professional dental care.
4. Education Level: Ghanbarzadegan, Mittinty, Brennan and Jamieson (2023) found that individuals with lower education levels were more likely to use emergency departments for dental problems rather than seeking care from a dentist, which often results in increased reliance on self-care methods.

5. Dental Anxiety: Armfield et al. (2007) reported that individuals with high dental fear were more likely to engage in self-care practices and delay seeking professional treatment. This finding was supported by Berggren (2001), who noted that dental anxiety often leads to avoidance of professional care and increased reliance on self-care methods.
6. Previous Experiences: In addition to the information in section 2.1.3., Stoller et al. (2001) identified that past experiences with dental pain significantly influenced self-care choices. Patients who had positive experiences with certain self-care methods were more likely to use them again in future episodes of dental pain.
7. Access to Information: Detailed information can be found in section 2.1.4.

Sociodemographic factors

Age, gender and education levels are as mentioned in section “Demographic factors influencing prevalence”.

Socioeconomic Status: Socioeconomic status has been mentioned in section 2.1.1., 2.1.3. and “Demographic factors influencing prevalence”.

Employment Status: Employment status can affect self-care behaviours. A study by Carrasco-Garrido, Jiménez-García, Barrera and Gil de Miguel (2008) in Spain found that unemployed individuals were more likely to engage in self-medication practices for dental pain, possibly due to financial constraints in accessing professional care.

Clinical factors

Pain Intensity: Pain intensity is a significant predictor of self-care behaviours. Cohen et al. (2007) reported that higher levels of pain were associated with increased likelihood of self-care attempts. Similarly, a study by Maggiri and Locker (2002) found that individuals with higher levels of dental pain were more likely to engage in self-care practices.

Duration of Pain: The duration of pain can influence self-care behaviours. A study by Stoller et al. (2001) found that patients with chronic dental pain were more likely to develop complex self-care strategies over time compared to those with acute pain.

Previous Dental Experiences: As mentioned in the sections 2.1.4 and “Regional variations”, past experiences with dental treatments significantly influence self-care choices.

Oral Health Status: Overall oral health status can impact self-care behaviours. A study by Arcury, Bell, Anderson, Chen, Savoca, Kohrman and Quandt (2009) found that individuals with poorer oral health were more likely to engage in self-care practices, possibly due to more frequent experiences with dental pain.

Type of Dental Problem: The nature of the dental problem can influence self-care behaviours. A study by Tulip and Palmer (2008) found that patients with endodontic pain were more likely to attempt self-care methods before seeking professional help compared to those with other types of dental pain.

Touré, Kane, Diouf, Faye and Boucher (2007) also found that patients with Irreversible Acute Pulpitis (IAP) waited significantly longer before seeking emergency dental care compared to those with acute apical periodontitis (AAP), highlighting the influence of pain characteristics and patient perception on care-seeking behaviour.

Psychological factors

Dental Anxiety: Dental anxiety, detailed in Section 2.1.3 and “Demographic factors influencing prevalence”, remains a central psychological driver of self-care.

Self-Efficacy: Self-efficacy in managing dental pain can influence self-care behaviours. A study by Kakudate, Morita, Fukuhara, Sugai, Nagayama, Kawanami and Chiba (2010) found that individuals with higher self-efficacy in oral health management were more likely to engage in positive self-care practices and seek timely professional care. More details have been mentioned in section 2.1.1.

Health Beliefs: Health beliefs play a crucial role in shaping self-care behaviours. Details on health belief can be found in section 2.1.1.

Perceived Severity and Susceptibility: Perceptions of the severity of dental problems and susceptibility to dental diseases can influence self-care behaviours as mentioned in section

2.1.1. A study by Hollister and Anema (2004) also found that individuals who perceived dental problems as more severe were more likely to engage in preventive self-care practices.

Cultural and environmental factors

Cultural Norms: Cultural norms effects are mentioned in section 2.1.4. In addition, a study by Anwar, Green, Norris and Bukhari (2015) in Pakistan found that cultural beliefs about oral health varied across different ethnic groups, affecting self-care practices and professional care-seeking behaviours.

Access to Dental Care: Accessibility of dental services can impact self-care behaviours. Details can be found in section 2.1.4.

Media and Information Sources: Access to information can influence self-care behaviours. Details have been mentioned before in section 2.1.3 and 2.1.4.

Family and Social Networks: Family and social networks role have been mentioned in section 2.1.4.

Healthcare Policies: National healthcare policies can significantly impact access to dental care and, consequently, self-care practices, as mentioned in section 2.1.4.

Environmental Factors: Environmental factors such as urbanization can influence self-care behaviours. Arcury et al. (2012) found that rural populations in the United States had a higher prevalence of using home remedies for dental pain (52%) compared to urban populations (37%).

2.2.4. Effectiveness of self-care methods

Self-care methods for endodontic pain are widely used by patients, often as a first line of defense before seeking professional dental care. Understanding the effectiveness of these methods is crucial for both patients and dental professionals. This section will explore the pain relief provided by various self-care methods, compare them to professional care, and examine their long-term outcomes.

Pain relief from pharmacological methods

Pharmacological self-care methods, primarily OTC analgesics, are among the most common approaches used by patients experiencing endodontic pain.

Nonsteroidal anti-inflammatory drugs (NSAIDs)

NSAIDs are the most frequently used and effective OTC medications for endodontic pain relief. A systematic review by Moore et al. (2015) found that ibuprofen 400 mg provided effective pain relief in 50% of patients with moderate to severe dental pain, compared to 20% with placebo. The efficacy of ibuprofen in managing dental pain has been consistently demonstrated across multiple studies.

A meta-analysis by Bailey, Worthington, van Wijk, Yates, Coulthard and Afzal (2013) comparing ibuprofen and acetaminophen for dental pain relief found that ibuprofen was significantly more effective. The study reported that the Number Needed to Treat (NNT) for at least 50% pain relief over 4-6 hours was 2,5 for ibuprofen 400 mg compared to 3,7 for acetaminophen 1000 mg.

Naproxen, another commonly used NSAID, has also shown efficacy in managing endodontic pain. A study by Kiersch, Halladay and Hormel (1994) found that naproxen sodium 440 mg provided significant pain relief in patients with moderate to severe dental pain, with effects lasting up to 12 hours.

Some studies suggest that naproxen may be more effective than ibuprofen for dental pain, particularly in terms of duration of action (Derry, Derry, Moore and McQuay, 2009).

Acetaminophen (Paracetamol)

While not an anti-inflammatory, acetaminophen is frequently used for its pain-relieving properties. The meta-analysis by Moore et al. (2015) found that acetaminophen 1000 mg provided effective pain relief in 38% of patients with moderate to severe dental pain, compared to 16% with placebo. However, its efficacy is generally considered lower than that of NSAIDs for dental pain.

Combination Products

Some OTC products combine different active ingredients, such as ibuprofen and acetaminophen, for enhanced pain relief. A study by Mehlisch, Aspley, Daniels and Bandy (2010) found that a combination of ibuprofen 200 mg and acetaminophen 500 mg provided greater pain relief than either drug alone in patients with postoperative dental pain. This synergistic effect has been supported by other studies, suggesting that combination products may offer superior analgesic efficacy compared to single-ingredient formulations.

Aspirin

A systematic review by Derry and Moore (2012) found that aspirin 1000 mg provided effective pain relief in dental pain, comparable to other NSAIDs.

Pain relief from non-pharmacological methods

Non-pharmacological self-care methods for endodontic pain include various home remedies and physical interventions. While these methods are widely used, their efficacy is often less well-documented compared to pharmacological approaches.

Salt water rinses

Salt water rinses are one of the most common non-pharmacological self-care methods used for endodontic pain. A study by Karmawati, Padjari, Budiarti and Lestari (2021) found that saltwater rinses provided some relief from dental pain and improved oral hygiene. The mechanism of action is believed to be related to the osmotic effects of salt, which can help reduce inflammation by drawing out excess fluid from inflamed tissues.

Cold application

Applying cold to the affected area is another common self-care method for endodontic pain. A systematic review by van der Westhuijzen, Becker, Morkel and Roelse (2005) found that cold therapy was effective in reducing pain and swelling following dental surgery, which may have implications for endodontic pain management. The pain-relieving effect of cold

application is attributed to its ability to reduce nerve conduction velocity and decrease metabolic activity in the affected area.

Clove oil

Clove oil is a traditional remedy that some patients use for dental pain relief. A randomized controlled trial by Alqareer, Alyahya ve Andersson (2006) found that clove gel was as effective as benzocaine gel in providing temporary relief from toothache pain. The analgesic effect of clove oil is attributed to its active ingredient, eugenol, which has been shown to have both analgesic and anti-inflammatory properties.

Garlic

While garlic is sometimes used as a home remedy for dental pain, scientific evidence supporting its effectiveness is limited. More details have been discussed in section “Non-pharmacological methods”. However, more research is needed to establish its efficacy specifically for endodontic pain relief.

Pain relief from alternative methods

Acupressure

A study by Müller, Schmucker, Naumann, Schlueter, Huber and Lederer (2023) found that acupressure applied to the LI4 (Hegu) point on the hand provided some relief from dental pain. The review concluded that acupuncture could effectively relieve dental pain compared to placebo or conventional analgesia. Acupuncture was found to improve intraoperative analgesia when combined with local anaesthetics and reduce postoperative pain levels. However, the evidence is limited, and more research is needed to confirm its effectiveness for endodontic pain specifically.

Homeopathy

A systematic review by Mathie, Fok, Viksveen, To and Davidson (2019) found insufficient evidence to support the use of homeopathy for dental pain. The scientific community generally considers homeopathy to be a placebo effect due to the extreme dilutions used.

Mindfulness and meditation

While there is growing evidence supporting mindfulness for chronic pain management, specific research on its efficacy for acute endodontic pain is limited.

Prayer or spiritual practices

While the psychological benefits of spiritual practices are recognized, scientific evidence specifically supporting their efficacy for endodontic pain relief is limited (Wachholtz and Pearce, 2009).

Comparison of self-care and professional care

While self-care methods can provide temporary relief for endodontic pain, they do not address the underlying cause of the pain. Professional dental care is essential for proper diagnosis and treatment of endodontic issues.

A study by Cohen et al. (2007) found that patients who engaged in self-care practices before seeking professional help often experienced prolonged pain and potentially worsened their condition. The study reported that 57% of patients with dental pain used NSAIDs as a self-care method, but many delayed seeking professional care, leading to more severe symptoms.

Tulip and Palmer's (2008) study noted that patients who sought professional care earlier generally had better outcomes and shorter recovery times.

A comparative study by Pau et al. (2003) examined the effectiveness of self-care practices versus professional treatment for dental pain. The study found that while self-care methods provided some temporary relief, professional treatment resulted in significantly better pain resolution and addressed the underlying cause of the pain.

Long-term outcomes of self-care practices

The long-term outcomes of relying on self-care practices for endodontic pain can be problematic, particularly if professional care is delayed or avoided.

A longitudinal study by Armfield and Heaton (2013) followed patients with dental anxiety and high reliance on self-care practices over a five-year period. The study found that these patients had poorer oral health outcomes, including increased tooth loss and higher rates of untreated dental decay, compared to those who regularly sought professional care.

A study by Maggiri and Locker (2002) examined the relationship between dental anxiety, self-care practices, and oral health-related quality of life. The study found that individuals who relied primarily on self-care methods for managing dental pain reported lower oral health-related quality of life scores over time compared to those who regularly sought professional care.

In conclusion, while self-care methods can provide temporary relief for endodontic pain, they are not a substitute for professional dental care. Pharmacological methods, particularly NSAIDs, appear to be the most effective self-care approach for pain relief. Non-pharmacological methods show varying degrees of efficacy, with some traditional remedies lacking strong scientific support. The long-term outcomes of relying solely on self-care practices are generally poor, highlighting the importance of timely professional intervention in managing endodontic pain.

2.2.5. Risks and benefits of self-care in endodontic pain

Potential benefits of self-care

Self-care practices are common among patients experiencing endodontic pain, often serving as the first line of action before seeking professional dental care. While these practices can provide temporary relief, they also carry potential risks. Understanding both the benefits and risks is crucial for patients and dental professionals alike.

Self-care methods for endodontic pain can offer several potential benefits to patients. One of the primary advantages is the immediate pain relief that many patients experience. OTC

analgesics, particularly NSAIDs, have been shown to be effective in managing dental pain. More details can be found in section “Pain relief from pharmacological methods”. This immediate relief can be crucial for patients who cannot access professional care immediately.

Beyond pain relief, NSAIDs also help reduce inflammation associated with endodontic pain. Rainsford’s (2009) explanation of the mechanism can be found in section “*Over-the-counter (OTC) medications*”. This dual action of pain relief and anti-inflammatory effects can significantly improve patients’ comfort levels while they await professional treatment.

By managing pain and inflammation, self-care methods can help improve patients’ quality of life in the short term. A study by Pau et al. (2003) found that effective pain management through self-care practices was associated with better oral health-related quality of life scores among patients with dental pain. This improvement in quality of life can be particularly important for patients who may have to wait for professional treatment due to various reasons such as appointment availability or financial constraints.

Self-care methods, particularly OTC medications, are generally more cost-effective than emergency dental visits. This can be particularly beneficial for patients with limited financial resources or those without dental insurance. However, it’s important to note that while this cost-effectiveness is a short-term benefit, it should not be seen as a long-term solution, as emphasized by Cohen et al. (2007) in their study on dental care utilization patterns.

Engaging in self-care practices can provide patients with a sense of control over their condition. Self-care practices can contribute to this sense of self-efficacy, empowering patients to take an active role in managing their dental health.

For patients with dental anxiety, self-care methods can provide a way to manage pain without immediately facing the stress of a dental visit. While this should not replace professional care, it can help patients manage their anxiety in the short term and potentially make them more comfortable with seeking professional treatment later.

Risks associated with self-medication

While self-care practices, particularly self-medication, can offer temporary relief for endodontic pain, they also carry significant risks that patients and healthcare providers should be aware of.

One of the most significant risks of self-medication is that it can mask the underlying cause of the pain without addressing it. This can lead to delayed treatment and progression of the dental problem. A study by Tulip and Palmer (2008) found that patients who engaged in prolonged self-medication for dental pain often presented with more severe symptoms when they eventually sought professional care. This delay in seeking proper treatment can result in more complex and costly procedures being necessary, as well as potentially irreversible damage to the tooth and surrounding tissues.

Inappropriate use of antibiotics for dental pain is a common form of self-medication that contributes to the global problem of antibiotic resistance. A systematic review by Cope, Francis, Wood and Chestnutt (2016) highlighted the prevalence of unnecessary antibiotic use in dentistry and its contribution to antibiotic resistance. This is particularly concerning in the context of endodontic pain, where antibiotics are often not the appropriate treatment but are frequently used by patients attempting self-care.

Over-the-counter medications, while generally safe, can cause adverse reactions, especially when used inappropriately or in combination with other medications. A study by Hersh et al. (2000) reported that NSAIDs, commonly used for dental pain, can cause gastrointestinal side effects, especially when used in high doses or for prolonged periods. These side effects can range from mild discomfort to severe complications such as gastrointestinal bleeding.

Self-medication can also lead to potentially dangerous drug interactions, especially in patients with underlying health conditions or those taking other medications. Ong et al. (2007) highlighted the need for caution when using NSAIDs in patients with cardiovascular conditions or those taking anticoagulants. These interactions can lead to serious health complications if not properly managed.

Acetaminophen, another common OTC medication used for dental pain, carries a risk of liver toxicity when used in high doses. Yoon's (2016) report on it can be found in section "Pharmacological methods". This risk is particularly relevant in the context of dental pain, where patients might be tempted to exceed recommended doses in an attempt to manage severe pain.

Delayed professional treatment and its consequences

Delayed professional treatment due to reliance on self-care methods for endodontic pain can have serious consequences that patients should be aware of.

One of the most significant consequences of delayed treatment is the progression of dental disease. A study by Pak and White (2011) found that delays in seeking treatment for endodontic problems often resulted in more severe pulpal and periapical pathology, necessitating more complex and costly treatments. This progression can lead to irreversible damage to the tooth and surrounding tissues, potentially resulting in tooth loss that could have been prevented with timely intervention.

As the underlying condition worsens, patients may experience increased pain and discomfort. Segura-Egea, Gould, Şen, Jonasson, Cotti, Mazzoni, Sunay, Tjäderhane and Dummer (2017) reported that patients who delayed endodontic treatment often presented with more severe pain and larger periapical lesions compared to those who sought timely treatment. This increased pain can significantly impact a patient's quality of life and may lead to more extensive use of pain medications, potentially exacerbating the risks associated with self-medication.

Untreated endodontic infections can spread to surrounding tissues, leading to more serious conditions. Siqueira and Rôças (2013) described cases where delayed treatment of endodontic infections led to cellulitis, osteomyelitis, and even life-threatening conditions like Ludwig's angina. These complications not only pose serious health risks but also require more intensive and expensive treatments.

Delayed treatment can negatively impact the success rates of endodontic procedures. Ng, Mann and Gulabivala (2011) reported lower success rates for root canal treatments in teeth

with pre-existing large periapical lesions, which are often a result of delayed treatment. This means that even when treatment is eventually sought, the outcomes may be less favourable than if treatment had been initiated earlier.



3. MATERIALS AND METHODOLOGY

Under this chapter, the methodological framework of the study has been presented, including the study design, data collection tools, and statistical analyses.

3.1. Study Design

This study utilized a descriptive, cross-sectional survey design to comprehensively investigate self-care tendencies and their effectiveness in alleviating pain among patients suffering from endodontic pain. Conducted at the general endodontic training clinic of Gazi University between November 2022 and July 2023, the research aimed to explore both sociodemographic and clinical factors influencing self-care practices, as well as the perceived effectiveness of these methods in managing pain. The study protocol received ethical approval from the Clinical Research Ethics Committee of Gazi University Faculty of Dentistry (decision no: GUDHKA EK. 2022.19/2; 06.10.2022) and adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for observational studies.

Eligible participants included patients presenting with spontaneous pain requiring primary endodontic treatment. The exclusion criteria and the flowchart of the study are shown in Figure 3.1. The flowchart of the study. To minimize interviewer bias, any patient reporting a previous pain intensity of ≥ 1 on a 0-10 Numerical Rating Scale (NRS) was included in the study. Convenience sampling was employed, with investigators systematically questioning all scheduled patients.

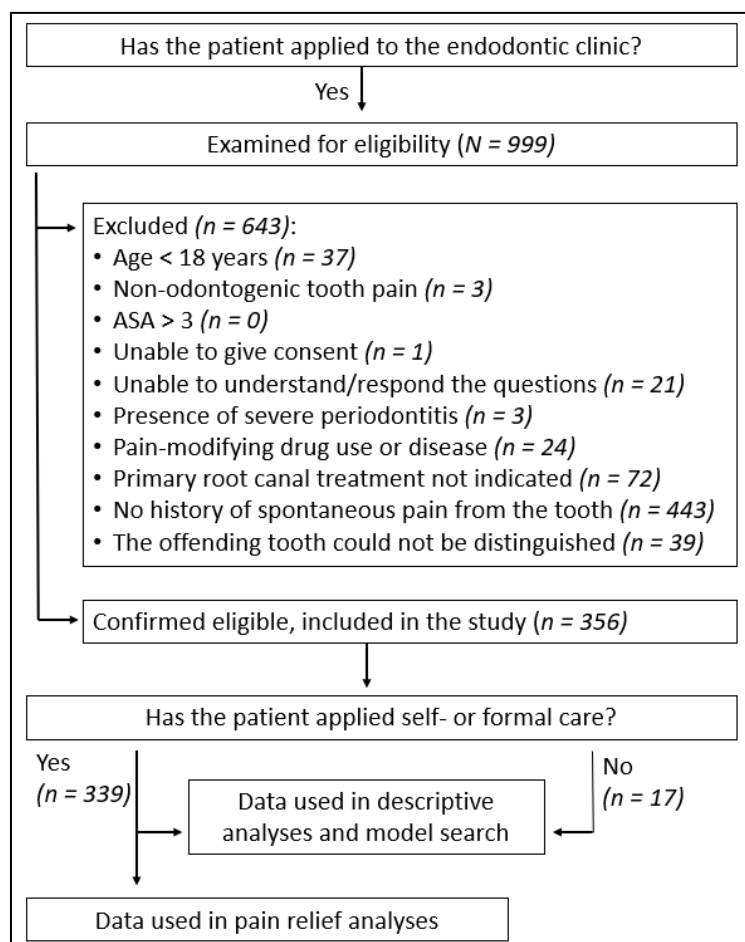


Figure 3.1. The flowchart of the study

Informed consent was obtained from all participants prior to their involvement in the study. The informed consent process involved providing detailed information about the study's purpose, procedures, potential risks, and benefits. Participants were also informed of their right to withdraw from the study at any time without any repercussions regarding their dental care. The research aimed to provide insights into patient behaviours regarding self-care in endodontic pain management.

The study design allowed for a thorough examination of self-care practices, encompassing both pharmacological and non-pharmacological approaches. Participants were asked to identify which self-care methods they had utilized prior to seeking professional treatment.

The data collection process involved structured questionnaires that captured various aspects of patient demographics, clinical history, and self-care and formal care practices. This approach facilitated a detailed analysis of the factors influencing self-care behaviours and the effectiveness of these methods in alleviating pain.

The structured questionnaire consisted of multiple sections that allowed for comprehensive data gathering:

1. **Sociodemographic Data:** This section collected information on age, gender, education level, household income, marital status, and residence type (urban or rural). These variables were essential for understanding how demographic factors influenced self-care behaviours.
2. **Clinical Data:** Participants provided details about their medical and dental history, including previous treatments received, duration of pain prior to consultation, and maximum pain levels experienced on the NRS scale prior to professional intervention. This information was critical for assessing how clinical factors correlated with self-care practices.
3. **Self-Care Practices:** Patients were presented with a categorized list of potential self-care methods derived from existing literature on dental pain management. They were asked to indicate which methods they had employed for managing their pain prior to seeking professional care.
4. **Formal Care Practices:** This section documented professional interventions sought by participants before or alongside self-care methods. It included consultations with dentists or other healthcare professionals, prescribed medications (e.g., antibiotics, analgesics), and emergency dental visits. This information was vital for understanding the interplay between self-care and formal care in managing endodontic pain.
5. **Effectiveness Rating:** To assess how effective each method was perceived to be in relieving pain, participants rated their experience using a 5-point Likert scale ranging from no relief (0) to complete relief (4). This rating system allowed for quantitative analysis of the effectiveness of various self-care strategies.

The inclusion criteria were defined to ensure that only those patients who could provide relevant insights into self-care practices were enrolled in the study. Patients aged 18 years or older who presented with spontaneous endodontic pain requiring treatment were eligible for inclusion. This age criterion was established to ensure that participants had the cognitive ability to understand the survey questions and provide informed consent.

Exclusion criteria were also carefully considered to maintain the integrity of the data collected. Patients who had received prior endodontic treatment on the affected tooth within

six months before enrolment were excluded from participation as their experiences might differ significantly from those experiencing new-onset endodontic issues. Additionally, individuals with systemic health conditions that could affect pain perception or management were excluded to minimize confounding variables. The exclusion criteria have been shown in Figure 3.1.

Data collection was standardized across all participants to ensure consistency and reliability in the responses obtained. The structured questionnaire was administered by trained investigators who were familiar with the study objectives and procedures. To further enhance data quality and reduce potential biases associated with interviewer influence, investigators were trained to follow a standardized script during patient interviews.

To address potential recall bias, where patients might struggle to accurately remember their past self-care practices, participants were instructed not to rate any care methods if they could not clearly recall using them. This instruction aimed to improve the accuracy of the data collected while acknowledging the inherent limitations associated with retrospective reporting.

3.2. Establishing the List of Self-Care Applications

To develop a comprehensive and relevant list of self-care applications for managing endodontic pain, we began by reviewing existing literature that documented various self-care behaviours associated with dental pain relief. This initial review served as a foundational template from which we could draw insights into common practices utilized by patients experiencing endodontic issues. The categorization of these self-care behaviours was informed by previous studies, which highlighted a range of methods including pharmacological options, home remedies, and alternative therapies.

The first step in establishing the list involved translating the categorized items into Turkish to ensure cultural relevance and understanding among the local patient population. This translation process was not merely linguistic but also encompassed cultural adaptation, ensuring that the terms used resonated with the experiences and practices of Turkish-speaking patients. This attention to cultural context is crucial, as it enhances the likelihood that patients will accurately report their self-care practices.

Following this translation and adaptation phase, we presented the draft list to a sample of 115 endodontic patients attending our clinic. During this process, patients were asked to indicate whether they had applied any of the listed self-care methods or if they had utilized any other unlisted applications for pain relief. This approach allowed us to gather a wide array of self-care strategies employed by patients in real-world settings.

As patients reported additional self-care methods not included in the initial draft list, these new items were carefully evaluated for inclusion. Specifically, any new application that was reported by at least two different patients was added to the draft list. This ensured that only commonly recognized methods were incorporated into our final version, reflecting practices that are genuinely utilized by patients.

The categorization of new items was determined through discussions among two investigators (Hande BENGÜ and Güven KAYAOĞLU), who reached consensus on how best to classify these methods within the established framework. Existing items that received no endorsements from at least two patients were removed from consideration, ensuring that our final list accurately represented relevant and frequently used self-care practices.

The finalized list encompassed a diverse range of self-care methods, including both pharmacological approaches such as over-the-counter analgesics (e.g., ibuprofen and acetaminophen) and non-pharmacological strategies like home remedies (e.g., saltwater rinses, clove applications, cold compresses). Each method was carefully considered for its mechanism of action and effectiveness in alleviating dental pain.

The comprehensive nature of this list served as a foundation for subsequent data collection and analysis. By capturing a wide array of self-care practices employed by endodontic patients, we aimed to provide valuable insights into how these behaviours correlate with sociodemographic factors and clinical characteristics.

3.3. Questionnaire

The questionnaire developed for this study was designed to gather comprehensive data on patients' self-care practices, their effectiveness in alleviating endodontic pain, and the sociodemographic and clinical factors influencing these behaviours. The questionnaire was

structured into three main sections, each aimed at capturing different dimensions of the patients' experiences and practices related to endodontic pain management.

3.3.1. Sociodemographic and clinical data

This section collected essential information regarding the participants' demographic profiles and clinical backgrounds. The sociodemographic variables included:

- Age: Participants were asked to provide their age in years, allowing for analysis of how age influences self-care practices. This is particularly relevant as younger patients may have different access to information and resources compared to older individuals.
- Gender: Respondents indicated their gender, which is crucial for understanding potential differences in self-care behaviours between male and female patients.
- Education Level: Questions regarding the highest level of education attained (e.g., primary, secondary, tertiary) helped assess the relationship between educational attainment and health literacy related to self-care practices.
- Household Income: Participants were asked to categorize their household income into predefined ranges (e.g., low, medium, high), which can impact access to healthcare resources and influence self-care behaviours.
- Marital Status: Information on whether participants were single, married, divorced, or widowed provided insights into social support systems that may affect health-seeking behaviours.
- Residence Type: Patients indicated whether they lived in urban or rural areas, which is significant given the differences in access to dental care resources.

Clinical data collected included age, gender, American Society of Anesthesiologists (ASA) health status, tooth type, jaw, periapical status, pulpal status, and the variables listed below:

- Dental History: This encompassed previous dental treatments received, frequency of dental visits, and any history of endodontic procedures. Understanding a participant's dental history can provide context for their current self-care practices and perceptions of pain.

- **Duration of Pain:** Patients reported how long they had been experiencing pain prior to seeking treatment, measured in days. This information is vital for assessing the urgency of their self-care efforts and understanding the progression of their condition.
- **Maximum (Max) and Minimum (Min) Pain Levels:** Participants rated their Max and Min pain intensity on a 0-10 NRS before seeking professional care. This rating allows for a quantitative analysis of pain severity and its correlation with self-care behaviours.

3.3.2. Categorized list of self- and formal care methods

In this section, patients were presented with a structured list derived from the established self-care applications relevant to endodontic pain management, as detailed in section 3.2, Establishing the List of Self-Care Applications. The list included both pharmacological and non-pharmacological methods that patients might employ. Participants were asked to indicate which methods they had utilized prior to seeking professional care. The categorized list of self- and formal care methods is visually summarized in Figure 3.2. The categorized list is explained below the Figure 3.2.

(S) Self-Care	
(a) Self-Medication	
1. Prescription medicine (systemic)	Antibiotics, corticosteroids, etc.
2. Over-the-counter medicine (systemic)	NSAIDs, acetaminophen, aspirin, etc.
3. Antibiotic + Analgesic combination	Various combinations.
4. Over-the-counter medicine (local, topical)	Kloroben, Tantum Verde, Majezik spray, etc.
(b) Home Remedies (Home Treatment)	
1. Over-the-counter dental products	Listerine, Orajel, etc.
2. Rinsing the mouth with combinations of warm water, salt, vinegar, and carbonate	-
3. Placing ice on the affected area or rinsing the mouth with cold water	-
4. Placing aspirin or another analgesic on the affected area	-
5. Massaging the gums	-
6. Drinking alcohol/liquor or applying it to the tooth with a cotton ball (including cologne)	-
7. Putting spices such as cloves, ginger, garlic, thyme, and mint on the tooth or applying the oil or tea forms of these substances to the tooth	-
8. Putting olives on the tooth	-
9. Putting toothpaste on the tooth	-
10. Brushing the tooth	-
11. Placing cold/warm compresses on the jaw	-
12. Pressing/massaging the jaw from the outside with the palm of the hand	-
(c) Speaking with a Relative/Friend/Neighbor	
(d) Alternative Healthcare	
1. Praying/Meditation	-
(F) Formal Care	
(a) Professional Services	
1. Dentist:	-
2. Physician:	-
3. Emergency Service:	-
4. Pharmacist:	-
(b) Medication Use by Prescription or Professional Advice	
1. Prescription medicine (systemic):	Antibiotics, corticosteroids, etc.
2. Over-the-counter medicine (systemic):	NSAIDs, acetaminophen, aspirin, etc.
3. Over-the-counter medicine (local, topical):	Kloroben, Tantum Verde, Majezik spray, etc.
Other (please explain): _____	

Figure 3.2. Applications list

1. SELF CARE (S)

- Self-Medication Practices (Sa): This category encompassed over-the-counter medications such as NSAIDs (e.g., ibuprofen and naproxen) and acetaminophen. Participants were asked if they had used these medications for pain relief and how effective they found them. The inclusion of these medications reflects their common use among patients seeking immediate relief from dental discomfort.
- Home Remedies (Sb): Patients were asked whether they had utilized various home remedies for pain relief, including saltwater rinses, clove or garlic applications, cold compresses, and alcohol-based rinses.
- -Spoke to a relative, friend or neighbour (Sc): This category captured instances where patients sought advice or support from their social network regarding their dental pain.
- Alternative Healthcare Practices (Sd): This included any non-traditional methods such as speaking with friends or family about pain management strategies or seeking advice from alternative healthcare practitioners.

2. FORMAL CARE (F)

This category encompassed professional health services sought by patients (Fa). It primarily included consultations with dentists or other health professionals, resulting in prescriptions for medication (Fb) or referrals to specialized dental facilities.

3.3.3. Pain Relief Rating Scale

To assess the effectiveness of each care method used by participants, a standardized 5-point Likert scale was employed (Stoller et al., 2001). This scale allowed patients to rate their perceived level of pain relief as follows:

0 = no pain relief

1 = a little pain relief

2 = moderate pain relief

3 = a lot of pain relief

4 = complete pain relief

This rating system provided a quantitative measure of the effectiveness of various self-care strategies employed by patients. By analysing these ratings in conjunction with sociodemographic and clinical data, we aimed to identify patterns and correlations that could inform both clinical practice and future research.

3.4. Statistical Analyses

The statistical analyses conducted in this study were integral to evaluating the factors influencing self-care practices and assessing the effectiveness of various pain relief methods employed by participants. The analysis was performed using R Statistical Software (version 4.2.1.)

3.4.1. Model search

To evaluate the factors affecting self-care practices, multivariate logistic regression models were constructed. The dependent variable in this analysis was the use of self-care by the patient, coded as a binary variable: those who engaged in self-care were coded as 1, while those who did not were coded as 0.

Three specific self-care conditions were tested within the models:

1. Self-medication (Sa): This condition was defined as any use of over-the-counter medications for pain relief without professional guidance.
2. Home remedies (Sb): This condition included various non-pharmacological methods that patients might employ to manage their pain, such as saltwater rinses and clove applications.
3. Other Self-Care Practices (Sb OR Sc OR Sd): This category included home remedies (Sb), speaking with a relative or friend (Sc), or seeking alternative healthcare (Sd), allowing for a broader understanding of self-care behaviours.

Independent variables included sociodemographic factors such as sex, age, education level, household income, marital status, and residence type, along with clinical factors like sex, age, ASA health status, tooth type affected by endodontic issues, duration of pain

experienced prior to treatment, American Association of Endodontists (AAE) pulpal and periapical status, and Max and Min pain levels reported on the NRS scale.

The process began with univariate analyses, employing logistic regression for categorical variables and Kendall's correlation tests for continuous independent variables against the binary dependent variable. Variable selection was conducted using a threshold of $P \leq .10$. For categorical variables such as education level, marital status, and periapical status, additional dummy variables were created and tested.

Variables meeting the significance criteria were then incorporated into a multivariate analysis, resulting in a saturated model. To refine this model, a backward stepwise regression approach was applied. This process involved systematically eliminating non-significant variables, removing the variable with the highest p-value in each iteration. The final reduced model retained variables that were either statistically significant ($P < .05$) or marginally significant ($.05 < P < .10$).

Following the analysis of these separate models, a combined model was also evaluated to explore potential interactions between clinical and sociodemographic variables. This comprehensive approach allowed for a more nuanced understanding of the interplay between clinical and social factors influencing self-care behaviours in endodontic patients.

3.4.2. Pain relief

The analysis of pain relief encompassed data from all patients, regardless of their pulpal condition. For comparing two groups, the non-parametric Wilcoxon rank sum test was employed. When comparing more than two groups, the non-parametric Kruskal-Wallis test was utilized, followed by post-hoc pairwise comparisons using the Benjamini-Hochberg correction to adjust for multiple testing. Relevant statistical comparisons were conducted between and among self-care and formal care applications (designated as comparisons №1-8). Groups with fewer than 10 observations were excluded from the statistical analysis to ensure robust results. The threshold for statistical significance was set at $P < .05$. Additionally, a separate analysis focusing solely on patients diagnosed with Symptomatic Irreversible Pulpitis (SIP) was performed to examine pain relief in this specific subgroup.

Sample size calculation

To determine the appropriate sample size for logistic regression models, we applied Peduzzi's method (Peduzzi, Concato, Kemper, Holford and Feinstein, 1996). This approach calculates the required sample size using the formula $n = 10k/p$, where k represents the number of independent variables, and p denotes the smallest probability of dependent variable levels. In our study, the dental model had the highest number of independent variables ($k = 10$). Based on pilot test findings, we determined $p = \min(0,34, 0,66) = 0,34$. Consequently, the Min required sample size was calculated as $n = 10(10)/0,34 = 295$ patients. This sample size ensures adequate statistical power for our logistic regression analyses while accounting for the complexity of our models.

4. FINDINGS

Of the 999 patients initially screened for eligibility, 643 were excluded, resulting in a final dataset of 356 patients (Figure 3.1 illustrates the exclusion criteria and flowchart). Table 4.1. presents the descriptive sociodemographic and dental data. The majority of patients (n=339) had utilized self-care and/or sought formal care before presenting at the observation setting. Notably, 89,9% of patients employed self-care methods, either alone or in combination with formal care (see Table 4.1.).

Table 4.1. Descriptive sociodemographic and dental variables. Data are shown as n (%) unless stated otherwise. Frequencies of patients utilizing self-care, formal care, or no care are reported at the end of the table

Variable	Number of patients	Descriptives
Sex and age		
Male	134	Mean age $\pm$ standard deviation: 38,4 $\pm$ 14,5 years (range: 18–79 years)
Female	222	Mean age $\pm$ standard deviation: 35,0 $\pm$ 13,3 years (range: 18–73 years)
Total	356	Mean age $\pm$ standard deviation: 36,3 $\pm$ 13,8 years (range: 18–79 years)
Variable		Descriptives
Jaw		
Mandible		184 (51,8%)
Maxilla		171 (48,2%)
Missing data		1
Tooth type		
Posterior		324 (91,3%)
Anterior		31 (8,7%)
Missing data		1
ASA		
1		121 (34%)
2		228 (64%)
3		7 (2%)
Education level		
None		1 (0,3%)
Primary school		47 (13,2%)
Middle school		35 (9,8%)
High school		151 (42,4%)
Associate degree		24 (6,7%)
Bachelor's degree		86 (24,2%)

Table 4.1. (continued) Descriptive sociodemographic and dental variables. Data are shown as n (%) unless stated otherwise. Frequencies of patients utilizing self-care, formal care, or no care are reported at the end of the table

Variable	Descriptives
Postgraduate degree	12 (3,4%)
Household income	
Below min wage	26 (7,3%)
Min wage	97 (27,2%)
Above min wage	233 (65,4%)
Marital status	
Married	211 (59,3%)
Separated	0 (0%)
Divorced	9 (2,5%)
Widowed	4 (1,1%)
Never married	132 (37,1%)
Residence	
Urban	173 (48,6%)
Suburban	180 (50,6%)
Rural	3 (0,8%)
Pattern of dental clinic attendance	
Goes when has a problem	301 (84,6%)
Goes occasionally	28 (7,9%)
Goes regularly	27 (7,6%)
Duration of pain	
Average: 84,4 days (SD: 155,8 days; range: 1-1095 days)	
Pulpal status	
Symptomatic irreversible pulpitis	224 (62,9%)
Necrosis	132 (37,1%)
Periapical status	
Normal apical tissue	59 (16,6%)
Symptomatic apical periodontitis	247 (69,4%)
Asymptomatic apical periodontitis	26 (7,3%)
Chronic apical abscess	5 (1,4%)
Acute apical abscess	19 (5,3%)
Pain intensity (NRS; 0-10)	
Max pain	Mean: 8,1 (SD: 1,9, range: 1-10)
Min pain	Mean: 2,9 (SD: 1,6, range: 0-10)
Missing data	1

Table 4.1. (continued) Descriptive sociodemographic and dental variables. Data are shown as n (%) unless stated otherwise. Frequencies of patients utilizing self-care, formal care, or no care are reported at the end of the table

Variable	Descriptives
Frequency of patients applying methods (in general)	
Self-care only	151 (42,4%)
Formal care only	19 (5,3%)
Both	169 (47,5%)
None	17 (4,8%)
Frequency of patients applying methods (specific)*	
Sa: Self-medication	244 (68,5%)
Sb: Home remedies	230 (64,6%)
Sc: Speaking with a relative, friend, or neighbour	76 (21,3%)
Sd: Alternative healthcare	12 (3,4%)
Sb OR Sc OR Sd	250 (70,2%)
Fa: Professional services	189 (53,1%)
Fb: Medication use by prescription or professional advice	144 (40,4%)

*Since patients could have used multiple methods, the total percentage may be greater than 100%. Abbreviations used: Sa = self-medication, Sb = home remedies, Sc = consulting a relative, friend, or neighbour, Sd = alternative healthcare, Fa = professional services, Fb = medication taken by prescription or on professional advice, ASA = American Society of Anaesthesiologists Physical Status Classification System, NRS = numerical rating scale

4.1. Model Analysis

Univariate findings are detailed in Tables 4.2.-4.4. Among the tested models, the combination model outperformed the separate dental or sociodemographic models, demonstrating more statistically significant variables and higher accuracy, sensitivity, and specificity values. The Hosmer-Lemeshow goodness-of-fit test indicated adequate fit for all three models ($P > ,10$). Table 4.5. presents the coefficients and performance metrics of the multivariate models. Max pain emerged as the strongest predictor variable. The results in Table 4.5. were adjusted for potential confounders of age and pattern of dental clinic attendance, as these factors were found to be marginally or statistically significant in the saturated models ($P < ,10$).

Table 4.2. Univariate statistical results using logistic regression with the dependent variable self-medication (Sa). The variable is coded as 1 if applied and 0 otherwise

Variable	Code 0; n (%)	Code 1; n (%)	Odds ratio (90% CI)	P value
Education level				
Other (n=273)	85 (31,14)	188 (68,86)	1	
Middle school or less (n=83)	27 (32,53)	56 (67,47)	0,938 (0,606-1,468)	0,811
Marital status				
Other (n=224)	74 (33,04)	150 (66,96)	1	
Never married (n=132)	38 (28,79)	94 (71,21)	1,22 (0,826-1,815)	0,405
Household income				
Other (n=123)	41 (33,33)	82 (66,67)	1	
>Min wage (n=233)	71 (30,47)	162 (69,53)	1,141 (0,769-1,686)	0,58
Residence				
Other (n=183)	61 (33,33)	122 (66,67)	1	
Urban (n=173)	51 (29,48)	122 (70,52)	1,196 (0,821-1,745)	0,434
Pattern of dental clinic attendance				
Other (n=55)	18 (32,73)	37 (67,27)	1	
Goes when has a problem (n=301)	94 (31,23)	207 (68,77)	1,071 (0,632-1,778)	0,826
Sex				
Male (n=134)	51 (38,06)	83 (61,94)	1	
Female (n=222)	61 (27,48)	161 (72,52)	1,622 (1,105-2,38)	0,038 **
Age (cont. data)				
			0,983 (0,97-0,996)	0,035 **
ASA				
Other (n=235)	75 (31,91)	160 (68,09)	1	
ASA1 (n=121)	37 (30,58)	84 (69,42)	1,064 (0,717-1,591)	0,797
Jaw				
Mandible (n=184)	61 (33,15)	123 (66,85)	1	
Maxilla (n=171)	50 (29,24)	121 (70,76)	1,2 (0,823-1,754)	0,427
Tooth type				
Anterior (n=31)	12 (38,71)	19 (61,29)	1	

Table 4.2. (continued) Univariate statistical results using logistic regression with the dependent variable self-medication (Sa). The variable is coded as 1 if applied and 0 otherwise

Variable	Code 0; n (%)	Code 1; n (%)	Odds ratio (90% CI)	P value
Posterior (n=324)	99 (30,56)	225 (69,44)	1,435 (0,746-2,695)	0,352
Duration of pain (cont. data)			0,999 (0,9998-1,000)	0,102 *
Pulpal status				
Necrosis (n=132)	39 (29,55)	93(70,45)	1	
SIP (n=224)	73(32,59)	151(67,41)	0,867 (0,584-1,28)	0,55
Periapical status				
Other (n=297)	91 (30,64)	206 (69,36)	1	
Normal (n=59)	21 (35,59)	38 (64,41)	0,799 (0,491-1,32)	0,455
Max pain (cont. data)			1,347 (1,216-1,497)	< 0,001 **
Min pain (cont. data)			1,214 (1,067-1,39)	0,016 **

Variables showing statistical significance are indicated by asterisks (* for $p \leq 0.10$, ** for $p < 0.05$). Abbreviations used: ASA = American Society of Anaesthesiologists Physical Status Classification System; SIP = symptomatic irreversible pulpitis

Table 4.3. Univariate statistical results using logistic regression with the dependent variable home remedies (Sb). The variable is coded as 1 if applied and 0 otherwise

Variable	Code 0; n (%)	Code 1; n (%)	Odds ratio (90% CI)	P value
Education level				
Other (n=273)	93 (34,07)	180 (65,93)	1	
Middle school or less (n=83)	33 (39,76)	50 (60,24)	0,783 (0,513-1,201)	0,343
Marital status				
Other (n=224)	85 (37,95)	139 (62,05)	1	
Never married (n=132)	41 (31,06)	91 (68,94)	1,357 (0,928-1,999)	0,19
Household income				
Other (n=123)	42 (34,15)	81 (65,85)	1	
>Min wage (n=233)	84 (36,05)	149 (63,95)	0,92 (0,624-1,349)	0,721
Residence				
Other (n=183)	66 (36,07)	117 (63,93)	1	
Urban (n=173)	60 (34,68)	113 (65,32)	1,062 (0,738-1,531)	0,785

Table 4.3. (continued) Univariate statistical results using logistic regression with the dependent variable home remedies (Sb). The variable is coded as 1 if applied and 0 otherwise

Variable	Code 0; n (%)	Code 1; n (%)	Odds ratio (90% CI)	P value
Pattern of dental clinic attendance				
Other (n=55)	14 (25,45)	41 (74,55)	1	
Goes when has a problem (n=301)	112 (37,21)	189 (62,79)	0,576 (0,327-0,979)	0,097 *
Sex				
Male (n=134)	57 (42,54)	77 (57,46)	1	
Female (n=222)	69 (31,08)	153 (68,92)	1,641 (1,130-2,386)	0,029 **
Age (cont. data)				
			0,979 (0,966-0,992)	0,008 **
ASA				
Other (n=235)	81 (34,47)	154 (65,53)	1	
ASA1 (n=121)	45 (37,19)	76 (62,81)	0,888 (0,606-1,306)	0,611
Jaw				
Mandible (n=184)	63 (34,24)	121 (65,76)	1	
Maxilla (n=171)	63 (36,84)	108 (63,16)	0,893 (0,619-1,286)	0,609
Tooth type				
Anterior (n=31)	12 (38,71)	19 (61,29)	1	
Posterior (n=324)	114 (35,19)	210 (64,81)	1,163 (0,606-2,179)	0,695
Duration of pain (cont. data)				
			1,000 (0,999-1,001)	0,953
Pulpal status				
Necrosis (n=132)	43 (32,58)	93(67,42)	1	
SIP (n=224)	83(37,05)	151(62,95)	0,821 (0,559-1,199)	0,394
Periapical status				
Other (n=297)	106 (35,69)	191 (64,31)	1	
Normal (n=59)	20 (33,90)	39 (66,10)	1,082 (0,665-1,793)	0,793
Max pain (cont. data)				
			1,360 (1,229-1,511)	< 0,001 **
Min pain (cont. data)				
			1,184 (1,046-1,346)	0,027 **

Variables that are statistically significant are indicated by asterisks (* for $P \leq 0.10$, ** for $P < 0.05$). Abbreviations used: ASA = American Society of Anaesthesiologists Physical Status Classification System; SIP = symptomatic irreversible pulpitis.

Table 4.4. Univariate statistical results using logistic regression with the dependent variables: application of home remedies OR speaking with a relative, friend, or neighbour OR application of alternate healthcare (Sb OR Sc OR Sd, respectively). Each variable is coded as 1 if applied and 0 otherwise

Variable	Code 0; n (%)	Code 1; n (%)	Odds ratio (90% CI)	P value
Education level				
Other (n=273)	75 (27,47)	198 (72,53)	1	
Middle school or less (n=83)	31 (32,53)	52 (62,65)	0,635 (0,412-0,986)	,086 *
Marital status				
Other (n=224)	74 (33,04)	150 (66,96)	1	
Never married (n=132)	32 (24,24)	100 (75,76)	1,542 (1,03-2,332)	,081 *
Household income				
Other (n=123)	38 (30,89)	85 (69,11)	1	
>Min wage (n=233)	68 (29,18)	165 (70,82)	1,085 (0,725-1,613)	,737
Residence				
Other (n=183)	59 (32,24)	124 (67,76)	1	
Urban (n=173)	47 (27,17)	126 (72,83)	1,276 (0,87-1,874)	,296
Pattern of dental clinic attendance				
Other (n=55)	9 (16,36)	46 (83,64)	1	
Goes when has a problem (n=301)	97 (32,23)	204 (67,77)	0,411 (0,21-0,751)	,021 **
Sex				
Male (n=134)	47 (35,07)	87 (64,93)	1	
Female (n=222)	59 (26,58)	163 (73,42)	1,492 (1,011-2,201)	,09 *
Age (cont. data)				
			0,977 (0,964-0,991)	,005 **
ASA				
Other (n=235)	69 (29,36)	166 (70,64)	1	
ASA1 (n=121)	37 (30,58)	84 (69,42)	0,944 (0,636-1,415)	,812
Jaw				
Mandible (n=184)	51 (27,72)	133 (72,28)	1	
Maxilla (n=171)	55 (32,16)	116 (67,84)	0,809 (0,551-1,185)	,361

Table 4.4. (continued) Univariate statistical results using logistic regression with the dependent variables: application of home remedies OR speaking with a relative, friend, or neighbour OR application of alternate healthcare (Sb OR Sc OR Sd, respectively). Each variable is coded as 1 if applied and 0 otherwise

Variable	Code 0; n (%)	Code 1; n (%)	Odds ratio (90% CI)	P value
Tooth type				
Anterior (n=31)	8 (25,81)	23 (74,19)	1	
Posterior (n=324)	98 (30,25)	226 (69,75)	0,802 (0,381-1,577)	,606
Duration of pain (cont. data)			1,000 (0,999-1,001)	,999
Pulpal status				
Necrosis (n=132)	34 (25,76)	98 (74,24)	1	
SIP (n=224)	72 (32,14)	152 (67,86)	0,732 (0,487-1,092)	,204
Periapical status				
Other (n=297)	87 (29,29)	210 (70,71)	1	
Normal (n=59)	19 (32,20)	40 (67,80)	0,872 (0,531-1,461)	,655
Max pain (cont. data)			1,354 (1,222-1,507)	< ,001 **
Min pain (cont. data)			1,171 (1,03-1,341)	,049 **

Variables with statistical significance are indicated by asterisks (* for $P \leq 0.10$, ** for $P < 0.05$). Abbreviations used: ASA = American Society of Anaesthesiologists Physical Status Classification System; SIP = symptomatic irreversible pulpitis.

Table 4.5. The final (reduced) multivariate combined models for the 3 tested self-care conditions, and their accuracy performances at different threshold values

Sa H-L test $P = ,469$	Estimate	Std. Error	z value	P value	Odds ratio (90% CI)	(Threshold) accuracy; sensitivity; specificity
(Intercept)	-0,973	0,605	-1,607	,108	0,378 (0,138, 1,017)	(0,6) 0,70; 0,84; 0,38 (0,65) 0,68; 0,77; 0,48 (0,685) [§] 0,63; 0,66; 0,54
Age	-0,015	0,008	-1,768	,077	0,985 (0,972, 0,999)	
Max pain	0,291	0,063	4,590	<,001	1,338 (1,207, 1,488)	
Sb H-L test $P = ,374$	Estimate	Std. Error	z value	P value	Odds ratio (90% CI)	(Threshold) accuracy; sensitivity; specificity
(Intercept)	-0,599	0,656	-0,913	,361	0,549 (0,186, 1,618)	(0,5) 0,66; 0,89; 0,25 (0,6) 0,65; 0,77; 0,44 (0,65) [§] 0,65; 0,68; 0,60
Age	-0,019	0,008	-2,296	,022	0,981 (0,968, 0,995)	
Pattern of dental clinic attendance	-0,637	0,350	-1,822	,068	0,529 (0,291, 0,925)	
Max pain	0,309	0,064	4,817	<,001	1,362 (1,228, 1,517)	

Table 4.5. (continued) The final (reduced) multivariate combined models for the 3 tested self-care conditions, and their accuracy performances at different threshold values

Sb OR Sc OR Sd H-L test $P = ,280$	Estimate	Std. Error	z value	P value	Odds ratio (90% CI)	(Threshold) accuracy; sensitivity; specificity
(Intercept)	0,066	0,692	0,095	,924	1,068 (0,344, 3,384)	(0,6) 0,71; 0,86; 0,36 (0,65) 0,69; 0,79; 0,46 (0,7) [§] 0,67; 0,70; 0,59
Age	-0,021	0,009	-2,396	,017	0,979 (0,966, 0,993)	
Pattern of dental clinic attendance	-1,004	0,404	-2,486	,013	0,367 (0,181, 0,690)	
Max pain	0,309	0,066	4,696	<,001	1,362 (1,225, 1,522)	

[§] Mean; Abbreviations used; CI: Confidence Interval, H-L test: Hosmer-Lemeshow test, Sa: self-medication, Sb: home remedies, Sc: speaking with a relative, friend, or neighbour, Sd: alternative healthcare (i.e., praying/meditation)

4.2. Pain Relief Analysis

Table 4.6 presents the descriptive pain relief data in summary, while detailed results are shown in Table 4.7. Figure 4.1. illustrates the statistical comparisons between and among groups. The statistical outcomes remained largely consistent even when the analysis was restricted to patients with symptomatic irreversible pulpitis (see Table 4.8 and Figure 4.2.). However, in this subgroup, no statistically significant difference was observed between formal use of prescription medicine (systemic; i.e., antibiotic [Fb1]) and formal use of antibiotic + analgesic combination ([Fb3]; $P > ,05$). Both of these approaches demonstrated significantly higher pain relief scores compared to the formal use of OTC medicine (systemic [Fb2], and local/topical [Fb4]) ($P = ,026$) (see Figure 4.2.).

Table 4.6. Summary of the number of patients applying a care method and their descriptive pain relief scores. Pain relief was rated on a 5-point scale (0-4). All patients are included regardless of pulpal status

	n	mode	median	min-max
SELF-CARE (TOTAL)	874 [n (available score) =790] [‡]	1	1	0-4
Sa (Self-medication)	320 [n(available score)=315]	2	2	0-4
Sa1 (prescription medicine; systemic)	4	N/A [†]	N/A	0-4
Sa2 (OTC medicine; systemic)	257 [n(available score)=252]	2	2	0-4
Sa2 (NSAID)	150 [n(available score)=148]	4	3	0-4
Sa2 (Acetaminophen)	100 [n(available score)=97]	1	2	0-4
Sa3 (Antibiotic + analgesic combination)	9	1	1	0-4
Sa4 (OTC medicine; local, topical)	50	0	2	0-4

Table 4.6. (continued) Summary of the number of patients applying a care method and their descriptive pain relief scores. Pain relief was rated on a 5-point scale (0-4). All patients are included regardless of pulpal status

	n	mode	median	min-max
Sb (Home remedies)	466 [n(available score)=463]	0	1	0-4
Sb1 (OTC dental products; Listerine)	19	0	0	0-3
Sb2 (Rinsing the mouth w/ warm water...)	123 [n(available score)=122]	0	1	0-4
Sb3 (Placing ice on the affected area...)	13	2	2	0-3
Sb4 (Placing Aspirin or...)	4	1	1	0-3
Sb5 (Massaging the gums)	13	0 & 1	1	0-3
Sb6 (Drinking/applying alcohol...)	19	4	3	0-4
Sb7 (Putting spices...)	95 [n(available score)=94]	0	1	0-4
Sb8 (Putting olive...)	25	0	0	0-2
Sb9 (Putting toothpaste...)	6	2	2	0-4
Sb10 (Brushing the tooth)	97 [n(available score)=96]	0	1	0-4
Sb11 (Placing cold/warm compress...)	37	1	1	0-4
Sb12 (Pressing/massaging the jaw...)	4	1	1	0-2
Sc (Speaking with a relative...)	76 [n(available score)=0]	-	-	-
Sd (Alternative healthcare: praying...)	12	1	1	0-3
FORMAL CARE (TOTAL)	373 [n(available score)=177]	4	3	0-4
Fa (Professional services)	200 [n(available score)=6]	2 & 4	2,5	0-4
Fb (Medication use by prescription...)	173 [n(available score)=171]	4	3	0-4
Fb1 (Prescrip. med.; systemic; antibiotic)	25 [n(available score)=24]	4	4	0-4
Fb2 (OTC medicine; systemic)	40 [n(available score)=39]	3 & 4	3	0-4
Fb2 (NSAID)	32	4	3	0-4
Fb2 (Acetaminophen)	3	2	2	1-2
Fb3 (Antibiotic + analgesic combination)	86	4	3	0-4
Fb4 (OTC medicine; local, topical)	22	1	2	0-4

†N/A = Not applicable. Summary statistics were not reported due to insufficient observations for certain scores.
 ‡Scoring was sometimes not possible for reasons such as the patient being unable to recall pain relief or actions like hospital referral, recommendations to see a dentist, or drug prescription/suggestion that could not be scored.
 Abbreviations used: S = self-care, F = formal care, Sa = self-medication, Sb = home remedies, Sc = speaking with a relative, friend, or neighbour, Sd = alternative healthcare, Fa = professional services, Fb = medication use by prescription or professional advice, Sa1 = self-medication with prescription medicine (systemic), Sa2 = self-medication with OTC medicine (systemic), Sa3 = self-medication with antibiotic + analgesic combination, Sa4 = self-medication with OTC medicine (local, topical), Sb1 = OTC dental products (Listerine was the only product used by the patients; active pharmaceutical ingredients: eucalyptol, menthol, methyl salicylate, thymol), Sb2 = rinsing the mouth with combinations of warm water, salt, vinegar, and carbonate, Sb3 = placing ice on the affected area or rinsing the mouth with cold water, Sb4 = placing aspirin or another analgesic on the affected area, Sb5 = massaging the gums, Sb6 = drinking alcohol/liquor or applying it to the tooth with a cotton ball, Sb7 = putting spices such as cloves, ginger, garlic, thyme, and mint on the tooth or applying the oil or tea forms of these substances to the tooth, Sb8 = putting olives on the tooth, Sb9 = putting toothpaste on the tooth, Sb10 = brushing the tooth, Sb11 = placing cold/warm compresses on the jaw, Sb12 = pressing or massaging the jaw from the outside with the palm of the hand, Fb1 = formal use of prescription medicine (systemic; antibiotics were the only medicine prescribed), Fb2 = formal use of OTC medicine (systemic), Fb3 = formal use of antibiotic + analgesic combination, Fb4 = formal use of OTC medicine (local, topical), NSAID = nonsteroidal anti-inflammatory drug

Table 4.7. Detailed presentation of the number of patients applying a specific care method and their descriptive pain relief scores. Pain relief was rated on a 5-point scale (0-4). All patients are included regardless of pulpal status

	n	mode	median	min-max
SELF-CARE (TOTAL)	874 [n (available score) =790]‡	1	1	0-4
Sa (Self-medication)	320 [n(available score)=315]	2	2	0-4
Sa1 (prescription medicine; systemic)	4	N/A†	N/A	0-4
Sa1 (antibiotic)	3	N/A	N/A	0-4
Sa1 (corticosteroid)	0	-	-	-
Sa1 (opiate)	1	3	3	3-3
Sa2 (OTC medicine; systemic)	257 [n(available score)=252]	2	2	0-4
Sa2 (NSAID)	150 [n(available score)=148]	4	3	0-4
Sa2 (acetaminophen)	100 [n(available score)=97]	1	2	0-4
Sa2 (NSAID + acetaminophen)	2	N/A	2,5	2-3
Sa2 (Aspirin; <i>API: acetylsalicylic acid</i>)	1	4	4	4-4
Sa2 (unknown analgesic)	4	4	3,5	1-4
Sa3 (antibiotic +analgesic combination)	9	1	1	0-4
Sa4 (OTC medicine; local, topical)	50	0	2	0-4
Sa4 (Kloroben, Andorex; <i>API: chlorhexidine gluconate, benzydamine HCl</i>)	18	2	1	0-4
Sa4 (Klorhex; <i>API: chlorhexidine gluconate</i>)	1	2	2	2-2
Sa4 (Majezik spray/mouthwash; <i>API: flurbiprofen</i>)	8	N/A	2	0-4
Sa4 (Vemcaine spray; <i>API: lidocaine</i>)	4	4	4	0-4
Sa4 (Dişinol; <i>API: clove oil, phenol, chlorobutanol</i>)	9	2	2	0-4
Sa4 (unknown spray/mouthwash)	10	0	0,5	0-4
Sb (Home remedies)	466 [n(available score)=463]	0	1	0-4
Sb1 (OTC dental products; Listerine)	19	0	0	0-3
Sb2 (Rinsing the mouth w/ warm water...)	123 [n(available score)=122]	0	1	0-4
Sb2 (salt + vinegar)	11	1	1	0-4
Sb2 (vinegar)	11	0	0	0-4
Sb2 (warm water)	6	1	1,5	1-3
Sb2 (salt + warm water)	82 [n(available score)=81]	0	1	0-4
Sb2 (carbonate + warm water)	7	1	1	0-3
Sb2 (vinegar + carbonate + salt)	1	0	0	0-0
Sb2 (vinegar + carbonate)	1	2	2	2-2
Sb2 (carbonate + salt + warm water)	4	0	0,5	0-1
Sb3 (Placing ice on the affected area...)	13	2	2	0-3
Sb4 (Placing Aspirin or...)	4	1	1	0-3

Table 4.7. (continued) Detailed presentation of the number of patients applying a specific care method and their descriptive pain relief scores. Pain relief was rated on a 5-point scale (0-4). All patients are included regardless of pulpal status

	n	mode	median	min-max
Sb5 (massaging the gums)	13	0 & 1	1	0-3
Sb6 (drinking/applying alcohol...)	19	4	3	0-4
Sb6 (drinking alcohol/liquor)	3	N/A	2	0-3
Sb6 (applying alcohol/liquor/cologne to the tooth...)	16	4	3	0-4
Sb7 (putting spices...)	95 [n(available score)=94]	0	1	0-4
Sb7 (clove)	65 [n(available score)=64]	0	1	0-4
Sb7 (garlic)	16	0	1	0-3
Sb7 (thyme)	9	1	1	0-4
Sb7 (ginger)	3	0	0	0-1
Sb7 (mint oil)	1	2	2	2-2
Sb7 (sage)	1	0	0	0-0
Sb8 (olive)	25	0	0	0-2
Sb9 (toothpaste)	6	2	2	0-4
Sb10 (brushing the tooth)	97 [n(available score)=96]	0	1	0-4
Sb11 (placing cold/warm compress...)	37	1	1	0-4
Sb11 (cold compress)	32	1	1	0-4
Sb11 (warm compress)	5	2	2	0-3
Sb12 (pressing/massaging the jaw...)	4	1	1	0-2
Sb.Marginals	11	0	1	0-2
Sc (Speaking with a relative...)	76 [n(available score)=0]	-	-	-
Sd (Alternative healthcare: praying...)	12	1	1	0-3
FORMAL CARE (TOTAL)	373 [n(available score)=177]	4	3	0-4
Fa (Professional services)	200 [n(available score)=6]	2 & 4	2,5	0-4
Fa1 (dentist)	149 [n(available score)=5]	2 & 4	2	0-4
Fa2 (physician)	25 [n(available score)=0]	-	-	-
Fa3 (emergency service)	14 [n(available score)=1]	3	3	3-3
Fa4 (pharmacist)	12[n(available score)=0]	-	-	-
Fb (Medication use by prescription...)	173 [n(available score)=171]	4	3	0-4
Fb1 (prescription medicine; systemic)	25 [n(available score)=24]	4	4	0-4
Fb1(antibiotic)	25 [n(available score)=24]	4	4	0-4
Fb1 (corticosteroid)	0	-	-	-
Fb1 (opiate)	0	-	-	-
Fb2 (OTC medicine; systemic)	40 [n(available score)=39]	3 & 4	3	0-4
Fb2 (NSAID)	32	4	3	0-4
Fb2 (acetaminophen)	3	2	2	1-2

Table 4.7. (continued) Detailed presentation of the number of patients applying a specific care method and their descriptive pain relief scores. Pain relief was rated on a 5-point scale (0-4). All patients are included regardless of pulpal status

	n	mode	median	min-max
Fb2 (Aspirin; <i>API: acetylsalicylic acid</i>)	0	-	-	-
Fb2 (unknown analgesic)	5 [n(available score)=4]	3	3	2-3
Fb3 (antibiotic + analgesic combination)	86	4	3	0-4
Fb4 (OTC medicine; local, topical)	22	1	2	0-4
Fb4 (Kloroben, Andorex; <i>API: chlorhexidine gluconate, benzydamine HCl</i>)	8	1	1	0-3
Fb4 (Klorhex; <i>API: chlorhexidine gluconate</i>)	3	1	2	1-3
Fb4 (Benzydamine HCl)	1	3	3	3-3
Fb4 (Majezik spray/mouthwash; <i>API: flurbiprofen</i>)	2	N/A	1,5	1-2
Fb4 (Vemcaine spray; <i>API: lidocaine</i>)	2	N/A	2,5	2-3
Fb4 (Dişinol; <i>API: clove oil, phenol, chlorobutanol</i>)	1	4	4	4-4
Fb4 (unknown spray/mouthwash)	5	0	2	0-4

†N/A = Not applicable. Summary statistics could not be reliably reported due to a low number of observations for certain scores. ‡Scoring was not always feasible for reasons such as the patient not recalling pain relief, or actions like hospital referral, recommendations to see a dentist, or drug prescription/suggestion that could not be scored. Abbreviations used: S = self-care, F = formal care, Sa = self-medication, Sb = home remedies, Sc = speaking with a relative, friend, or neighbour, Sd = alternative healthcare, Fa = professional services, Fb = medication use by prescription or professional advice, Sa1 = self-medication with prescription medicine (systemic), Sa2 = self-medication with over-the-counter medicine (systemic), Sa3 = self-medication with antibiotic + analgesic combination, Sa4 = self-medication with over-the-counter medicine (local, topical), Sb1 = over-the-counter dental products (Listerine was the only product used by the patients; active pharmaceutical ingredients: eucalyptol, menthol, methyl salicylate, thymol), Sb2 = rinsing the mouth with combinations of warm water, salt, vinegar, and carbonate, Sb3 = placing ice on the affected area or rinsing the mouth with cold water, Sb4 = placing aspirin or another analgesic on the affected area, Sb5 = massaging the gums, Sb6 = drinking alcohol or liquor or applying it to the tooth with a cotton ball, Sb7 = putting spices such as cloves, ginger, garlic, thyme, and mint on the tooth or applying the oil or tea forms of these substances to the tooth, Sb8 = putting olives on the tooth, Sb9 = putting toothpaste on the tooth, Sb10 = brushing the tooth, Sb11 = placing cold or warm compresses on the jaw, Sb12 = pressing or massaging the jaw from the outside with the palm of the hand, Fb1 = formal use of prescription medicine (systemic), Fb2 = formal use of over-the-counter medicine (systemic), Fb3 = formal use of antibiotic + analgesic combination, Fb4 = formal use of over-the-counter medicine (local, topical), NSAID = nonsteroidal anti-inflammatory drug, API = active pharmaceutical ingredient

Table 4.8. Number of symptomatic irreversible pulpitis (SIP) patients applying a specific care method and their descriptive pain relief scores. Pain relief was rated on a 5-point scale (0-4)

	n	mode	median	min-max
SELF-CARE (TOTAL)	514 [n(available score)=463]‡	1&2	1	0-4
Sa (Self-medication)	196 [n(available score)=192]	4	2	0-4
Sa1 (prescription medicine; systemic)	3	N/A†	N/A	1-4

Table 4.8. (continued) Number of symptomatic irreversible pulpitis (SIP) patients applying a specific care method and their descriptive pain relief scores. Pain relief was rated on a 5-point scale (0-4)

	n	mode	median	min-max
Sa1 (antibiotic)	2	N/A	N/A	1-4
Sa1 (corticosteroid)	0	-	-	-
Sa1 (opiate)	1	3	3	3-3
Sa2 (OTC medicine; systemic)	157 [n(available score)=156]	4	2	0-4
Sa2 (NSAID)	92 [n(available score)=91]	4	3	0-4
Sa2 (acetaminophen)	63 [n(available score)=61]	1	2	0-4
Sa2 (NSAID + acetaminophen)	1	2	2	2-2
Sa2 (Aspirin; <i>API: acetylsalicylic acid</i>)	0	-	-	-
Sa2 (unknown analgesic)	3	4	4	1-4
Sa3 (antibiotic + analgesic combination)	4	1	1,5	1-2
Sa4 (OTC medicine; local, topical)	29	2	2	0-4
Sa4 (Kloroben, Andorex; <i>API: chlorhexidine gluconate, benzydamine HCl</i>)	11	2	2	0-4
Sa4 (Klorhex; <i>API: chlorhexidine gluconate</i>)	0	-	-	-
Sa4 (Majezik spray/mouthwash; <i>API: flurbiprofen</i>)	5	N/A	2	0-4
Sa4 (Vemcaine spray; <i>API: lidocaine</i>)	1	4	4	4-4
Sa4 (Dişinol; <i>API: clove oil, phenol, chlorobutanol</i>)	7	4	2	0-4
Sa4 (unknown spray/mouthwash)	5	0	2	0-4
Sb (Home remedies)	270 [n(available score)=267]	0	1	0-4
Sb1 (OTC dental products; Listerine)	10	0	0,5	0-3
Sb2 (rinsing the mouth w/ warm water...)	69 [n(available score)=68]	1	1	0-4
Sb2 (salt + vinegar)	7	1	1	0-3
Sb2 (vinegar)	5	0	0	0-2
Sb2 (warm water)	4	1	1,5	1-3
Sb2 (salt + warm water)	48 [n(available score)=47]	1	1	0-4
Sb2 (carbonate + warm water)	3	1	2	1-3
Sb2 (vinegar + carbonate + salt)	0	-	-	-
Sb2 (vinegar + carbonate)	0	-	-	-
Sb2 (carbonate + salt + warm water)	2	0	0	0-0
Sb3 (placing ice on the affected area...)	6	2	2	0-2
Sb4 (placing Aspirin or...)	4	1	1	0-3
Sb5 (massaging the gums)	8	1	1	0-3
Sb6 (drinking/applying alcohol...)	13	4	3	0-4

Table 4.8. (continued) Number of symptomatic irreversible pulpitis (SIP) patients applying a specific care method and their descriptive pain relief scores. Pain relief was rated on a 5-point scale (0-4)

	n	mode	median	min-max
Sb6 (drinking alcohol/liquor)	2	N/A	1,5	0-3
Sb6 (applying alcohol/liquor/cologne to the tooth...)	11	4	3	0-4
Sb7 (putting spices...)	52	0	1	0-4
Sb7 (clove)	36	0	1	0-4
Sb7 (garlic)	11	0	0	0-3
Sb7 (thyme)	3	1	1	1-4
Sb7 (ginger)	2	N/A	0,5	0-1
Sb7 (mint oil)	0	-	-	-
Sb7 (sage)	0	-	-	-
Sb8 (olive)	16	0	0	0-2
Sb9 (toothpaste)	3	N/A	2	0-4
Sb10 (brushing the tooth)	64 [n(available score)=63]	1	1	0-4
Sb11 (placing cold/warm compress...)	21	1	1	0-4
Sb11 (cold compress)	17	1	1	0-4
Sb11 (warm compress)	4	N/A	1,5	0-3
Sb12 (pressing/massaging the jaw...)	3	1	1	0-1
Sb.Marginals	11	0	1	0-2
Sc (Speaking with a relative...)	44 [n(available score)=0]	-	-	-
Sd (Alternative healthcare: praying...)	4	0	0,5	0-3
FORMAL CARE (TOTAL)	195 [n(available score)=91]	4	3	0-4
Fa (Professional services)	108 [n(available score)=4]	N/	2,5	0-4
Fa1 (dentist)	82 [n(available score)=3]	N/A	2	0-4
Fa2 (physician)	11 [n(available score)=0]	-	-	-
Fa3 (emergency service)	8 [n(available score)=1]	3	3	3-3
Fa4 (pharmacist)	7 [n(available score)=0]	-	-	-
Fb (Medication use by prescription...)	87	4	3	0-4
Fb1 (prescription medicine; systemic)	10	4	3,5	0-4
Fb1(antibiotic)	10	4	3,5	0-4
Fb1 (corticosteroid)	0	-	-	-
Fb1 (opiate)	0	-	-	-
Fb2 (OTC medicine; systemic)	25	4	3	0-4
Fb2 (NSAID)	19	4	3	0-4
Fb2 (acetaminophen)	3	2	2	1-2
Fb2 (Aspirin; <i>API: acetylsalicylic acid</i>)	0	-	-	-
Fb2 (unknown analgesic)	3	3	3	2-3

Table 4.8. (continued) Number of symptomatic irreversible pulpitis (SIP) patients applying a specific care method, and their descriptive pain relief scores (5-point scale; 0-4)

	n	mode	median	min-max
Fb3 (antibiotic + analgesic combination)	38	4	3,5	0-4
Fb4 (OTC medicine; local, topical)	14	1	1,5	0-4
Fb4 (Kloroben, Andorex; API: chlorhexidine gluconate, benzydamine HCl)	6	1	1	0-3
Fb4 (Klorhex; API: chlorhexidine gluconate)	1	1	1	1-1
Fb4 (Benzydamine HCl)	0	-	-	-
Fb4 (Majezik spray/mouthwash; API: flurbiprofen)	2	N/A	1,5	1-2
Fb4 (Vemcaine spray; API: lidocaine)	1	3	3	3-3
Fb4 (Dişinol; API: clove oil, phenol, chlorobutanol)	1	4	4	4-4
Fb4 (unknown spray/mouthwash)	3	0	2	0-4

†N/A = Not applicable. Summary statistics were not provided due to an insufficient number of observations for certain scores. ‡Scoring could not always be performed for reasons such as the patient not recalling pain relief, or actions like referral to a hospital, recommendations to see a dentist, or prescription/suggestion of a drug that could not be scored. Abbreviations used: S = self-care, F = formal care, Sa = self-medication, Sb = home remedies, Sc = speaking with a relative, friend, or neighbour, Sd = alternative healthcare, Fa = professional services, Fb = medication use by prescription or professional advice, Sa1 = self-medication with prescription medicine (systemic), Sa2 = self-medication with over-the-counter medicine (systemic), Sa3 = self-medication with antibiotic + analgesic combination, Sa4 = self-medication with over-the-counter medicine (local, topical), Sb1 = over-the-counter dental products (Listerine was the only product used by the patients; active pharmaceutical ingredients: eucalyptol, menthol, methyl salicylate, thymol), Sb2 = rinsing the mouth with combinations of warm water, salt, vinegar, and carbonate, Sb3 = placing ice on the affected area or rinsing the mouth with cold water, Sb4 = placing aspirin or another analgesic on the affected area, Sb5 = massaging the gums, Sb6 = drinking alcohol or liquor or applying it to the tooth with a cotton ball, Sb7 = putting spices such as cloves, ginger, garlic, thyme, and mint on the tooth or applying the oil or tea forms of these substances to the tooth, Sb8 = putting olives on the tooth, Sb9 = putting toothpaste on the tooth, Sb10 = brushing the tooth, Sb11 = placing cold or warm compresses on the jaw, Sb12 = pressing or massaging the jaw from the outside with the palm of the hand, Fb1 = formal use of prescription medicine (systemic), Fb2 = formal use of over-the-counter medicine (systemic), Fb3 = formal use of antibiotic + analgesic combination, Fb4 = formal use of over-the-counter medicine (local, topical), NSAID = nonsteroidal anti-inflammatory drug, API = active pharmaceutical ingredient

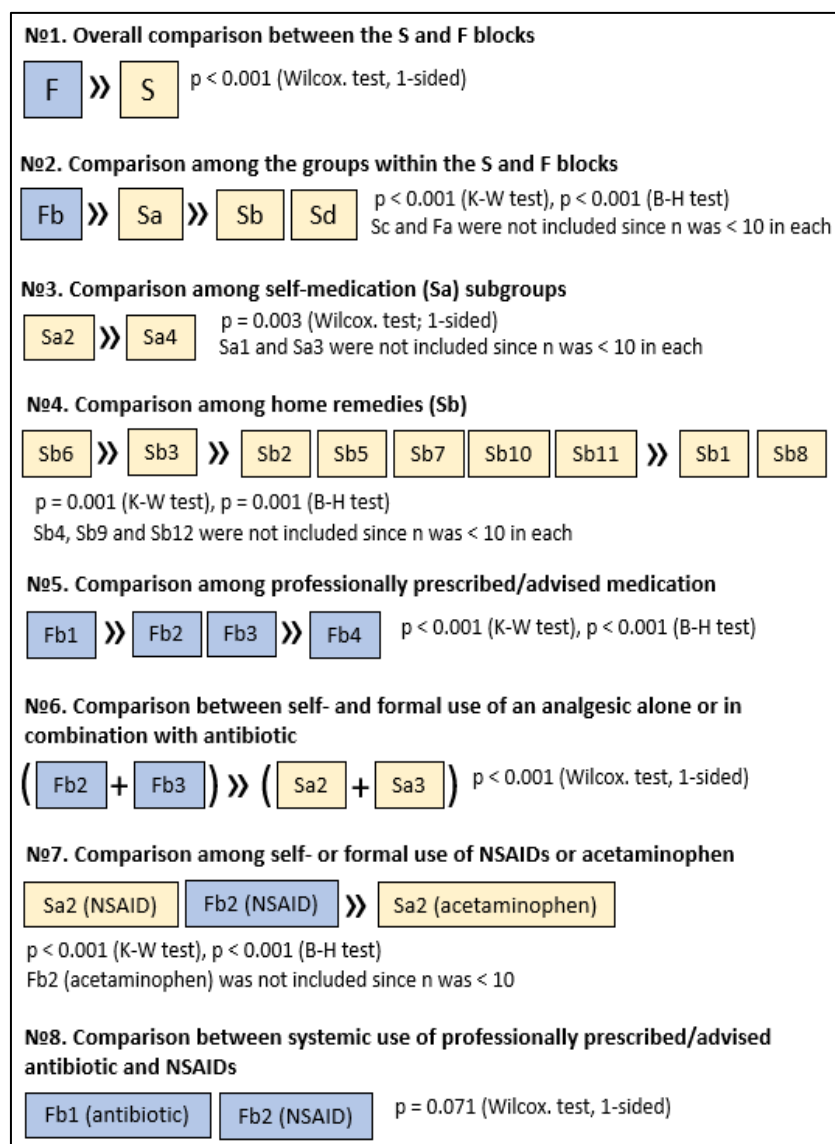


Figure 4.1. Statistical comparisons of pain relief regardless of the pulpal status; the symbol “»” indicates both the presence and direction of statistical significance ($\alpha = 0.05$ for all analyses). Abbreviations: S = self-care, F = formal care, Sa = self-medication, Sb = home remedies, Sc = speaking with a relative, friend, or neighbour, Sd = alternative healthcare, Fa = professional services, Fb = medication use by prescription or professional advice, Sa1 = self-medication with prescription medicine (systemic), Sa2 = self-medication with OTC medicine (systemic), Sa3 = self-medication with antibiotic + analgesic combination, Sa4 = self-medication with OTC medicine (local, topical), Sb1 = OTC dental products (Listerine was the only product used by the patients), Sb2 = rinsing the mouth with combinations of warm water, salt, vinegar, and carbonate, Sb3 = placing ice on the affected area or rinsing the mouth with cold water, Sb4 = placing aspirin or another analgesic on the affected area, Sb5 = massaging the gums, Sb6 = drinking alcohol or liquor or applying it to the tooth with a cotton ball, Sb7 = putting spices such as cloves, ginger, garlic, thyme, and mint on the tooth or applying the oil or tea forms of these substances to the tooth, Sb8 = putting olives on the tooth, Sb9 = putting toothpaste on the tooth, Sb10 = brushing the tooth, Sb11 = placing cold or warm compresses on the jaw, Sb12 = pressing or massaging the jaw from the outside with the palm of the hand, Fb1 = formal use of prescription medicine (systemic; antibiotics were the only medicine prescribed), Fb2 = formal use of OTC medicine (systemic), Fb3 = formal use of antibiotic + analgesic combination, Fb4 = formal use of OTC medicine (local, topical), NSAID = non-steroidal anti-inflammatory drug, Wilcox. test = Wilcoxon rank sum test with continuity correction, K-W test = Kruskal-Wallis test, B-H test = Benjamini-Hochberg Correction for post-hoc pairwise comparisons.

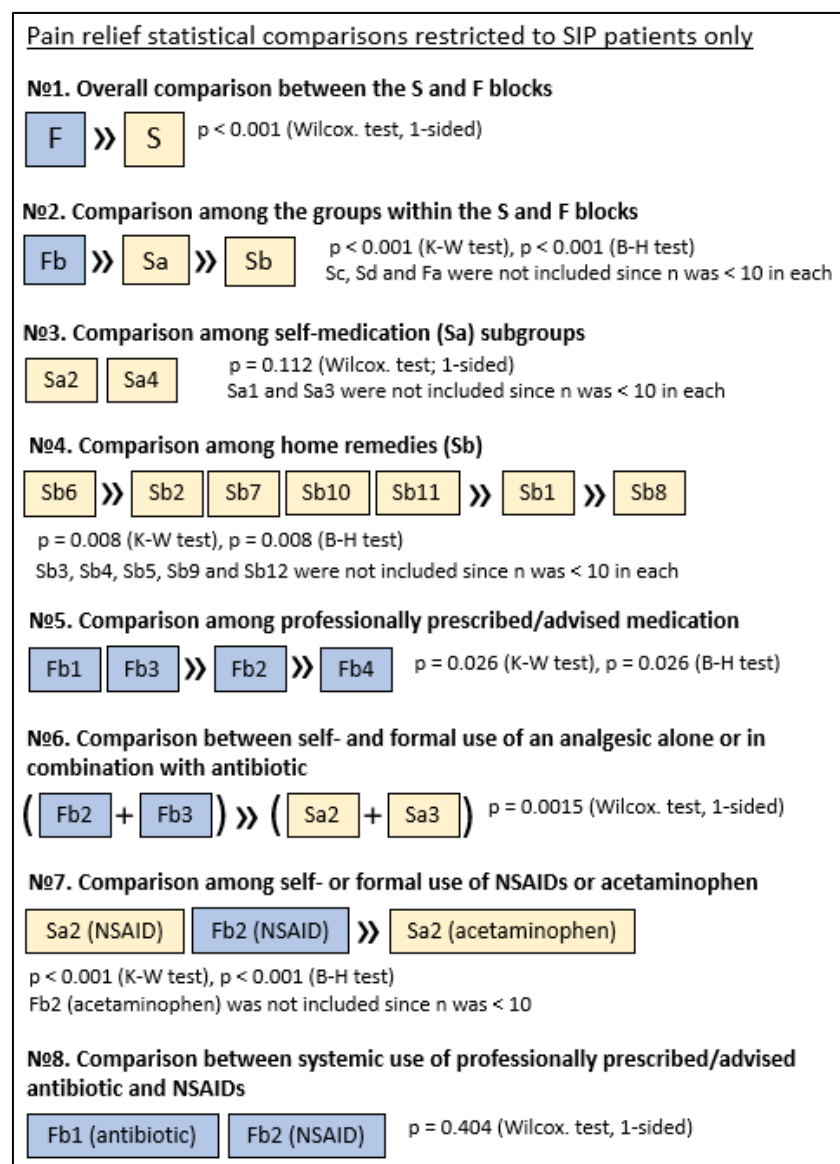


Figure 4.2. Statistical comparisons of pain relief methods in patients with symptomatic irreversible pulpitis (SIP); the symbol “»” indicates both the presence and direction of statistical significance ($\alpha = 0.05$ for all analyses). Abbreviations: S = self-care, F = formal care, Sa = self-medication, Sb = home remedies, Sc = speaking with a relative, friend, or neighbor, Sd = alternative healthcare, Fa = professional services, Fb = medication use by prescription or professional advice, Sa1 = self-medication with prescription medicine (systemic), Sa2 = self-medication with over-the-counter medicine (systemic), Sa3 = self-medication with antibiotic + analgesic combination, Sa4 = self-medication with over-the-counter medicine (local, topical), Sb1 = over-the-counter dental products, Sb2 = rinsing the mouth with combinations of warm water, salt, vinegar, and carbonate, Sb3 = placing ice on the affected area or rinsing the mouth with cold water, Sb4 = placing aspirin or another analgesic on the affected area, Sb5 = massaging the gums, Sb6 = drinking alcohol or liquor or applying it to the tooth with a cotton ball, Sb7 = putting spices such as cloves, ginger, garlic, thyme, and mint on the tooth or applying the oil or tea forms of these substances to the tooth, Sb8 = putting olives on the tooth, Sb9 = putting toothpaste on the tooth, Sb10 = brushing the tooth, Sb11 = placing cold or warm compresses on the jaw, Sb12 = pressing or massaging the jaw from the outside with the palm of the hand, Fb1 = formal use of prescription medicine (systemic; e.g., antibiotics), Fb2 = formal use of over-the-counter medicine (systemic), Fb3 = formal use of antibiotic + analgesic combination, Fb4 = formal use of over-the-counter medicine (local, topical), NSAID = non-steroidal anti-inflammatory drug, Wilcox. test = Wilcoxon rank sum test with continuity correction, K-W test = Kruskal-Wallis test, B-H test = Benjamini-Hochberg Correction for post-hoc pairwise comparisons.

Among home remedies, drinking or applying alcohol and intraoral cold treatments provided significantly greater pain relief than the other methods ($P = ,001$). However, overall, home remedies offered limited pain relief compared to formal care.

Medication with professional guidance was more effective than self-medication, except for NSAIDs, which provided similar relief regardless of whether used under professional guidance or not ($P < ,001$). In patients with symptomatic irreversible pulpitis, no significant difference was found between the formal use of prescription antibiotics and antibiotic-analgesic combinations ($P > ,05$). Both of these formal treatments showed significantly better pain relief compared to OTC medications ($P = ,026$).



5. DISCUSSION

Under this chapter, the findings related to the prevalence, influencing factors, effectiveness, and outcomes of self-care practices in endodontic pain have been discussed in detail.

5.1. Prevalence of Self-Care Practices

The prevalence of self-care practices among patients experiencing endodontic pain is remarkably high, with our study revealing that 89,9% of participants engaged in some form of self-care prior to seeking professional treatment. The observed prevalence aligns with previous reports by Tulip and Palmer (2008). While our observed prevalence is higher, this difference may be attributed to our specific focus on endodontic pain. This finding underscores the significant role that self-care plays in the management of endodontic pain and highlights the importance of understanding these behaviours in clinical practice.

Self-medication emerged as the most prevalent form of self-care in our study. This high prevalence of self-medication is consistent with findings from other studies, such as Cohen et al. (2007). The higher prevalence in our study may be due to the specific nature of endodontic pain, which often drives patients to seek immediate relief through readily available medications.

The reliance on pharmacological approaches for self-care can be attributed to the accessibility of over-the-counter medications and the immediate relief they can provide. However, this high prevalence of self-medication raises concerns about potential misuse and the risks associated with inappropriate medication use, particularly when patients may not be fully aware of the underlying cause of their pain or the potential interactions with other medications they may be taking.

Home remedies were also frequently reported in our study. This finding highlights the importance of cultural and traditional practices in managing dental pain. The prevalence of home remedy use in our study is higher than that reported by Jaiswal, Pachava, Sanikommu, Rawlani, Pydi and Ghanta (2015). This difference may be due to variations in cultural practices and healthcare accessibility between the study populations.

Furthermore, individuals who occasionally or regularly visited the dentist were more likely to engage in at least one of the following self-care practices: using home remedies, consulting a relative, friend, or neighbour, or seeking alternative healthcare options. This observation may be attributed to the increased motivation of regular dental visitors to take a more proactive interest and involvement in managing their own health (Parisius et al., 2014).

The relatively low prevalence of alternative healthcare methods in our study suggests that most patients recognize the need for conventional dental treatment for endodontic issues. However, this figure may vary across different cultural and socioeconomic contexts, as mentioned in section 2.1.1., which emphasized the influence of cultural beliefs on health-seeking behaviours.

When comparing our findings to international studies, we observe some variations in prevalence rates. For instance, our observed rate of self-medication use was slightly higher than Jain et al. (2016)'s findings. This difference could be attributed to variations in healthcare systems, cultural norms, and accessibility of over-the-counter medications between countries.

In conclusion, the high prevalence of self-care practices among patients with endodontic pain emphasizes the critical role these behaviours play in pain management strategies. While self-care can provide temporary relief, it is essential to ensure that patients understand its limitations and the importance of seeking professional dental care.

5.2. Factors Influencing Self-Care Behaviours

Self-care behaviours in the context of endodontic pain are influenced by a complex interplay of various factors, including sociodemographic characteristics, clinical variables, psychological aspects, and cultural influences. Understanding these factors is crucial for developing effective interventions and improving patient outcomes.

Younger patients were observed to engage in self-care practices more frequently compared to older individuals. This tendency may be explained by younger patients' familiarity with the internet, which allows them to easily access information about self-care methods. Previous study by Parisius, Stock-Schröer, Berger, Hermann and Joos (2014) reported that

seeking information about home remedies through media, including the internet, is a typical behaviour among patients. Another study by Heavilin, Gerbert, Page and Gibbs (2011) reported that patients often share their dental problems and seek advice on online social platforms. Interestingly, our findings differ from those of a previous study by Jaiswal et al (2015), which found that elderly individuals more commonly applied self-care methods for dental pain. Moreover, another study by Cohen, Bonito, Akin, Manski, Macek, Edwards and Cornelius (2009) concerning toothache revealed that age had no significant effect on the use of self-care methods. These contrasting results may stem from socio-cultural and economic differences among the study populations.

Regarding gender, previous studies by Arcury et al. (2009), Parisius et al. (2014) and Nusstein and Beck (2003) utilizing univariate analyses have consistently found that females are more likely to adopt various self-care strategies. This pattern was observed in our study as well. However, when other variables were controlled for, gender did not emerge as a statistically significant predictor. Similarly, another multivariate modelling study by Cohen et al. (2009) reported that gender and income, akin to our findings, were not significant factors when assessing diverse self-care applications.

Clinical factors such as pain intensity significantly influence self-care behaviours as well. Our analysis revealed a strong correlation between maximum pain levels reported by participants and their likelihood of engaging in self-care practices. As pain intensity increases, patients are more inclined to seek immediate relief through available means, including over-the-counter medications and home remedies. This finding is consistent with previous studies (Jaiswal et al., 2015) indicating that dental pain often drives individuals to take action quickly in search of alleviation.

The prevalence of certain home remedies also reflects cultural norms surrounding health-seeking behaviour. In some communities, there may be a strong emphasis on utilizing natural or traditional treatments before considering professional healthcare options (Arcury, Grzywacz, Neiberg, Lang, Nguyen, Altizer, Stoller, Bell and Quandt, 2012). Understanding these cultural influences is essential for developing effective patient education strategies that resonate with diverse populations.

The environment in which patients live can impact their access to healthcare resources and influence their self-care behaviours significantly. Urban residents typically have greater access to dental care facilities compared to those living in rural areas where resources may be limited (Cha and Cohen, 2021). This disparity can lead rural patients to rely more heavily on self-care methods due to the challenges associated with accessing timely professional care. Although our study included participants from urban, suburban, and rural areas, no significant differences were observed in self-care behaviours or pain relief outcomes across these settings.

5.3. Effectiveness of Self-Care Methods

The effectiveness of various self-care methods employed by patients experiencing endodontic pain is a critical area of investigation, as it directly impacts the management of pain and the overall treatment experience. Our findings reveal a nuanced landscape where both pharmacological and non-pharmacological approaches are utilized by patients, each with varying degrees of effectiveness.

Pharmacological methods, particularly OTC analgesics, emerged as the most common and effective self-care approach for managing endodontic pain. Among these, NSAIDs demonstrated superior efficacy in providing pain relief. Effectiveness of the NSAIDs, particularly ibuprofen, in managing endodontic pain is well-documented in the literature. Our findings corroborate Moore et al.'s study in 2015, as patients who used NSAIDs reported significantly higher pain relief scores compared to those who used other OTC medications or home remedies.

The mechanism of action of NSAIDs in providing pain relief and reducing inflammation in endodontic conditions is attributed to their ability to inhibit COX enzymes, thereby reducing prostaglandin synthesis. This dual action of pain relief and anti-inflammatory effects can significantly improve patients' comfort levels while they await professional treatment. However, it's important to note that while NSAIDs can provide effective temporary relief, they do not address the underlying cause of endodontic pain and should not be considered a substitute for professional dental care.

Acetaminophen, another commonly used OTC analgesic, was not as effective as NSAIDs but it still provided some degree of pain relief for patients. This finding is consistent with the meta-analysis by Moore et al. (2015), which reported that acetaminophen 1000 mg provided effective pain relief in 38% of patients with moderate to severe dental pain, compared to 16% with placebo. The lower efficacy of acetaminophen compared to NSAIDs in managing endodontic pain can be attributed to its lack of anti-inflammatory properties, which are crucial in addressing the inflammation associated with pulpal and periapical pathologies.

Interestingly, our study found that some patients used combination products containing both NSAIDs and acetaminophen. While the number of patients using these combinations was relatively small, those who did reported higher pain relief scores compared to single-ingredient formulations. This observation aligns with research by Mehlisch et al. (2010). The synergistic effect of these combinations warrants further investigation in the context of endodontic pain management.

When analysing the data for all patients, antibiotics alone demonstrated higher pain relief scores compared to the combination of antibiotics and analgesics. This intriguing result aligns with findings from another study (Torabinejad, Cymerman, Frankson, Lemon, Maggio and Schilder, 1994), which reported that penicillin alone was more effective in managing postoperative endodontic pain than a combination of penicillin and ibuprofen. The unexpected outcome may be attributed to a potential incompatibility between the two medications. However, when the analysis was limited to patients with symptomatic irreversible pulpitis, no significant difference in pain relief was observed between the two treatment approaches.

Regarding non-pharmacological self-care methods, our study revealed a wide range of practices employed by patients, with varying degrees of effectiveness. Among home remedies (except OTC dental products and putting olives on the tooth, which ranked as the least effective), cold application emerged as one of the more effective methods for alleviating endodontic pain. Patients reported moderate pain relief when applying cold compresses or rinsing with cold water. This finding is supported by previous research, such as the systematic review by van der Westhuijzen et al. (2005). The mechanism of action for cold therapy in endodontic pain relief can be attributed to its ability to reduce nerve conduction

velocity, decrease metabolic activity in the affected area, and induce vasoconstriction, which can help reduce inflammation and intrapulpal pressure.

Among the home remedies, drinking alcohol or applying it directly to the tooth emerged as the most effective method for pain relief. Systemically, alcohol elevates the pain threshold and provides analgesic effects through a dose-response relationship, likely mediated by its anxiolytic properties and central NMDA-receptor blocking mechanisms (Thompson, Oram, Correll, Tsermentseli and Stubbs 2017). When applied locally, ethanol acts as a TRPV-1 (capsaicin receptor) agonist, activating these receptors in peripheral neurons (Trevisani, Smart, Gunthorpe, Tognetto, Barbieri, Campi, Amadesi, Gray, Jerman, Brough, Owen, Smith, Randall, Harrison, Bianchi, Davis and Geppetti, 2002). This activation potentiates responses to capsaicin and other stimuli, such as heat and protons. Following this initial excitation, a phenomenon known as “capsaicin desensitization” occurs, wherein the neuron transitions to a refractory state. During this phase, sensory receptors are cross-desensitized, leading to reversible inactivation of the neuron (Fischer, Ciotu and Szallasi, 2020).

Saltwater rinses were another commonly reported non-pharmacological method in our study. While patients perceived some benefit from this practice, the pain relief scores were generally lower compared to pharmacological methods or cold application. The modest effectiveness of saltwater rinses aligns with findings from Karmawati et al. (2021). The mechanism of action is believed to be related to the osmotic effects of salt, which can help reduce inflammation by drawing out excess fluid from inflamed tissues.

However, it is important to note that while some home remedies showed moderate effectiveness, others provided minimal to no pain relief. For instance, patients who reported using garlic applications experienced little to no improvement in their pain levels. This highlights the variability in effectiveness among different home remedies and underscores the need for evidence-based guidance on self-care practices for endodontic pain.

When comparing the effectiveness of self-care methods to formal care interventions, our findings indicate that while some self-care strategies provide some level of relief, they often do not match the efficacy of professional treatments. Patients who received professional care, including prescribed medications and in-office treatments, reported significantly higher

pain relief scores compared to those relying solely on self-care methods. This observation is consistent with the study by Cohen et al. (2007).

Moreover, our analysis revealed that medication prescribed or recommended by a professional consistently outperformed self-medication practices in terms of pain relief efficacy. For instance, formally prescribed analgesics, either alone or in combination with antibiotics, produced higher median pain relief scores compared to OTC medications used without professional guidance.

It is crucial to emphasize that while self-care methods can provide temporary relief for endodontic pain, they do not address the underlying cause of the pain. Pak and White (2011) report about delays in seeking treatment for endodontic problems and their results can be found in section “Delayed professional treatment and its consequences”. This highlights the importance of timely professional intervention in managing endodontic conditions effectively, as self-care methods alone may lead to progression of the underlying dental issue.

Our analysis of the effectiveness of self-care methods in managing endodontic pain reveals a complex picture. While pharmacological methods, particularly NSAIDs, demonstrate significant efficacy in providing temporary pain relief, non-pharmacological approaches show varying degrees of effectiveness. Cold appear to offer moderate relief, while many other home remedies provide minimal benefit. However, it's crucial to emphasize that no self-care method matches the effectiveness of professional dental care in addressing the underlying cause of endodontic pain. These findings highlight the need for comprehensive patient education about appropriate self-care practices and the importance of timely professional intervention in managing endodontic conditions effectively.

5.4. Risks and Benefits of Self-Care

Self-care practices for endodontic pain present both potential benefits and risks that warrant careful consideration. While these methods can provide temporary relief and empower patients to manage their discomfort, they also carry inherent risks that must be acknowledged and addressed.

Benefits of self-care in endodontic pain management primarily revolve around the immediate relief and accessibility of various methods. The accessibility of OTC medications allows patients to obtain rapid relief, which can be particularly beneficial when professional dental care is not immediately available. This immediate pain management can improve patients' quality of life and reduce anxiety associated with dental pain. Additionally, the anti-inflammatory properties of NSAIDs can help reduce swelling and inflammation associated with endodontic conditions, potentially improving overall comfort.

As well as the pharmacological methods, non-pharmacological self-care methods, such as saltwater rinses and cold compresses, offer additional benefits. These methods are generally safe, cost-effective, and can be easily implemented at home.

However, it is crucial to acknowledge the potential risks associated with self-care practices in endodontic pain management. One of the primary concerns is that self-care methods may mask symptoms without addressing the underlying cause of the pain. This can lead to delayed treatment and potential progression of the dental condition as stated by Pak and White (2011).

The risk of inappropriate medication use is another significant concern. While NSAIDs are generally safe when used as directed, prolonged or excessive use can lead to adverse effects. Additionally, there is a risk of drug interactions, particularly in patients with underlying health conditions or those taking other medications. Details have been discussed in section “Risks associated with self-medication”.

Another risk associated with self-care practices is the potential for misdiagnosis. Patients may incorrectly attribute their pain to a dental issue when it could be a symptom of a more serious underlying condition. This highlights the importance of professional evaluation and diagnosis in cases of persistent or severe dental pain.

The use of home remedies, while often perceived as natural and safe, can also carry risks. Some traditional remedies may lack scientific evidence supporting their efficacy and safety. In our study, we found that while some home remedies showed moderate effectiveness, others provided minimal to no pain relief. This variability in effectiveness underscores the need for caution when relying on home remedies for pain management.

In addition, while home remedies are often perceived as safe natural alternatives, clinical evidence demonstrates they can cause significant harm when used inappropriately. Garlic (*Allium sativum*), a common dental pain remedy across cultures, has been implicated in multiple cases of oral mucosal burns (Patil and A. N., 2018; Muniz, Campos, Shinkai, Trindade and Cosme-Trindade, 2021). These cases exemplify how even widely accepted remedies carry risks when misapplied.

It is also important to consider the psychological aspects of self-care practices. While self-care can provide a sense of control and empowerment for patients, it may also lead to anxiety and frustration if the methods prove ineffective. This can potentially exacerbate dental anxiety and delay seeking professional care (Sebastian, Rajkumar, John, Daniel, George, Greeshma and James, 2022).

While self-care methods can offer temporary relief and have certain benefits in managing endodontic pain, they should not be considered a substitute for professional dental care. The risks associated with delayed treatment, potential progression of dental conditions, and inappropriate medication use highlight the importance of timely professional intervention.

5.5. Implications for Clinical Practice

The findings from this study have significant implications for clinical practice in endodontics, particularly regarding the management of patients experiencing endodontic pain. The high prevalence of self-care practices observed among patients highlights the need for dental professionals to actively engage in discussions about these behaviours during consultations.

Our findings of self-care prevalence underscore the importance of dental professionals inquiring about self-care methods used by patients prior to their visit. By understanding what methods patients have employed, clinicians can tailor their treatment plans accordingly and address any misconceptions regarding effective pain management strategies.

Given the high prevalence of self-medication with NSAIDs observed in our study which aligns with the previous studies (Cohen et al., 2007), clinicians should be prepared to discuss

the appropriate use of over-the-counter analgesics with patients, including proper dosing and potential side effects.

Our previously noted finding, that professionally guided medication provides more effective pain relief than self-medication, highlights the importance of professional guidance in pain management strategies for endodontic conditions. Clinicians should emphasize this point when discussing pain management with patients, encouraging them to seek professional advice rather than relying solely on self-medication.

Our analysis of factors influencing self-care behaviours, such as age and maximum pain levels, can help clinicians identify patients who may be more likely to engage in extensive self-care practices. This knowledge can guide clinicians in providing targeted education and intervention strategies for these high-risk groups.

The study's findings on the effectiveness of formal care methods compared to self-care practices provide strong evidence for clinicians to use when encouraging patients to seek timely professional treatment. By explaining the superior pain relief provided by professional interventions, clinicians can motivate patients to seek care earlier, potentially preventing the progression of dental conditions.

Integrating education about appropriate self-care practices into routine patient care can enhance overall outcomes in endodontic treatment. Clinicians should provide clear guidance on safe medication use and effective home remedies while ensuring patients remain informed about potential risks associated with inappropriate practices. This education should include information on the limitations of self-care methods and the importance of professional evaluation for proper diagnosis and treatment.

The study's findings on the risks associated with delayed treatment, such as the potential for more severe pulpal and periapical pathology, provide clinicians with valuable information to communicate to patients. Emphasizing these risks can encourage patients to seek professional care earlier, potentially improving treatment outcomes and reducing the need for more complex interventions.

The variability in effectiveness among different home remedies highlighted in our study underscores the need for evidence-based guidance on self-care practices. Clinicians should be prepared to discuss the relative efficacy of various home remedies, steering patients towards those with demonstrated effectiveness while cautioning against potentially harmful practices.

The findings of this study emphasize the need for a holistic approach to endodontic pain management that encompasses patient education, psychological support, and culturally sensitive practices. By adopting such an approach, dental professionals can significantly improve patient experiences and outcomes in managing endodontic conditions effectively while encouraging timely intervention when necessary. Future research should focus on developing and evaluating standardized protocols for patient education and self-care guidance in endodontic practice, as well as exploring innovative methods to improve patient compliance with professional recommendations.

5.6. Limitations of the Study

This study, while providing valuable insights into self-care practices for endodontic pain, has several limitations that should be considered when interpreting the results:

Sample Representativeness: The study was conducted at a single institution (Gazi University's general endodontic training clinic) over a specific time period. This may limit the generalizability of the findings to other populations or settings.

Cross-sectional Design: The cross-sectional nature of the study provides a snapshot of self-care practices at a single point in time. This design does not allow for the assessment of causal relationships or changes in behaviour over time.

Recall Bias: Despite efforts to minimize recall bias by instructing participants to only report methods they clearly remembered using, the study relied on patients' retrospective accounts of their self-care practices. This may have led to inaccuracies in reporting, particularly for pain experiences and self-care methods used in the past.

Self-reported Data: The study relied on self-reported data for pain intensity and effectiveness of self-care methods. This subjective nature of reporting may introduce bias, as individual perceptions of pain and relief can vary significantly.

Limited Clinical Data: While the study collected some clinical information, it may not have captured all relevant clinical factors that could influence self-care behaviours or pain experiences. More comprehensive clinical data could provide additional insights into the relationship between dental conditions and self-care practices.

Cultural Context: The study was conducted in Turkey, and the self-care methods list was adapted for cultural relevance. While this strengthens the study's applicability to the local population, it may limit the direct comparability of findings to other cultural contexts.

Exclusion of Certain Populations: The study excluded patients with systemic health conditions that could affect pain perception or management. While this exclusion criterion strengthens internal validity, it may limit the applicability of findings to patients with comorbidities.

Potential Selection Bias: The use of convenience sampling may have introduced selection bias, as patients who chose to participate might have different characteristics or experiences compared to those who declined.

Limited Exploration of Psychological Factors: Study may not have fully explored psychological factors that could influence self-care behaviours and pain perception, such as depression or general anxiety disorders.

Despite these limitations, the study provides valuable insights into self-care practices for endodontic pain and lays a foundation for future research in this area. Addressing these limitations in subsequent studies will further enhance our understanding of patient behaviours in managing endodontic pain.

6. CONCLUSION AND SUGGESTIONS

This study reveals critical patterns in self-care practices among Turkish patients with endodontic pain. Three primary findings emerge from the data. First, self-care is nearly universal in this population, with 89,9% of participants employing at least one method before visiting our clinic. This high prevalence suggests self-care is deeply embedded as a first-line response to dental pain in Turkey, potentially reflecting cultural norms or systemic barriers to immediate dental access.

Second, self-care choices are strongly tied to two key variables: pain severity and age. Younger adults showed significantly higher rates of self-care adoption, possibly due to greater health literacy or differing pain tolerance thresholds. Additionally, individuals who occasionally or regularly visited the dentist were more likely to engage in at least one self-care approach, such as using home remedies, consulting with a relative, friend, or neighbour, or seeking alternative healthcare options.

Third, effectiveness varied dramatically between methods. While professional-guided medication provided the highest pain relief, certain home remedies like intraoral cold application and topical alcohol use showed measurable efficacy, contrasting with ineffective practices such as garlic application. Notably, NSAID effectiveness did not differ between professional and self-guided use, suggesting these medications may be safely self-administered if dosage guidelines are followed.

These findings carry important implications. Public health initiatives should prioritize educating younger demographics about evidence-based home remedies while emphasizing the risks of antibiotic misuse.

At the policy level, integrating evidence-based pain management guidance into Turkey's national dental outreach programs could help ensure the proper use of medications and promote safe self-care practices, reducing reliance on methods that may be ineffective or harmful, whether self-medication or home remedies.

Furthermore, healthcare professionals should be equipped with up-to-date knowledge on home remedies and their effectiveness. By doing so, they can guide patients toward safe, evidence-based options as adjuncts to conventional treatment, fostering trust and supporting culturally sensitive, patient-centered care when needed. This collaborative approach could help ensure that self-care practices are both effective and safe, and that patients receive comprehensive guidance tailored to their needs.



REFERENCES

1. Afonso-Souza, G., Nadanovsky, P., Chor, D., Faerstein, E., Werneck, G. L. and Lopes, C. S. (2007). Association between routine visits for dental checkup and self-perceived oral health in an adult population in Rio de Janeiro: the Pró-Saúde Study. *Community Dentistry and Oral Epidemiology*, 35(5), 393-400.
2. Alqareer, A., Alyahya, A. and Andersson, L. (2006). The effect of clove and benzocaine versus placebo as topical anesthetics. *Journal of Dentistry*, 34(10), 747-750.
3. Anwar, M., Green, J. A., Norris, P. and Bukhari, N. I. (2015). Self-medication, home remedies, and spiritual healing: common responses to everyday symptoms in Pakistan. *Health Psychology and Behavioral Medicine*, 3(1), 281-295.
4. Anyanechi, C. and Saheeb, B. (2014). Toothache and self-medication practices: a study of patients attending a niger delta tertiary hospital in Nigeria. *Annals of Medical and Health Sciences Research*, 4(6), 884-888.
5. Appukuttan, D. P. (2016). Strategies to manage patients with dental anxiety and dental phobia: literature review. *Clinical, Cosmetic and Investigational Dentistry*, 8, 35-50.
6. Arcury, T. A., Bell, R. A., Anderson, A. M., Chen, H., Savoca, M. R., Kohrman, T. and Quandt, S. A. (2009). Oral health self-care behaviors of rural older adults. *Journal of Public Health Dentistry*, 69(3), 182-189.
7. Arcury, T. A., Grzywacz, J. G., Neiberg, R. H., Lang, W., Nguyen, H., Altizer, K., Stoller, E. P., Bell, R. A. and Quandt, S. A. (2012). Older adults' self-management of daily symptoms: complementary therapies, self-care, and medical care. *Journal of Aging and Health*, 24(4), 569-597.
8. Arcury, T. A., Savoca, M. R., Anderson, A. M., Chen, H., Gilbert, G. H., Bell, R. A., Leng, X., Reynolds, T. and Quandt, S. A. (2012). Dental care utilization among North Carolina rural older adults. *Journal of Public Health Dentistry*, 72(3), 190-197.
9. Armfield, J. M. and Heaton, L. J. (2013). Management of fear and anxiety in the dental clinic: a review. *Australian Dental Journal*, 58(4), 390-531.
10. Armfield, J. M., Stewart, J. F. and Spencer, A. J. (2007). The vicious cycle of dental fear: exploring the interplay between oral health, service utilization and dental fear. *BMC Oral Health*, 7, 1.
11. Bailey, E., Worthington, H. V., van Wijk, A., Yates, J. M., Coulthard, P. and Afzal, Z. (2013). Ibuprofen and/or paracetamol (acetaminophen) for pain relief after surgical removal of lower wisdom teeth. *Cochrane Database of Systematic Reviews*, (12).
12. Balkaran, R. L., Osoba, T. and Rafeek, R. (2014). A Cross-sectional Study of Patients' Satisfaction with Dental Care Facilities: A Survey of Adult Treatment at The University of the West Indies, School of Dentistry. *The West Indian Medical Journal*, 63(5), 490-498.
13. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
14. Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), *Annals of child development. Vol. 6. Six Theories of Child Development*, Greenwich, CT: JAI Press, 1-60.
15. Bashiru, B. O. and Anthony, I. N. (2014). Oral self-care practices among university students in Port Harcourt, Rivers State. *Nigerian Medical Journal*, 55(6), 486-489.
16. Bayan, L., Koulivand, P. H. and Gorji, A. (2014). Garlic: a review of potential therapeutic effects. *Avicenna Journal of Phytomedicine*, 4(1), 1-14.

17. Becker, D. E. and Phero, J. C. (2005). Drug therapy in dental practice: nonopioid and opioid analgesics. *Anesthesia Progress*, 52(4), 140-149.
18. Bender, I. B. (2000). Pulpal pain diagnosis--a review. *Journal of Endodontics*, 26(3), 175-179.
19. Berggren, U. (2001). Long-term management of the fearful adult patient using behavior modification and other modalities. *Journal of Dental Education*, 65(12), 1357-1368.
20. Broadbent, J. M., Zeng, J., Foster Page, L. A., Baker, S. R., Ramrakha, S. and Thomson, W. M. (2016). Oral health-related beliefs, behaviors, and outcomes through the life course. *Journal of Dental Research*, 95(7), 808-813.
21. Buglar, M. E., White, K. M. and Robinson, N. G. (2010). The role of self-efficacy in dental patients' brushing and flossing: Testing an extended Health Belief Model. *Patient Education and Counseling*, 78(2), 269-272.
22. Butani, Y., Weintraub, J. A. and Barker, J. C. (2008). Oral health-related cultural beliefs for four racial/ethnic groups: Assessment of the literature. *BMC Oral Health*, 8, 26.
23. Carrasco-Garrido, P., Jiménez-García, R., Barrera, V. H. and Gil de Miguel, A. (2008). Predictive factors of self-medicated drug use among the Spanish adult population. *Pharmacoepidemiology and Drug Safety*, 17(2), 193-199.
24. Carson, C. F., Hammer, K. A. and Riley, T. V. (2006). *Melaleuca alternifolia* (tea tree) oil: a review of antimicrobial and other medicinal properties. *Clinical Microbiology Reviews*, 19(1), 50-62.
25. Cha, A. E. and Cohen, R. A. (2021). Urban-rural Differences in Dental Care Use Among Adults Aged 18-64. *NCHS Data Brief*, (412), 1-8.
26. Chen, H. Y. and Wang, H. H. (2014). The effectiveness of acupressure on relieving pain: a systematic review. *Pain Management Nursing*, 15(2), 539-550.
27. Chung, G. and Oh, S. B. (2013). Eugenol as local anesthetic. K. Ramawat and J. M. Mérillon (Eds.), *Natural products*, Berlin, Heidelberg: Springer, 4001-4015.
28. Cohen, L. A., Bonito, A. J., Akin, D. R., Manski, R. J., Macek, M. D., Edwards, R. R. and Cornelius, L. J. (2008). Toothache pain: a comparison of visits to physicians, emergency departments and dentists. *The Journal of the American Dental Association*, 139(9), 1205-1216.
29. Cohen, L. A., Bonito, A. J., Akin, D. R., Manski, R. J., Macek, M. D., Edwards, R. R. And Cornelius, L. J. (2009). Toothache pain: behavioral impact and self-care strategies. *Special Care in Dentistry : Official Publication of the American Association of Hospital Dentists, the Academy of Dentistry for the Handicapped, and the American Society for Geriatric Dentistry*, 29(2), 85-95.
30. Cohen, L. A., Bonito, A. J., Eicheldinger, C., Manski, R. J., Macek, M. D., Edwards, R. R. and Khanna, N. (2011). Comparison of patient visits to emergency departments, physician offices, and dental offices for dental problems and injuries. *Journal of Public Health Dentistry*, 71(1), 13-22.
31. Cohen, L. A., Harris, S. L., Bonito, A. J., Manski, R. J., Macek, M. D., Edwards, R. R. and Cornelius, L. J. (2007). Coping with toothache pain: a qualitative study of low-income persons and minorities. *Journal of Public Health Dentistry*, 67(1), 28-35.
32. Cohen, S. M., Fiske, J. and Newton, J. T. (2000). The impact of dental anxiety on daily living. *British Dental Journal*, 189(7), 385-390.

33. Cooper, S. A., Desjardins, P., Brain, P., Paredes-Diaz, A., Troullos, E., Centofanti, R. and An, B. (2019). Longer analgesic effect with naproxen sodium than ibuprofen in post-surgical dental pain: a randomized, double-blind, placebo-controlled, single-dose trial. *Current Medical Research and Opinion*, 35(12), 2149–2158.
34. Cope, A. L., Francis, N. A., Wood, F. and Chestnutt, I. G. (2016). Antibiotic prescribing in UK general dental practice: a cross-sectional study. *Community Dentistry and Oral Epidemiology*, 44(2), 145–153.
35. Derry, C. J., Derry, S. and Moore, R. A. (2013). Single dose oral ibuprofen plus paracetamol (acetaminophen) for acute postoperative pain. *The Cochrane Database of Systematic Reviews*, 2013(6), CD010210.
36. Derry, C., Derry, S., Moore, R. A. and McQuay, H. J. (2009). Single dose oral naproxen and naproxen sodium for acute postoperative pain in adults. *The Cochrane Database of Systematic Reviews*, 2009(1), CD004234.
37. Derry, S. and Moore, R. A. (2012). Single dose oral aspirin for acute postoperative pain in adults. *The Cochrane Database of Systematic Reviews*, 2012(4), CD002067.
38. Duijster, D., de Jong-Lenters, M., Verrips, E. and van Loveren, C. (2015). Establishing oral health promoting behaviours in children - parents' views on barriers, facilitators and professional support: a qualitative study. *BMC Oral Health*, 15, 157.
39. Fillingim, R. B., King, C. D., Ribeiro-Dasilva, M. C., Rahim-Williams, B. and Riley III, J. L. (2009). Sex, gender, and pain: a review of recent clinical and experimental findings. *The Journal of Pain*, 10(5), 447-485.
40. Fischer, M. J. M., Ciotu, C. I. and Szallasi, A. (2020). The mysteries of capsaicin-sensitive afferents. *Frontiers in Physiology*, 11, 554195.
41. Gambhir, R. S., Sohi, R. K., Nanda, T., Sawhney, G. S. and Setia, S. (2013). Impact of school based oral health education programmes in India: a systematic review. *Journal of Clinical and Diagnostic Research: JCDR*, 7(12), 3107–3110.
42. Gatchel, R. J., Peng, Y. B., Peters, M. L., Fuchs, P. N. and Turk, D. C. (2007). The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychological Bulletin*, 133(4), 581–624.
43. Ghanbarzadegan, A., Mittinty, M., Brennan, D. S. and Jamieson, L. M. (2023). The effect of education on dental service utilization patterns in different sectors: a multiple mediation analysis. *Community Dentistry and Oral Epidemiology*, 51(6), 1093–1099.
44. Graham, G. G., Davies, M. J., Day, R. O., Mohamudally, A. and Scott, K. F. (2013). The modern pharmacology of paracetamol: therapeutic actions, mechanism of action, metabolism, toxicity and recent pharmacological findings. *Inflammopharmacology*, 21(3), 201-232.
45. Heavilin, N., Gerbert, B., Page, J. E. and Gibbs, J. L. (2011). Public health surveillance of dental pain via Twitter. *Journal of Dental Research*, 90(9), 1047-1051.
46. Heard, K., Bui, A., Mlynarchek, S. L., Green, J. L., Bond, G. R., Clark, R. F., Kozer, E., Koff, R. S. and Dart, R. C. (2014). Toxicity from repeated doses of acetaminophen in children: assessment of causality and dose in reported cases. *American Journal of Therapeutics*, 21(3), 174–183.
47. Heft, M. W., Meng, X., Bradley, M. M. and Lang, P. J. (2007). Gender differences in reported dental fear and fear of dental pain. *Community Dentistry and Oral Epidemiology*, 35(6), 421-428.
48. Hersh, E. V., Kane, W. T., O'Neil, M. G., Kenna, G. A., Katz, N. P., Golubic, S. and Moore, P. A. (2011). Prescribing recommendations for the treatment of acute pain in dentistry. *Compendium of Continuing Education in Dentistry* (Jamesburg, N.J.: 1995), 32(3), 22–32.

49. Hersh, E. V., Moore, P. A. and Ross, G. L. (2000). Over-the-counter analgesics and antipyretics: a critical assessment. *Clinical Therapeutics*, 22(5), 500-548.
50. Hewlings, S. J. and Kalman, D. S. (2017). Curcumin: A Review of Its Effects on Human Health. *Foods* (Basel, Switzerland), 6(10), 92.
51. Hollister, M. C. and Anema, M. G. (2004). Health behavior models and oral health: a review. *Journal of Dental Hygiene: JDH*, 78(3), 6.
52. Horowitz, A. M. and Kleinman, D. V. (2008). Oral health literacy: the new imperative to better oral health. *Dental Clinics of North America*, 52(2), 333–vi.
53. Huynh, N. C. N., Everts, V., Leethanakul, C., Pavasant, P. and Ampornaramveth, R. S. (2016). Rinsing with saline promotes human gingival fibroblast wound healing in vitro. *PLoS One*, 11(7), e0159843.
54. Internet: *American Association of Endodontists (AAE)*. Glossary of Endodontic Terms <https://www.aae.org/specialty/clinical-resources/glossary-endodontic-terms/>. Accessed January 2, 2025.
55. Internet: *American Society of Anesthesiologists*. (2020, December 13). Statement on ASA Physical Status Classification System. <https://www.asahq.org/standards-and-practice-parameters/statement-on-asa-physical-status-classification-system> Accessed January 2, 2025.
56. Internet: *Public Health England*. (2019). Urgent dental care: Evidence review. URL: https://assets.publishing.service.gov.uk/media/5c9e1a1140f0b633f7198ac4/urgent_dental_care_evidence_review.pdf, Accessed 5 April 2025.
57. Jain, A., Bhaskar, D. J., Gupta, D., Agali, C., Yadav, P. and Khurana, R. (2016). Practice of self-medication for dental problems in Uttar Pradesh, India. *Oral Health & Preventive Dentistry*, 14(1), 5-11.
58. Jaiswal, A. K., Pachava, S., Sanikommu, S., Rawlani, S. S., Pydi, S. and Ghanta, B. (2015). Dental pain and self-care: a cross-sectional study of people with low socio-economic status residing in rural India. *International Dental Journal*, 65(5), 256–260.
59. Kakudate, N., Morita, M., Fukuhara, S., Sugai, M., Nagayama, M., Kawanami, M. and Chiba, I. (2010). Application of self-efficacy theory in dental clinical practice. *Oral Diseases*, 16(8), 747-752.
60. Karmawati, I. A., Padjeri, I., Budiarti, R. and Lestari, S. Y. (2021). The effectiveness of salt solution gargle to reduce pain through monitoring the PUFA index at Dr. Dradjat Prawiranegara Serang, Banten in 2018. *International Research Journal of Pharmacy and Medical Sciences*, 4(3), 1–5.
61. Keiser, K. and Hargreaves, K.M. (2002). Building effective strategies for the management of endodontic pain. *Endodontic Topics*, 3, 93-105.
62. Khan, R. S., Ahmed, K., Blakeway, E., Skapinakis, P., Nihoyannopoulos, L., Macleod, K., Sevdalis, N., Ashrafian, H., Platt, M., Darzi, A. and Athanasiou, T. (2011). Catastrophizing: a predictive factor for postoperative pain. *The American Journal of Surgery*, 210(1), 122-131.
63. Kiersch, T. A., Halladay, S. C. and Hormel, P. C. (1994). A single-dose, double-blind comparison of naproxen sodium, acetaminophen, and placebo in postoperative dental pain. *Clinical Therapeutics*, 16(3), 394–404.
64. Lee, J. Y., Divaris, K., Baker, A. D., Rozier, R. G. and Vann Jr, W. F. (2012). The relationship of oral health literacy and self-efficacy with oral health status and dental neglect. *American Journal of Public Health*, 102(5), 923-929.
65. Lethem, J., Slade, P. D., Troup, J. D. and Bentley, G. (1983). Outline of a Fear-Avoidance Model of exaggerated pain perception--I. *Behaviour Research and Therapy*, 21(4), 401–408.

66. Listl, S., Galloway, J., Mossey, P. A. and Marcenes, W. (2015). Global Economic Impact of Dental Diseases. *Journal of Dental Research*, 94(10), 1355–1361.
67. Maggiri, J. and Locker, D. (2002). Five-year incidence of dental anxiety in an adult population. *Community Dental Health*, 19(3), 173–179.
68. Malanga, G. A., Yan, N. and Stark, J. (2015). Mechanisms and efficacy of heat and cold therapies for musculoskeletal injury. *Postgraduate Medicine*, 127(1), 57-65.
69. Marshman, Z., Porritt, J., Dyer, T., Wyborn, C., Godson, J. and Baker, S. (2012). What influences the use of dental services by adults in the UK? *Community Dentistry and Oral Epidemiology*, 40(4), 306–314.
70. Mashhadi, N. S., Ghiasvand, R., Askari, G., Hariri, M., Darvishi, L. and Mofid, M. R. (2013). Anti-oxidative and anti-inflammatory effects of ginger in health and physical activity: review of current evidence. *International Journal of Preventive Medicine*, 4(1), S36–S42.
71. Mathie, R. T., Fok, Y. Y. Y., Viksveen, P., To, A. K. L. and Davidson, J. R. T. (2019). Systematic Review and Meta-Analysis of Randomised, Other-than-Placebo Controlled, Trials of Non-Individualised Homeopathic Treatment. *Homeopathy: the Journal of the Faculty of Homeopathy*, 108(2), 88–101.
72. McKay, D. L. and Blumberg, J. B. (2006). A review of the bioactivity and potential health benefits of peppermint tea (*Mentha piperita* L.). *Phytotherapy Research*, 20(8), 619-633.
73. McLeroy, K. R., Bibeau, D., Steckler, A. and Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, 15(4), 351-377.
74. Mehlisch, D. R., Aspley, S., Daniels, S. E. and Bandy, D. P. (2010). Comparison of the analgesic efficacy of concurrent ibuprofen and paracetamol with ibuprofen or paracetamol alone in the management of moderate to severe acute postoperative dental pain in adolescents and adults: a randomized, double-blind, placebo-controlled, parallel-group, single-dose, two-center, modified factorial study. *Clinical Therapeutics*, 32(5), 882-895.
75. Melzack R. (1999). From the gate to the neuromatrix. *Pain*, Suppl 6, S121–S126.
76. Melzack, R. and Wall, P.D. (1965). Pain mechanisms: a new theory. *Science*, 150(3699), 971-979.
77. Moore, P. A., Ziegler, K. M., Lipman, R. D., Aminoshariae, A., Carrasco-Labra, A. and Mariotti, A. (2018). Benefits and harms associated with analgesic medications used in the management of acute dental pain: An overview of systematic reviews. *The Journal of the American Dental Association*, 149(4), 256-265.e3.
78. Moore, R. A., Wiffen, P. J., Derry, S., Maguire, T., Roy, Y. M. and Tyrrell, L. (2015). Non-prescription (OTC) oral analgesics for acute pain - an overview of Cochrane reviews. *The Cochrane Database of Systematic Reviews*, 2015(11), CD010794.
79. Morosko, T. E. and Simmons, F. F. (1966). The effect of audio-analgesia on pain threshold and pain tolerance. *Journal of Dental Research*, 45(6), 1608-1617.
80. Muniz, I. A. F., Campos, D. E. S., Shinkai, R. S. A., Trindade, T. G. D. and Cosme-Trindade, D. C. (2021). Case report of oral mucosa garlic burn during COVID-19 pandemic outbreak and role of teledentistry to manage oral health in an older adult woman. *Special Care in Dentistry : Official Publication of the American Association of Hospital Dentists, the Academy of Dentistry for the Handicapped, and the American Society for Geriatric Dentistry*, 41(5), 639–643.

81. Müller, M., Schmucker, C., Naumann, J., Schlueter, N., Huber, R. and Lederer, A. K. (2023). Acupuncture in management of acute dental pain - A systematic review and meta-analysis. *The Japanese Dental Science Review*, 59, 114–128.
82. Ng, Y. L., Mann, V. and Gulabivala, K. (2011). A prospective study of the factors affecting outcomes of nonsurgical root canal treatment: part 1: periapical health. *International Endodontic Journal*, 44(7), 583-609.
83. Nixdorf, D. R., Law, A. S., Lindquist, K., Reams, G. J., Cole, E., Kanter, K., Nguyen, R. H. N., Harris, D. R. and National Dental PBRN Collaborative Group (2016). Frequency, impact, and predictors of persistent pain after root canal treatment: a national dental PBRN study. *Pain*, 157(1), 159–165.
84. Nixdorf, D. R., Law, A. S., Look, J. O., Rindal, D. B., Durand, E. U., Kang, W., Agee, B. S., Fellows, J. L., Gordan, V. V., Gilbert, G. H. and National Dental PBRN Collaborative Group (2012). Large-scale clinical endodontic research in the National Dental Practice-Based Research Network: study overview and methods. *Journal of Endodontics*, 38(11), 1470–1478.
85. Nouri, S. S., Adler-Milstein, J., Thao, C., Acharya, P., Barr-Walker, J., Sarkar, U. and Lyles, C. (2020). Patient characteristics associated with objective measures of digital health tool use in the United States: A literature review. *Journal of the American Medical Informatics Association*, 27(5), 834-841.
86. Nusstein, J. M. and Beck, M. (2003). Comparison of preoperative pain and medication use in emergency patients presenting with irreversible pulpitis or teeth with necrotic pulps. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontics*, 96(2), 207–214.
87. Oberoi, S. S., Dhingra, C., Sharma, G. and Sardana, D. (2015). Antibiotics in dental practice: how justified are we. *International Dental Journal*, 65(1), 4–10.
88. Ong, C. K. S., Lirk, P., Tan, C. H. and Seymour, R. A. (2007). An evidence-based update on nonsteroidal anti-inflammatory drugs. *Clinical Medicine and Research*, 5(1), 19-34.
89. Orem, D. E. (2001). *Nursing: Concepts of practice* (6th ed.). St Louis, MO: Mosby, 136-159.
90. Pak, J. G. and White, S. N. (2011). Pain prevalence and severity before, during, and after root canal treatment: a systematic review. *Journal of Endodontics*, 37(4), 429-438.
91. Parisius, L. M., Stock-Schröer, B., Berger, S., Hermann, K. and Joos, S. (2014). Use of home remedies: a cross-sectional survey of patients in Germany. *BMC Family Practice*, 15, 116.
92. Patel, R., Miner, J. R. and Miner, S. L. (2012). The need for dental care among adults presenting to an urban ED. *The American Journal of Emergency Medicine*, 30(1), 18-25.
93. Patil, B. and A. N., R., (2018). Allium sativum: Oral mucosal burn. *International Journal of Oral Health Dentistry*; 4(4), 247-248.
94. Pau, A. K., Croucher, R. and Marcenes, W. (2003). Prevalence estimates and associated factors for dental pain: a review. *Oral Health & Preventive Dentistry*, 1(3), 209–220.
95. Peduzzi, P., Concato, J., Kemper, E., Holford, T. R. and Feinstein, A. R. (1996). A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology*, 49(12), 1373–1379.
96. Peedikayil, F. C., Sreenivasan, P. and Narayanan, A. (2015). Effect of coconut oil in plaque related gingivitis -- A preliminary report. *Nigerian Medical Journal*, 56(2), 143-147.

97. Petersen, P. E. and Kwan, S. (2011). Equity, social determinants and public health programmes --the case of oral health. *Community Dentistry and Oral Epidemiology*, 39(6), 481-487.
98. Petersen, P. E., Bourgeois, D., Ogawa, H., Estupinan-Day, S. and Ndiaye, C. (2008). The global burden of oral diseases and risks to oral health. *Bulletin of the World Health Organization*, 83(9), 661-669.
99. Prochaska, J. O. and Velicer, W. F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion: AJHP*, 12(1), 38-48.
100. Rainsford, K. D. (2009). Ibuprofen: pharmacology, efficacy and safety. *Inflammopharmacology*, 17(6), 275-342.
101. Ramos-e-Silva, M., Ferreira, A. F., Bibas, R. and Carneiro, S. (2018). Clinical evaluation of fluid extract of Chamomilla recutita for oral aphthae. *Journal of Drugs in Dermatology*, 5(7), 612-617.
102. Rosenstock, I. M., Strecher, V. J. and Becker, M. H. (1988). Social learning theory and the Health Belief Model. *Health Education Quarterly*, 15(2), 175-183.
103. Sebastian, A. T., Rajkumar, E., John, R., Daniel, M., George, A. J., Greeshma, R. and James, T. (2022). Emotional Self-Care: Exploring the Influencing Factors Among Individuals with Cancer. *Frontiers in Psychology*, 13, 898345.
104. Segura-Egea, J. J., Gould, K., Şen, B. H., Jonasson, P., Cotti, E., Mazzoni, A., Sunay, H., Tjäderhane, L. and Dummer, P. M. H. (2017). Antibiotics in Endodontics: a review. *International Endodontic Journal*, 50(12), 1169-1184.
105. Siqueira, J. F., Jr and Rôças, I. N. (2013). Microbiology and treatment of acute apical abscesses. *Clinical Microbiology Reviews*, 26(2), 255-273.
106. Stoller, E. P., Gilbert, G. H., Pyle, M. A. and Duncan, R. P. (2001). Coping with tooth pain: a qualitative study of lay management strategies and professional consultation. *Special care in dentistry: official publication of the American Association of Hospital Dentists, the Academy of Dentistry for the Handicapped, and the American Society for Geriatric Dentistry*, 21(6), 208-215.
107. Thompson, T., Oram, C., Correll, C. U., Tsermentseli, S. and Stubbs, B. (2017). Analgesic effects of alcohol: a systematic review and meta-analysis of controlled experimental studies in healthy participants. *The Journal of Pain*, 18(5), 499-510.
108. Tillis, T. S., Stach, D. J., Cross-Poline, G. N., Annan, S. D., Astroth, D. B. and Wolfe, P. (2003). The transtheoretical model applied to an oral self-care behavioral change: development and testing of instruments for stages of change and decisional balance. *Journal of Dental Hygiene: JDH*, 77(1), 16-25.
109. Torabinejad, M., Cymerman, J. J., Frankson, M., Lemon, R. R., Maggio, J. D. and Schilder, H. (1994). Effectiveness of various medications on postoperative pain following complete instrumentation. *Journal of Endodontics*, 20(7), 345-354.
110. Touré, B., Kane, A. W., Diouf, A., Faye, B. and Boucher, Y. (2007). Preoperative pain and medications used in emergency patients with irreversible acute pulpitis or acute apical periodontitis: a prospective comparative study. *Journal of Orofacial Pain*, 21(4), 303-308.
111. Trevisani, M., Smart, D., Gunthorpe, M. J., Tognetto, M., Barbieri, M., Campi, B., Amadesi, S., Gray, J., Jerman, J. C., Brough, S. J., Owen, D., Smith, G. D., Randall, A. D., Harrison, S., Bianchi, A., Davis, J. B. and Geppetti, P. (2002). Ethanol elicits and potentiates nociceptor responses via the vanilloid receptor-1. *Nature Neuroscience*, 5(6), 546-551.

112. Tulip, D. E. and Palmer, N. O. (2008). A retrospective investigation of the clinical management of patients attending an out of hours dental clinic in Merseyside under the new NHS dental contract. *British Dental Journal*, 205(12), 659–648.
113. van der Westhuijzen, A. J., Becker, P. J., Morkel, J. and Roelse, J. A. (2005). A randomized observer blind comparison of bilateral facial ice pack therapy with no ice therapy following third molar surgery. *International Journal of Oral and Maxillofacial Surgery*, 34(3), 281–286.
114. Vane, J. R. and Botting, R. M. (2003). The mechanism of action of aspirin. *Thrombosis Research*, 110(5-6), 255–258.
115. Vargas, C. M. and Arevalo, O. (2009). How dental care can preserve and improve oral health. *Dental Clinics of North America*, 53(3), 399–420.
116. Vlaeyen, J. W. S. and Linton, S. J. (2000). Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. *Pain*, 85(3), 317–332.
117. Wachholtz, A. B. and Pearce, M. J. (2009). Does spirituality as a coping mechanism help or hinder coping with chronic pain?. *Current Pain and Headache Reports*, 13(2), 127–132.
118. Watt, R. G., Heilmann, A., Listl, S. and Peres, M. A. (2016). London Charter on Oral Health Inequalities. *Journal of Dental Research*, 95(3), 245–247.
119. Wide Boman, U., Carlsson, V., Westin, M. and Hakeberg, M. (2013). Psychological treatment of dental anxiety among adults: a systematic review. *European Journal of Oral Sciences*, 121(3 Pt 2), 225–234.
120. Yoon, E., Babar, A., Choudhary, M., Kutner, M. and Pysopoulos, N. (2016). Acetaminophen-Induced Hepatotoxicity: a Comprehensive Update. *Journal of Clinical and Translational Epatology*, 4(2), 131–142.
121. Zeidan, F., Grant, J. A., Brown, C. A., McHaffie, J. G. and Coghill, R. C. (2012). Mindfulness meditation-related pain relief: evidence for unique brain mechanisms in the regulation of pain. *Neuroscience Letters*, 520(2), 165–173.



ATTACHMENTS

ATTACHMENT-1. Informed Voluntary Consent Form

Bilgilendirilmiş Gönüllü Olur Formu

1. Araştırmanın adı: “Endodontik ağrılı hastalarda öz-bakım eğilimleri ve bunların ağrıyı rahatlatma etkinlikleri”
2. Bu bir bilimsel araştırmadır.
3. Araştırmanın amacı, kanal tedavisi gerektiren diş ağrılarına karşı halkımızın kullandığı ağrı rahatlatma yöntemlerini belirlemektir. Bu yöntemlere başvuran insanların profilleri çıkartılacaktır. Bu yöntemlerin diş ağrısını rahatlatma etkinlikleri incelenecektir.
4. Gönüllü için araştırma yaklaşık 7 dakika sürecektir.
5. Araştırmaya 295 gönüllünün katılması beklenmektedir.
6. Araştırmada sadece bir anket uygulanacaktır.
7. Anket, size yapılacak tedaviden bağımsızdır.
8. Araştırmada halihazırda bilinen rutin muayene yöntemleri kullanılacaktır.
9. Araştırmada deney yoktur.
10. Yapılacak anket herhangi bir sağlık riski oluşturmamaktadır.
11. Araştırmadan çıkacak sonucun bu aşamada tedavinize bir etkisi olmayacaktır.
12. Bu araştırma bir ana tedavi veya bir alternatif tedavi içermemektedir.
13. Size herhangi bir tazminat (sigorta) verilmeyecektir.
14. Size ulaşım ve yemek gibi masraflara ilişkin ödeme yapılmayacaktır.
15. Sizden beklenen, sorulara en doğru şekilde cevap vermenizdir.
16. Araştırmaya katılımınız kendi isteğinize bağlıdır ve istediğiniz zaman, herhangi bir cezaya veya yaptırıma maruz kalmaksızın, hiçbir hakkınızı kaybetmeksizin araştırmaya katılmayı reddedebilir veya araştırmadan çekilebilirsiniz.
17. Kimliğinizi ortaya çıkaracak kayıtlar gizli tutulacaktır, kamuoyuna açıklanmayacaktır; araştırma sonuçlarının yayımlanması halinde dahi kimliğiniz gizli kalacaktır,
18. İzleyiciler, yoklama yapan kişiler, etik kurul, kurum ve diğer ilgili sağlık otoritelerinin orijinal tıbbi kayıtlarınıza doğrudan erişimleri bulunabilecektir, ancak bu bilgiler gizli tutulacaktır, yazılı bilgilendirilmiş gönüllü olur formunu imzalayarak söz konusu erişime izin vermiş olacaksınız,
19. Araştırma, haklarınız veya araştırmayla ilgili herhangi bir advers olay hakkında daha fazla bilgi temin edebilmeniz için temasa geçebileceğiniz kişiye ait günün 24 saatinde erişebileceğiniz telefon numarası: Dr. Güven Kayaoğlu: 0533 7491369
20. Sizden hiçbir biyolojik materyal alınmayacaktır.

“Bilgilendirilmiş gönüllü olur formundaki tüm açıklamaları okudum. Bana yukarıda konusu ve amacı belirtilen araştırma ile ilgili yazılı ve sözlü açıklama aşağıda adı belirtilen hekim tarafından yapıldı. Araştırmaya gönüllü olarak katıldığımı, istediğim zaman gerekçeli veya gerekçesiz olarak araştırmadan ayrılabileceğimi biliyorum. **Söz konusu araştırmaya, hiçbir baskı ve zorlama olmaksızın kendi rızamla katılmayı kabul ediyorum**”

Gönüllünün adı / soyadı / imzası / tarih

Araştırmacının adı / soyadı / imzası / tarih

(Gerekli halde) olur işlemine tanık olan kişinin adı / soyadı / imzası / tarih

(Gerekli halde) anne ve baba veya kanuni temsilcinin adı / soyadı / imzası / tarih

ATTACHMENT-2. Survey Questions

Tarih:

Dosya no:

Sosyo-demografik, Medikal, Dental Bilgi

Cinsiyet: K / E

Yaş:

Diş no:

ASA sınıflaması için bilgi	Sistemik hastalıklar:	Kullandığı ilaçlar:
	Sigara kullanımı: ☐ Şu an içmiyor ☐ Şu an içiyor	Alkol kullanımı: ☐ Hiç/minimum ☐ Sosyal ☐ Bağımlılık
	Hamilelik durumu:	Boy/Kilo:

Eğitim düzeyi ☐ İlkokul ☐ Ortaokul ☐ Lise ☐ Lisans/Önlisans ☐ Lisansüstü	Hane gelir düzeyi ☐ Asgari ücret altı ☐ Asgari ücret ☐ Asgari ücret üstü	Medeni hali ☐ Evli ☐ Ayrı ☐ Boşanmış ☐ Dul ☐ Hiç evlenmemiş	Yaşadığı yer ☐ Şehir ☐ Şehir merkezinden uzak (banliyö) ☐ Köy/kırsal
--	--	---	--

Diş hekimine gitme düzeni ☐ Sorun oldukça ☐ Zaman zaman ☐ Düzenli

İlgili dişte ağrı hikayesi ☐ Yok ☐ Geçmişte ☐ Şu an
Dişte ağrı ne kadar süredir var?
Son 12 saat içerisinde ağrı kesici aldınız mı?

ATTACHMENT-2. (continued) Survey Questions

Pulpal ve Periapikal Durum**Pulpal durum**

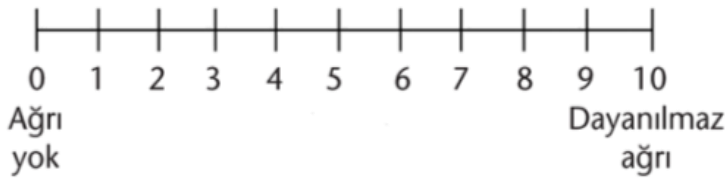
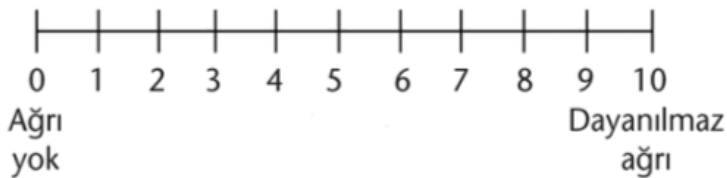
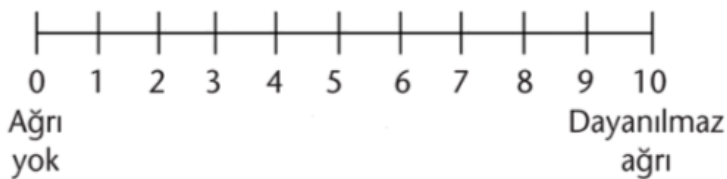
- ☐ Normal pulpa
- ☐ Reversible pulpitis
- ☐ Semptomatik irreversible pulpitis
- ☐ Asemptomatik irreversible pulpitis
- ☐ Pulpa nekrozu
- ☐ Kanal tedavili
- ☐ Ekstirpe

Periapikal durum

- ☐ Normal apikal doku
- ☐ Semptomatik apikal periodontitis
- ☐ Asemptomatik apikal periodontitis
- ☐ Kronik apikal apse
- ☐ Akut apikal apse
- ☐ Condensing Osteitis

Tedavi sırasında alınan bilgiler

Diş vital / devital / necrobiosis (mixed)

İlgili dişte hissedilen maksimum ağrı:**İlgili dişte hissedilen minimum ağrı:****İlgili dişte şu an hissedilen ağrı:**

ATTACHMENT-2. (continued) Survey Questions

(Ö) ÖZ-BAKIM**(a) Kendi kendine ilaç kullanımı**

- 1--Yalnızca reçete ile alınan ilaçlar (sistemik): antibiyotikler, kortikosteroidler, vb
- 2--Reçetesiz de alınabilen ilaçlar (sistemik): NSAİ, parasetamol, Aspirin, vb
- 3--Antibiyotik + Ağrı kesici kombinasyonu
- 4--Reçetesiz de alınabilen ilaçlar (lokal, topikal): Kloroben, Klorhex, Tantum verde, Majezik spray, Geraks spray, Vemcaine spray, Kenacort A Orabase, Dişinol, vb

(b) Evsel çözümler

- 1--Market veya eczane reyonundan reçetesiz alınabilen diş ürünleri: Oragel, Listerine, vb
- 2-- Ağzı tuz, ılık su, sirke, karbonat kombinasyonları ile çalkalamak
- 3--Diş üzerine çay poşeti yerleştirmek
- 4--Etkilenen bölgeye buz yerleştirmek ya da soğuk su ile çalkalama yapmak
- 5--Etkilenen bölgeye aspirin ya da başka bir ağrı kesici ilaç yerleştirmek
- 6--Dişetlerine masaj yapmak
- 7--Alkollü içecek içmek ya da alkollü içeceği pamuk yardımıyla dişe uygulamak
- 8--Çeneye sıcak kompres / sıcak su torbası uygulamak
- 9--Dişe sarımsak, karanfil, zencefil gibi baharat maddeler ya da bu maddelerin yağ veya çay formlarını uygulamak
- 10--Dişe zeytin yerleştirmek
- 11--Dişe diş macunu yerleştirmek
- 12--Afyon vb kullanımı
- 13--Dişteki boşluğa patlamış mısır, sakız gibi ürünler yerleştirmek
- 14--Bölgeye / dişe gazyağı, benzin, tuvalet ispirosu (izopropil alkol) gibi zehirli kimyasallar uygulamak
- 15-- Başın etrafını sıkıca sarmak

(c) Bir akraba, arkadaş ya da komşu ile konuşmak/danışmak

Açıklama:

(d) Alternatif sağlık bakım yöntemleri

- 1--Halk doktoru ya da şifacı gibi alternatif sağlık sağlayıcılar ile konuşmak
- 2--Hoca veya imam ile konuşmak
- 3--Dua etmek / Meditasyon yapmak

Açıklama:

(F) FORMAL BAKIM YÖNTEMLERİ**(a) Profesyonel servisler**

- 1--Diş hekimi
- 2--Doktor
- 3--Acil servis
- 4--Eczacı

Açıklama:

(b) Reçete veya profesyonel tavsiye ile ilaç kullanımı

- 1--Yalnızca reçete ile alınan ilaçlar (sistemik)
- 2--Reçetesiz de alınabilen ilaçlar (sistemik):
- 3--Antibiyotik + Ağrı kesici kombinasyonu
- 4--Reçetesiz de alınabilen ilaçlar (lokal, topikal)

ATTACHMENT-2. (continued) Survey Questions

Diğer (belirtiniz)**Uygulanan öz-bakım / formal-bakım yöntemlerinin etkileri**

- ☐ 0- Hiç rahatlatmadı
- ☐ 1- Biraz rahatlattı
- ☐ 2-Orta derecede rahatlattı
- ☐ 3- Çok rahatlattı
- ☐ 4-Tamamen rahatlattı

Öz-bakım/ Formal bakım yöntemlerinin algılanan etkinliği

- ☐ Etkili değildi
- ☐ Ağrıyı hafifletti veya geçici olarak rahatlattı
- ☐ Ağrıyı ortadan kaldırdı

ATTACHMENT-3. Ethics Committee Approval Document

Evrak Takip ve Sayısı: 25.11.2022-E.519919



T.C.
GAZİ ÜNİVERSİTESİ REKTÖRLÜĞÜ
Dış Hekimliği Fakültesi
Klinik Araştırmalar Etik Kurulu

Sayı : E-21071282-050.99-519919
Konu : Prof. Dr. Güven KAYAOĞLU

25.11.2022

Sayın Prof. Dr. Güven KAYAOĞLU
Endodonti Anabilim Dalı Başkanlığına

Fakültemiz Klinik Araştırmalar Etik Kuruluna, etik açıdan değerlendirilmek üzere sorumlu araştırmacı "Endodontik Ağrılı Hastalarda Öz-Bakım Eğilimleri ve Bunların Ağrıyı Rahatlatma Etkinlikleri" konulu çalışma, Etik Kurulumuz tarafından incelenmiş ve araştırma etiği açısından uygun bulunmuştur.

Bilgilerinizi ve gereğini rica ederim.

Önemli Not: Sağlık Bakanlığına başvuruda bulunacak çalışmaların, Kurulumuz tarafından incelenmiş ve onaylanmış "**Değerlendirilen Belgeler**" kısmında belirtilmiş olan **Tarih ve Versiyon/Revizyon numaralarının** ve "**Karar Bilgileri**" kısmında belirtilmiş olan **karar numarasının** yazılması gerekmektedir. Aksi takdirde Sağlık Bakanlığına teslim edilen belgelerde Tarih ve Versiyon/Revizyon numaralarında uyumsuzluk yaşanmaktadır ve bu nedenle dosyalar reddedilmektedir. Bu konuya önem verilmesi bilgilerinize sunulur.

Prof. Dr. Mesut Enes ODABAŞ
Kurul Başkanı

Ek:Klinik Araştırmalar Etik Kurul Karar Formu (3 Sayfa)/Elden Teslim Edilecektir.

Belge Doğrulama Kodu :BSAET61HFZ

Bu belge, güvenli elektronik imza ile imzalanmıştır.

Belge Takip Adresi : <https://www.turkiye.gov.tr/gazi-universitesi-ebys>

Gazi Üniversitesi Dış Hekimliği Fakültesi Bışkek Cad. No:4 kat 1 Emek/Ankara
Tel:0 (312) 203 40 00 Faks:0 (312) 223 92 26
e-Posta :dihbilisim@gazi.edu.tr İnternet Adresi :http://dent.gazi.edu.tr

Bilgi için :N. Cihan Ünay
Birim Evrak Sorumlusu
Telefon No:(0312) 203 40 69



ATTACHMENT-3. (continued) Ethics Committee Approval Document

KLİNİK ARAŞTIRMALAR ETİK KURULU KARAR FORMU

ARAŞTIRMANIN AÇIK ADI	Prof. Dr. Güven KAYAOĞLU tarafından gönderilen "Endodontik Ağrılı Hastalarda Öz-Bakım Eğilimleri ve Bunların Ağrıyı Rahatlatma Etkinlikleri" konulu çalışmanın kabulüne,
VARSA ARAŞTIRMANIN PROTOKOL KODU	

DEĞERLENDİRİLEN BELGELER	Belge Adı	Tarihi	Versiyon Numarası	Dili
	ARAŞTIRMA PROTOKOLÜ	31.08.2022	Versiyon 2	Türkçe ☒ İngilizce ☐ Diğer ☐
	BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU	08.07.2022	Versiyon 1	Türkçe ☒ İngilizce ☐ Diğer ☐
	OLGU RAPOR FORMU	31.08.2022	Versiyon 2	Türkçe ☒ İngilizce ☐ Diğer ☐
	ARAŞTIRMA BROŞÜRÜ			Türkçe ☐ İngilizce ☐ Diğer ☐
DEĞERLENDİRİLEN DİĞER BELGELER	Belge Adı			Açıklama
	SIGORTA	☐		
	ARAŞTIRMA BÜTÇESİ	☒	08.07.2022 - Versiyon 1	
	BIYOLOJİK MATERYEL TRANSFER FORMU	☐		
	İLAN	☐		
	YILLIK BİLDİRİM	☐		
	SONUÇ RAPORU	☐		
	GÜVENLİLİK BİLDİRİMLERİ	☐		
	DİĞER	☐		
KARAR BİLGİLERİ	Karar No: GÜDHKAEK.2022.19/2 Tarih: 06.10.2022			
	Yukarıda bilgileri verilen başvuru dosyası ile ilgili belgeler araştırmanın gerekece, amaç, yaklaşım ve yöntemleri dikkate alınarak incelenmiş ve uygun bulunmuş olup araştırmanın/çalışmanın başvuru dosyasında belirtilen merkezlerde gerçekleştirilmesinde etik ve bilimsel sakınca bulunmadığına toplantıya katılan etik kurul üye tam sayısının salt çoğunluğu ile karar verilmiştir. İlaç ve Biyolojik Ürünlerin Klinik Araştırmaları Hakkında Yönetmelik kapsamında yer alan araştırmalar/çalışmalar için Türkiye İlaç ve Tıbbi Cihaz Kurumu'ndan izin alınması gerekmektedir.			

KLİNİK ARAŞTIRMALAR ETİK KURULU	
ETİK KURULUN ÇALIŞMA ESASI	İlaç ve Biyolojik Ürünlerin Klinik Araştırmaları Hakkında Yönetmelik, İyi Klinik Uygulamaları Kılavuzu
BAŞKANIN UNVANI / ADI / SOYADI:	Prof. Dr. Mesut Enes ODABAŞ

Unvanı/Adı/Soyadı	Uzmanlık Alanı	Kurumu	Cinsiyet	Araştırma ile ilişkisi	Katılım *	İmza
Prof. Dr. Mesut Enes ODABAŞ (Etik Kurul Başkanı)	Çocuk Diş Hekimliği	Gazi Ü. Diş Hekimliği Fakültesi	E ☒ K ☐	E ☐ H ☐	E ☐ H ☐	
Prof. Dr. Nur MOLLAOĞLU	Ağız, Diş ve Çene Cerrahisi	Gazi Ü. Diş Hekimliği Fakültesi	E ☐ K ☒	E ☐ H ☐	E ☐ H ☐	
Prof. Dr. Şebnem KAVAKLI	Fizyoloji	Ufuk Ü. Tıp Fakültesi	E ☐ K ☒	E ☐ H ☐	E ☐ H ☐	
Prof. Dr. Orhan Mecit ULUDAĞ	Farmakoloji	Gazi Ü. Eczacılık Fakültesi	E ☒ K ☐	E ☐ H ☐	E ☐ H ☐	
Prof. Dr. Ferhan EĞİLMEZ (Bildirimlerden sorumlu olan üye)	Protetik Diş Tedavisi	Gazi Ü. Diş Hekimliği Fakültesi	E ☐ K ☒	E ☐ H ☒	E ☒ H ☐	
Prof. Dr. Mine Betül ÜÇTAŞLI	Restoratif Diş Tedavisi	Gazi Ü. Diş Hekimliği Fakültesi	E ☐ K ☒	E ☐ H ☐	E ☐ H ☐	
Prof. Dr. İlkey PEKER	Ağız, Diş ve Çene Radyolojisi	Gazi Ü. Diş Hekimliği Fakültesi	E ☐ K ☒	E ☐ H ☐	E ☐ H ☐	
Prof. Dr. Burcu ÖZDEMİR (Etik kurul başkan yardımcısı)	Periodontoloji	Gazi Ü. Diş Hekimliği Fakültesi	E ☐ K ☒	E ☐ H ☐	E ☐ H ☐	
Doç. Dr. Benay YILDIRIM	Oral Patoloji	Gazi Ü. Diş Hekimliği Fakültesi	E ☐ K ☒	E ☐ H ☐	E ☐ H ☐	
Doç. Dr. Mügem Aslı EKİCİ	Endodonti	Gazi Ü. Diş Hekimliği Fakültesi	E ☐ K ☒	E ☐ H ☐	E ☐ H ☒	

Etik Kurul Başkanının
Unvanı/Adı/Soyadı: Prof. Dr. Mesut Enes ODABAŞ
İmza:

Not: Etik kurul başkanı, imzasının yer almadığı her sayfaya imza atmalıdır.

ATTACHMENT-3. (continued) Ethics Committee Approval Document

KLİNİK ARAŞTIRMALAR ETİK KURULU KARAR FORMU

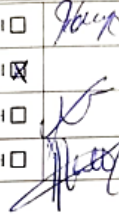
ARAŞTIRMANIN AÇIK ADI		Prof. Dr. Güven KAYAOĞLU tarafından gönderilen "Endodontik Ağrılı Hastalarda Öz-Bakım Eğilimleri ve Bunların Ağrıyı Rahatlatma Etkinlikleri" konulu çalışmanın kabulüne,			
VARSA ARAŞTIRMANIN PROTOKOL KODU					
ETİK KURUL BİLGİLERİ	ETİK KURULUN ADI	Gazi Üniversitesi Diş Hekimliği Fakültesi Klinik Araştırmalar Etik Kurulu			
	AÇIK ADRESİ:	Bişkek Caddesi 82.Sokak No:4 E Blok Zemin Kat Çankaya ANKARA			
	TELEFON	0312 203 40 69			
	FAKS	0312 203 41 39			
	E-POSTA	disetikkurul@gazi.edu.tr			
BAŞVURU BİLGİLERİ	KOORDİNATÖR/SORUMLU ARAŞTIRMACI UNVANI/ADI/SOYADI	Prof. Dr. Güven KAYAOĞLU			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ UZMANLIK ALANI	Endodonti Anabilim Dalı Başkanlığı			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ BULUNDUĞU MERKEZ	Gazi Üniversitesi Diş Hekimliği Fakültesi			
	YARDIMCI ARAŞTIRMACILAR	Prof. Dr. Bülent ALTUNKAYNAK, Doç. Dr. Mügem Aslı EKİCİ, Dt. Hande BENGÜ			
	VARSA İDARİ SORUMLU UNVANI/ADI/SOYADI				
	DESTEKLEYİCİ				
	PROJE YÜRÜTÜCÜSÜ UNVANI/ADI/SOYADI (TÜBİTAK vb. gibi kaynaklardan destek alanlar için)				
	DESTEKLEYİCİNİN YASAL TEMSİLCİSİ				
	ARAŞTIRMANIN FAZİ VE TÜRÜ	FAZ 1	☐		
		FAZ 2	☐		
		FAZ 3	☐		
		FAZ 4	☐		
		Gözlemsel ilaç çalışması	☐		
		Tıbbi cihaz klinik araştırması	☐		
		İn vitro tıbbi tanı cihazları ile yapılan performans değerlendirme çalışmaları	☐		
İlaç dışı klinik araştırma		☐			
Diğer ise belirtiniz: İlaç Dışı Girişimsel Olmayan Klinik Araştırmalar					
ARAŞTIRMAYA KATILAN MERKEZLER	TEK MERKEZ	ÇOK MERKEZLİ	ULUSAL	ULUSLARARASI	
	☒	☐	☒	☐	

Etik Kurul Başkanının
Unvanı/Adı/Soyadı: Prof. Dr. Mesut Enes ODABAŞ
İmza:

Not: Etik kurul başkanı, imzasının yer almadığı her sayfaya imza atmalıdır.

ATTACHMENT-3. (continued) Ethics Committee Approval Document

KLİNİK ARAŞTIRMALAR ETİK KURULU KARAR FORMU

ARAŞTIRMANIN AÇIK ADI		Prof. Dr. Güven KAYAOĞLU tarafından gönderilen "Endodontik Ağrılı Hastalarda Öz-Bakım Eğilimleri ve Bunların Ağrıyı Rahatlatma Etkinlikleri" konulu çalışmanın kabulüne.							
VARSA ARAŞTIRMANIN PROTOKOL KODU									
Doç. Dr. Nehir CANIGÜR BAVBEK	Ortodonti	Gazi Ü. Diş Hekimliği Fakültesi	E ☐	K ☒	E ☐	H ☐	E ☐	H ☐	
Dr. Öğr. Üyesi Hakan TÖZÜN	Halk Sağlığı	Gazi Ü. Tıp Fakültesi	E ☒	K ☐	E ☐	H ☐	E ☐	H ☒	
Av. Efe AYAZ	Avukat	Serbest Avukat	E ☒	K ☐	E ☐	H ☐	E ☐	H ☐	
İlker YAVUZ	Fotoğraf Eğitmeni	-	E ☒	K ☐	E ☐	H ☐	E ☐	H ☐	

*:Toplantıda Bulunma

Etik Kurul Başkanının
Unvanı/Adı/Soyadı: Prof. Dr. Mesut Enes ODABAŞ
İmza:

Not: Etik kurul başkanı, imzasının yer almadığı her sayfaya imza atmalıdır.

Original research article

Self-care tendencies and their pain-relieving effects in patients with endodontic pain: a descriptive survey

Hande Bengü ¹, Mügem Aslı Ekici ¹,Özlem İlk ², Güven Kayaoğlu ^{1*}

¹Department of Endodontics, Faculty of Dentistry, Gazi University, ²Department of Statistics, Middle East Technical University, Ankara, Turkey

ABSTRACT

OBJECTIVE: This paper aims to search for sociodemographic/dental models predicting the self-care orientations in endodontic patients and to explore the effectiveness of the applied methods in relieving pain.

MATERIALS AND METHOD: Patients with a history of endodontic pain presenting at the endodontic clinic of Gazi University were subjected to a survey. Their sociodemographic and clinical data were obtained. They were asked to select from a structured list whether they had used any self- or formal care methods. Pain relief was measured using a 5-point standard Likert scale. Statistical analyses were done using multivariate logistic regression, Wilcoxon and Kruskal-Wallis tests, and Benjamini-Hochberg correction.

RESULTS: Among 356 patients, 90% applied self-care alone or in combination with formal care. Maximum pain level, age, and pattern of dental clinic attendance were the variables that predicted orientations to various subcategories of self-care behaviors, with the first two variables remaining statistically or marginally significant in all tested conditions ($P < .05$ or $< .10$). Among the home remedies, drinking or local application of alcohol and intraoral cold treatment by the patient provided significantly greater pain relief than the others ($P = .001$). Medication under the guidance of a professional was more effective than self-medication ($P < .001$; except for NSAIDs, which were similarly effective in both cases).

CONCLUSION: Before applying to the dental school hospital, most of the patients used various self-care methods for relieving toothache. Maximum pain and age were the common covariates of various self-care orientations. Overall, formal care relieved pain better than self-care. Home remedies generally displayed little effectiveness.

KEYWORDS: Drug misuse; endodontics; home treatment; public health; toothache; traditional medicine

CITATION: Bengü H, Ekici MA, İlk O, Kayaoğlu G. Self-care tendencies and their pain-relieving effects in patients with endodontic pain: a descriptive survey. Acta Odontol Turc 2025;42(1):1-12

EDITOR: Bağdagül Helvacıoğlu Kıvanç, Gazi University, Ankara, Turkey

COPYRIGHT: © 2025 Bengü *et al.* This work is licensed under a [Creative Commons Attribution License](#). Unrestricted use, distribution, and reproduction in any medium are permitted provided the original author and source are credited.

FUNDING: None declared.

CONFLICT OF INTEREST: The authors declare no conflict of interest related to this study.

[Abstract in Turkish is at the end of the manuscript]

INTRODUCTION

Tooth pain is a sign that warns the patient that something is wrong with the tooth and that they should take care of the situation. The accepted standard of care for tooth pain is obviously professional dental treatment. However, patients may tend to apply non-professional methods (self-care) solely or before eventually consulting a professional (formal care),¹⁻⁴ possibly due to their socio-cultural backgrounds, the intensity of their complaint, concerns about dental treatment, access to healthcare systems, *etc.*, Self-care is a universally recognized practice that often has beneficial effects and encompasses interpretation and treatment of symptoms, as well as disease prevention.⁵ Practices such as using home remedies, self-medication, speaking with a relative/friend (non-professionals), alternative healthcare, *etc.*, are considered among self-care behaviors.^{1-3,6}

Among the self-care applications, home remedies are therapies that can be carried out at home, typically using everyday products and ingredients to treat illnesses or enhance health. They are very popular among people,²⁻⁹ and an online search (*e.g.*, Google, Yahoo) inquiring “How to relieve tooth pain OR toothache?” returns predominantly with various home remedy recommendations (*e.g.*, salt water rinse, clove oil, garlic, *etc.*).

Received: March 17, 2024; Accepted: May 6, 2024

*Corresponding author: Dr. Güven Kayaoğlu, Department of Endodontics, Faculty of Dentistry, Gazi University, 06490, Emek, Ankara, Turkey
E-mail: guvenk@gazi.edu.tr; guvenkayaoglu@gmail.com

ATTACHMENT-4. (continued) Published Article

2

Self-care and pain relief

Self-medication is regarded by many dental pain sufferers as first-aid, and it can indeed be useful.^{1-3,5-7,10-13} However, inappropriate self-medication can do more harm than good (e.g., development of bacterial resistance against antibiotics, gastrointestinal complications with NSAID use, etc.). However, with previous experiences or recommendations from non-professionals, self-medication is often used by endodontic patients.

Studies have been done concerning self-care applications in oral or dental problems.^{1-3,5,6,9} However, there are limited studies that have focused particularly on endodontic patients.¹⁰⁻¹² Also, there is little knowledge about how self-care strategies relieve dental pain.^{1,3} To this end, the aims of this study were:

- 1) to determine whether patients with endodontic pain refer to any care method before applying to the dental school hospital (self-care or formal care), determine the varieties and frequencies of the methods used by these patients, and search for sociodemographic and dental models explaining endodontic patients' self-care practice behavior (primary aim),
- 2) to examine the effectiveness of the applied methods in relieving the pain (secondary aim).

MATERIALS AND METHOD

This is a descriptive study in which endodontic patients' self- or formal care practice behaviors were recorded via a survey, and their pain relief was analyzed exploratively with clinically relevant comparisons. This study was approved by the Clinical Research Ethics Committee of Gazi University Faculty of Dentistry (decision no: GUDHKA EK. 2022.19/2; 06.10.2022) and was carried out according to the STROBE checklist for observational studies.¹⁴

Establishing the list of self-care applications

Categorized lists of self-care behaviors for dental pain were taken as templates.^{2,3} Following translation into the Turkish language and cultural adaptation, the categorized items were presented to 115 endodontic patients, and the patients were asked whether they applied any of these items or any other unlisted application for pain relief. Other applications reported by the patients were added to the draft list (provided that an item was reported by at least 2 different patients). How a new item would be placed in the categorization was discussed and decided by two investigators (H.B. and G.K.). Otherwise, existing items that were not selected by at least two patients were removed from the draft list. The final version of the applications list is shown in Figure 1.

The questionnaire

The data were collected standardized for all patients and were based on patients' self-reports, dental/medical charts, and clinical examination findings. The questionnaire consisted mainly of 3 parts:

- 1) sociodemographic and clinical data,
- 2) the categorized list of self- and formal care methods,
- 3) a rating scale for measuring the effectiveness of the care method: (5-point standard Likert scale containing the following ordinal gradations: 0 = no pain relief, 1 = a little pain relief, 2 = moderate pain relief, 3 = a lot of pain relief, and 4 = complete pain relief).¹⁵

Study design

This study was carried out at the general endodontic training clinic of the Faculty of Dentistry, Gazi University. Patients with a history of spontaneous pain requiring primary endodontic treatment of a tooth (the exposure) were included in the study between November 2022 and July 2023. The exclusion criteria and the flowchart of the study are shown in Figure 2. To avoid interviewer bias toward selecting a patient with a greater intensity of pain, any patient with a previous pain intensity ≥ 1 (0-10; NRS) was included in the study.

Using convenience sampling, the investigators questioned all scheduled patients successively. An informed consent was obtained, and the contents of the form were shown and read aloud to the patient. Some items like 'spoke to a relative, friend or neighbor' (mostly resulted in recommendations for seeing a dentist) or 'professional services' (mostly resulted in prescription or referral to dental school hospital) could not be rated. Also, to reduce recall bias, patients were told not to rate the pain relief if they could not remember. Missing data that occurred this way or due to improper data collection by the investigator were neglected, and the analyses were conducted with the available data.

Diagnostics included routine radiographical and clinical examination (e.g., inspection, palpation, percussion, etc.). The patients' preoperative indefinite pulpal diagnoses were confirmed upon endodontic access by observing the bleeding coming from the pulp chamber. Partially necrotic teeth (pulp necrobiosis) were considered necrotic.

Statistical analyses

Model search

The factors affecting the self-care practice were evaluated by constructing multivariate models. The dependent variable was the self-care use by the patient. A two-valued dependent variable was formed by coding a patient applying self-care as 1 and coding others as 0. Below, three tested self-care conditions are shown (behavioral outcomes):

- 1) Self-medication (Sa); if applied (code 1), otherwise (code 0)
- 2) Home remedies (Sb); if applied (code 1), otherwise (code 0)
- 3) Home remedies (Sb) OR spoke with a relative, friend, or neighbor (Sc) OR alternate healthcare (Sd): if at least one applied (code 1), otherwise (code 0)

ATTACHMENT-4. (continued) Published Article

H Bengü et al.

3

(S) SELF-CARE	
(a) Self-medication	
1- Prescription medicine (systemic): antibiotics, corticosteroids, etc.	
2- Over-the-counter medicine (systemic): NSAIDs, acetaminophen, Aspirin, etc.	
3- Antibiotic + Analgesic combination	
4- Over-the-counter medicine (local, topical): Kloroben, Klorhex, Tantum verde, Majezik spray, Geraks spray, Vemcaine spray, Kenacort A Orabase, Dişinol, etc.	
(b) Home remedies (home treatment)	
1- Over-the-counter dental products: Listerine, Oragel, etc.	
2- Rinsing the mouth with combinations of warm water, salt, vinegar, and carbonate	
3- Placing ice on the affected area or rinsing the mouth with cold water	
4- Placing aspirin or another analgesic on the affected area	
5- Massaging the gums	
6- Drinking alcohol/liquor or applying it to the tooth with a cotton ball (including cologne)	
7- Putting spices such as cloves, ginger, garlic, thyme, and mint on the tooth or applying the oil or tea forms of these substances to the tooth	
8- Putting olives on the tooth	
9- Putting toothpaste on the tooth	
10- Brushing the tooth	
11- Placing cold/warm compresses on the jaw	
12- Pressing/massaging the jaw from the outside with the palm of the hand	
(c) Speaking with a relative, friend, or neighbor	
(d) Alternative healthcare	
1- Praying / Meditation	
(F) FORMAL CARE	
(a) Professional services	(b) Medication use by prescription or professional advice
1- Dentist	1- Prescription medicine (systemic)
2- Physician	2- Over-the-counter medicine (systemic)
3- Emergency service	3- Antibiotic + Analgesic combination
4- Pharmacist	4- Over-the-counter medicine (local, topical)

Other (please explain)

Figure 1. The final version of the applications list

For each condition, models were sought in 2 separate contexts: dental and sociodemographic. The dental context included the independent variables: sex, age (years), ASA health status,¹⁶ tooth type, jaw, duration of pain (days), AAE pulpal and periapical status,¹⁷ maximum and minimum pain levels (NRS; 0-10, each), whereas the sociodemographic context included: sex, age, ASA health status, education level, household income, marital status, residence, and pattern of dental clinic attendance. Sex, age, and health status as potential confounders were common in both contexts and included in statistical analyses for control. No categorization was done for the numerical variables, age, duration of pain, and pain levels. These were analyzed as continuous data.

First, univariate analyses were performed using logistic regression and correlation tests (Kendall's; between the binary dependent variable and continuous independent variables), and variable selection was performed ($P \leq .10$, as default). Additional dummy variables were tested for education level, marital status, and periapical status. Significant (candidate) variables were entered into a multivariate analysis, so a saturated model was obtained. A final reduced model was established (statistically significant: $P < .05$ or marginally significant: $.05 < P < .10$) with a backward stepwise regression approach, eliminating the insignificant variables one by one, and deleting the one with the greatest p-value each time. A combined model was also tested. Analyses were done using R Statistical Software (v4.2.1).¹⁸

ATTACHMENT-4. (continued) Published Article

4

Self-care and pain relief

Pain relief

The pain relief analysis included the data of all patients, regardless of their pulpal status. Non-parametric Wilcoxon rank sum test was used for the comparison of the two groups. Non-parametric Kruskal-Wallis test was used for the comparison of more than two groups and post-hoc pairwise comparisons were done using the Benjamini-Hochberg correction. Relevant statistical comparisons were made between and among self-care and formal care applications (comparisons designated №1-8). If the observation number was less than 10, it was not included in the statistical analysis. Statistical significance was set at $P < .05$. An analysis of pain relief restricted to patients with symptomatic irreversible pulpitis was also performed.

Sample size calculation

In calculating the sample size for logistic regression models, Peduzzi's approach was used.¹⁹ This approach calculates the sample size as $n=10(k)/p$, where k represents the number of independent variables, and p represents the smallest probability of dependent variable levels. The k value was 10 for the dental model (the model with the greatest number of independent variables). According to the pilot test findings [$p=\min(0.34, 0.66)$], p was 0.34. Thus, the minimum required number of patients was $n=10(10)/0.34=295$.

RESULTS

From 999 patients examined for eligibility, 643 were excluded, so the final dataset included 356 patients (see Figure 2 for exclusions and the flowchart). The descriptive sociodemographic and dental data are shown in Table 1. Most patients had applied self-and/or formal care before presenting to the observation setting ($n=339$). Furthermore, 89.9% of the patients applied self-care alone or in combination with formal care (Table 1).

Model search

Univariate findings are shown in Table 2 (here, only of patients who applied at least one of Sb, Sc, or Sd; data not shown for the other conditions). Among the tested models, the combination model performed better than the separate dental or sociodemographic models (included more statistically significant variables and had greater accuracy, sensitivity, and specificity values). For the three models, the Hosmer-Lemeshow goodness-of-fit test indicated no evidence of poor fit ($P > .10$). The coefficients and performances of the multivariate models are given in Table 3. Note that maximum pain was the strongest predictor variable, and results in Table 3 were adjusted for possible confounders of age and pattern of dental clinic attendance since these were found to be marginally or statistically significant in the saturated models ($P < .10$).

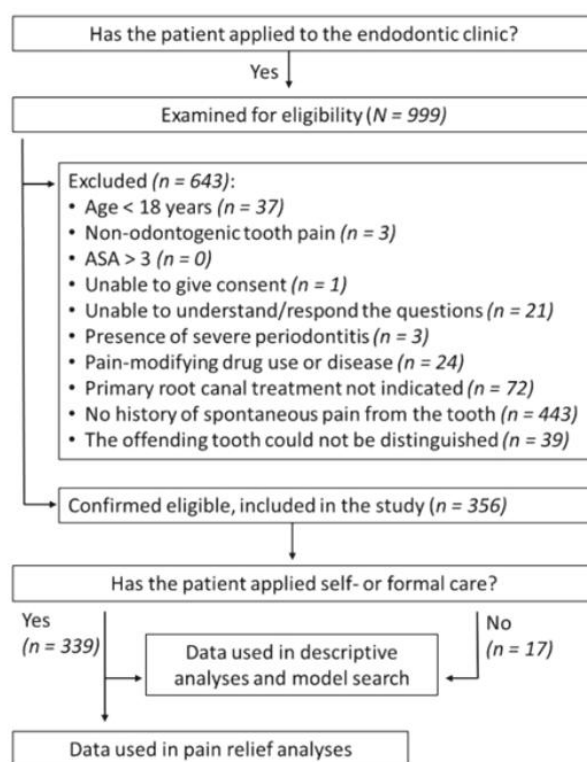


Figure 2. The flowchart of the study

ATTACHMENT-4. (continued) Published Article

H Bengü et al.

5

Table 1. Descriptive sociodemographic and dental variables are presented as n (%), if not mentioned otherwise. Frequencies of patients who applied self-care, formal care, or none are shown at the end of the table.

Sex and age male: 134 (mean age $\pm$ standard deviation: 38.4 ± 14.5 years; range: 18–79 years) female: 222 (mean age $\pm$ standard deviation: 35.0 ± 13.3 years; range: 18–73 years) total: 356 (mean age $\pm$ standard deviation: 36.3 ± 13.8 years; range: 18–79 years)
Jaw mandible: 184 (51.8) maxilla: 171 (48.2) missing data: 1
Tooth type posterior: 324 (91.3) anterior: 31 (8.7) missing data: 1
ASA 1: 121 (34) 2: 228 (64) 3: 7 (2)
Education level none: 1 (0.3) primary school: 47 (13.2) middle school: 35 (9.8) high school: 151 (42.4) associate degree: 24 (6.7) bachelor's degree: 86 (24.2) postgraduate degree: 12 (3.4)
Household income below minimum wage: 26 (7.3) minimum wage: 97 (27.2) above minimum wage: 233 (65.4)
Marital status married: 211 (59.3) separated: 0 (0) divorced: 9 (2.5) widowed: 4 (1.1) never married: 132 (37.1)
Residence urban: 173 (48.6) suburban: 180 (50.6) rural: 3 (0.8)
Pattern of dental clinic attendance goes when has a problem: 301 (84.6) goes occasionally: 28 (7.9) goes regularly: 27 (7.6)
Duration of pain: average: 84.4 days (standard deviation: 155.8 days; range: 1–1095 days)
Pulpal status symptomatic irreversible pulpitis: 224 (62.9) necrosis: 132 (37.1)
Periapical status normal apical tissue: 59 (16.6) symptomatic apical periodontitis: 247 (69.4) asymptomatic apical periodontitis: 26 (7.3) chronic apical abscess: 5 (1.4) acute apical abscess: 19 (5.3)
Maximum pain (NRS; 0–10): mean: 8.1 (standard deviation: 1.9, range: 1–10)
Minimum pain (NRS; 0–10): mean: 2.9 (standard deviation: 1.6, range: 0–10) missing data: 1
Frequency of patients applying methods (in general) Self-care only: 151 (42.4) Formal care only: 19 (5.3) Both: 169 (47.5) None: 17 (4.8)
Frequency of patients applying methods (specific)† Sa: 244 (68.5) Sb: 230 (64.6) Sc: 76 (21.3) Sd: 12 (3.4) Sb OR Sc OR Sd: 250 (70.2) Fa: 189 (53.1) Fb: 144 (40.4)

†Because a patient may have applied more than 1 method, the sum can exceed 100%. Abbreviations; Sa: self-medication, Sb: home remedies, Sc: Speaking with a relative, friend, or neighbor, Sd: alternative healthcare, Fa: professional services, Fb: medication use by prescription or professional advice, ASA: American Society of Anesthesiologists Physical Status Classification System, NRS: numerical rating scale.

ATTACHMENT-4. (continued) Published Article

6

Self-care and pain relief

Table 2. Univariate statistical results using logistic regression tests (dependent variable is the application of 'home remedies' (Sb) OR 'speaking with a relative, friend, or neighbor' (Sc) OR application of 'alternate healthcare' (Sd); (code 1: if applied, code 0: otherwise)

Variable	Code 0; n (%)	Code 1; n (%)	Odds ratio (90% CI)	P value
Education level				
Other (n=273)	75 (27.47)	198 (72.53)	1	
Middle school or less (n=83)	31 (32.53)	52 (62.65)	0.635 (0.412-0.986)	.086 *
Marital status				
Other (n=224)	74 (33.04)	150 (66.96)	1	
Never married (n=132)	32 (24.24)	100 (75.76)	1.542 (1.03-2.332)	.081 *
Household income				
Other (n=123)	38 (30.89)	85 (69.11)	1	
>Minimum wage (n=233)	68 (29.18)	165 (70.82)	1.085 (0.725-1.613)	.737
Residence				
Other (n=183)	59 (32.24)	124 (67.76)	1	
Urban (n=173)	47 (27.17)	126 (72.83)	1.276 (0.87-1.874)	.296
Pattern of dental clinic attendance				
Other (n=55)	9 (16.36)	46 (83.64)	1	
Goes when has a problem (n=301)	97 (32.23)	204 (67.77)	0.411 (0.21-0.751)	.021 **
Sex				
Male (n=134)	47 (35.07)	87 (64.93)	1	
Female (n=222)	59 (26.58)	163 (73.42)	1.492 (1.011-2.201)	.09 *
Age (cont. data)				
			0.977 (0.964-0.991)	.005 **
ASA				
Other (n=235)	69 (29.36)	166 (70.64)	1	
ASA1 (n=121)	37 (30.58)	84 (69.42)	0.944 (0.636-1.415)	.812
Jaw				
Mandible (n=184)	51 (27.72)	133 (72.28)	1	
Maxilla (n=171)	55 (32.16)	116 (67.84)	0.809 (0.551-1.185)	.361
Tooth type				
Anterior (n=31)	8 (25.81)	23 (74.19)	1	
Posterior (n=324)	98 (30.25)	226 (69.75)	0.802 (0.381-1.577)	.606
Duration of pain (cont. data)				
			1.000 (0.999-1.001)	.999
Pulpal status				
Necrosis (n=132)	34 (25.76)	98 (74.24)	1	
SIP (n=224)	72 (32.14)	152 (67.86)	0.732 (0.487-1.092)	.204
Periapical status				
Other (n=297)	87 (29.29)	210 (70.71)	1	
Normal (n=59)	19 (32.20)	40 (67.80)	0.872 (0.531-1.461)	.655
Max pain (cont. data)				
			1.354 (1.222-1.507)	< .001 **
Min pain (cont. data)				
			1.171 (1.03-1.341)	.049 **

Statistically significant variables are marked with asterisk (* $P \leq .10$, ** $P < .05$). Abbreviations; ASA: American Society of Anesthesiologists Physical Status Classification System, SIP: symptomatic irreversible pulpitis

Table 3. The final (reduced) multivariate combined models for the 3 tested self-care conditions, and their accuracy performances at different threshold values

Sa	Estimate	Std. Error	z value	P value	Odds ratio (90% CI)	(Threshold) accuracy, sensitivity, specificity
H-L test, P = .469						
(Intercept)	-0.973	0.605	-1.607	.108	0.378 (0.138, 1.017)	(0.6) 0.70, 0.84, 0.38
Age	-0.015	0.008	-1.768	.077	0.985 (0.972, 0.999)	(0.65) 0.68, 0.77, 0.48
Max pain	0.291	0.063	4.590	<.001	1.338 (1.207, 1.488)	(0.685) ^a 0.63, 0.66, 0.54
Sb						
H-L test, P = .374						
(Intercept)	-0.599	0.656	-0.913	.361	0.549 (0.186, 1.618)	(0.5) 0.66, 0.89, 0.25
Age	-0.019	0.008	-2.296	.022	0.981 (0.968, 0.995)	(0.6) 0.65, 0.77, 0.44
Pattern of dental clinic attendance	-0.637	0.350	-1.822	.068	0.529 (0.291, 0.925)	(0.65) ^a 0.65, 0.68, 0.60
Max pain	0.309	0.064	4.817	<.001	1.362 (1.228, 1.517)	
Sb OR Sc OR Sd						
H-L test, P = .280						
(Intercept)	0.066	0.692	0.095	.924	1.068 (0.344, 3.384)	(0.6) 0.71, 0.86, 0.36
Age	-0.021	0.009	-2.396	.017	0.979 (0.966, 0.993)	(0.65) 0.69, 0.79, 0.46
Pattern of dental clinic attendance	-1.004	0.404	-2.486	.013	0.367 (0.181, 0.690)	(0.7) ^a 0.67, 0.70, 0.59
Max pain	0.309	0.066	4.696	<.001	1.362 (1.225, 1.522)	

^aMean; Abbreviations; CI: Confidence Interval, H-L test: Hosmer-Lemeshow test, Sa: self-medication, Sb: home remedies, Sc: speaking with a relative, friend, or neighbor, Sd: alternative healthcare (i.e., praying/meditation)

ATTACHMENT-4. (continued) Published Article

H Bengü et al.

7

Pain relief analysis

The descriptive pain relief data and the statistical comparisons between/among the groups are shown in Table 4 (data from all patients, regardless of the pulpal status) and Figure 3, respectively. The statistical outcomes were mostly similar even when the input data was restricted to patients with symptomatic irreversible pulpitis (Figure 3). Differently, in patients

with symptomatic irreversible pulpitis, no statistically significant difference was found between formal use of prescription medicine (systemic; i.e., antibiotic [Fb1]) and formal use of antibiotic + analgesic combination ([Fb3]; $P > .05$) [N5], and both revealed significantly greater scores compared to the formal use of over-the-counter (OTC) medicine (systemic [Fb2], and local/topical [Fb4]) ($P = .026$) (Figure 3).

Table 4. Number of patients applying a specific care method, and their descriptive pain relief scores (5-point scale; 0-4). All patients' data are presented here regardless of the pulpal status.

	n	mode	median	min-max
SELF CARE (TOTAL)	874 [n(available score)=790]‡	1	1	0-4
Sa (Self-medication)	320 [n(available score)=315]	2	2	0-4
Sa1 (prescription medicine; systemic)	4	N/A†	N/A	0-4
Sa1 (antibiotic)	3	N/A	N/A	0-4
Sa1 (corticosteroid)	0	-	-	-
Sa1 (opiate)	1	3	3	3-3
Sa2 (OTC medicine; systemic)	257 [n(available score)=252]	2	2	0-4
Sa2 (NSAID)	150 [n(available score)=148]	4	3	0-4
Sa2 (acetaminophen)	100 [n(available score)=97]	1	2	0-4
Sa2 (NSAID + acetaminophen)	2	N/A	2.5	2-3
Sa2 (Aspirin; API: acetylsalicylic acid)	1	4	4	4-4
Sa2 (unknown analgesic)	4	4	3.5	1-4
Sa3 (antibiotic + analgesic combination)	9	1	1	0-4
Sa4 (OTC medicine; local, topical)	50	0	2	0-4
Sa4 (Kloroben, Andorex; API: chlorhexidine gluconate, benzydamine HCl)	18	2	1	0-4
Sa4 (Klorhex; API: chlorhexidine gluconate)	1	2	2	2-2
Sa4 (Majezik spray/mouthwash; API: flurbiprofen)	8	N/A	2	0-4
Sa4 (Vemcaine spray; API: lidocaine)	4	4	4	0-4
Sa4 (Dişinol; API: clove oil, phenol, chlorobutanol)	9	2	2	0-4
Sa4 (unknown spray/mouthwash)	10	0	0.5	0-4
Sb (Home remedies)	466 [n(available score)=463]	0	1	0-4
Sb1 (OTC dental products; Listerine)	19	0	0	0-3
Sb2 (Rinsing the mouth w/ warm water...)	123 [n(available score)=122]	0	1	0-4
Sb2 (salt + vinegar)	11	1	1	0-4
Sb2 (vinegar)	11	0	0	0-4
Sb2 (warm water)	6	1	1.5	1-3
Sb2 (salt + warm water)	82 [n(available score)=81]	0	1	0-4
Sb2 (carbonate + warm water)	7	1	1	0-3
Sb2 (vinegar + carbonate + salt)	1	0	0	0-0
Sb2 (vinegar + carbonate)	1	2	2	2-2
Sb2 (carbonate + salt + warm water)	4	0	0.5	0-1
Sb3 (Placing ice on the affected area...)	13	2	2	0-3
Sb4 (Placing Aspirin or...)	4	1	1	0-3
Sb5 (Massaging the gums)	13	0 & 1	1	0-3
Sb6 (Drinking/applying alcohol...)	19	4	3	0-4
Sb6 (Drinking alcohol/liquor)	3	N/A	2	0-3
Sb6 (Applying alcohol/liquor/cologne to the tooth...)	16	4	3	0-4

ATTACHMENT-4. (continued) Published Article

8

Self-care and pain relief

Sb7 (Putting spices...)	95 [n(available score)=94]	0	1	0-4
Sb7 (clove)	65 [n(available score)=64]	0	1	0-4
Sb7 (garlic)	16	0	1	0-3
Sb7 (thyme)	9	1	1	0-4
Sb7 (ginger)	3	0	0	0-1
Sb7 (mint oil)	1	2	2	2-2
Sb7 (sage)	1	0	0	0-0
Sb8 (olive)	25	0	0	0-2
Sb9 (toothpaste)	6	2	2	0-4
Sb10 (brushing the tooth)	97 [n(available score)=96]	0	1	0-4
Sb11 (Placing cold/warm compress...)	37	1	1	0-4
Sb11 (cold compress)	32	1	1	0-4
Sb11 (warm compress)	5	2	2	0-3
Sb12 (Pressing/massaging the jaw...)	4	1	1	0-2
Sb.Marginals	11	0	1	0-2
Sc (Speaking with a relative...)	76 [n(available score)=0]	-	-	-
Sd (Alternative healthcare: praying...)	12	1	1	0-3
FORMAL CARE (TOTAL)	373 [n(available score)=177]	4	3	0-4
Fa (Professional services)	200 [n(available score)=6]	2 & 4	2.5	0-4
Fa1 (dentist)	149 [n(available score)=5]	2 & 4	2	0-4
Fa2 (physician)	25 [n(available score)=0]	-	-	-
Fa3 (emergency service)	14 [n(available score)=1]	3	3	3-3
Fa4 (pharmacist)	12[n(available score)=0]	-	-	-
Fb (Medication use by prescription...)	173 [n(available score)=171]	4	3	0-4
Fb1 (Prescription medicine; systemic)	25 [n(available score)=24]	4	4	0-4
Fb1(antibiotic)	25 [n(available score)=24]	4	4	0-4
Fb1 (corticosteroid)	0	-	-	-
Fb1 (opiate)	0	-	-	-
Fb2 (OTC medicine; systemic)	40 [n(available score)=39]	3 & 4	3	0-4
Fb2 (NSAID)	32	4	3	0-4
Fb2 (acetaminophen)	3	2	2	1-2
Fb2 (Aspirin; API: acetylsalicylic acid)	0	-	-	-
Fb2 (unknown analgesic)	5 [n(available score)=4]	3	3	2-3
Fb3 (antibiotic + analgesic combination)	86	4	3	0-4
Fb4 (OTC medicine; local, topical)	22	1	2	0-4
Fb4 (Kloroben, Andorex; API: chlorhexidine gluconate, benzydamine HCl)	8	1	1	0-3
Fb4 (Klorhex; API: chlorhexidine gluconate)	3	1	2	1-3
Fb4 (Benzydamine HCl)	1	3	3	3-3
Fb4 (Majezik spray/mouthwash; API: flurbiprofen)	2	N/A	1.5	1-2
Fb4 (Verncaine spray; API: lidocaine)	2	N/A	2.5	2-3
Fb4 (Dişinol; API: clove oil, phenol, chlorobutanol)	1	4	4	4-4
Fb4 (unknown spray/mouthwash)	5	0	2	0-4

†N/A: Not applicable. There were not many observations in a specific score to reliably report these summary statistics. ‡Scoring was not always possible for various reasons (e.g., the patient could not remember the pain relief, actions such as referral to a hospital, recommendations to see a dentist, prescription/suggestion of a drug were not scorable). Abbreviations; S: self-care, F: formal care, Sa: self-medication, Sb: home remedies, Sc: Speaking with a relative, friend, or neighbor, Sd: alternative healthcare, Fa: professional services, Fb: medication use by prescription or professional advice, Sa1: self-medication with prescription medicine (systemic), Sa2: self-medication with over-the-counter medicine (systemic), Sa3: self-medication with antibiotic + analgesic combination, Sa4: self-medication with over-the-counter medicine (local, topical), Sb1: over-the-counter dental products (Listerine was the only product used by the patients; active pharmaceutical ingredients: eucalyptol, menthol, methyl salicylate, thymol), Sb2: rinsing the mouth with combinations of warm water, salt, vinegar and carbonate, Sb3: placing ice on the affected area or rinsing the mouth with cold water, Sb4: placing aspirin or another analgesic on the affected area, Sb5: massaging the gums, Sb6: drinking alcohol/liquor or applying it to the tooth with a cotton ball, Sb7: putting spices such as cloves, ginger, garlic, thyme and mint on the tooth or applying the oil or tea forms of these substances to the tooth, Sb8: putting olives on the tooth, Sb9: putting toothpaste on the tooth, Sb10: brushing the tooth, Sb11: placing cold/warm compresses on the jaw, Sb12: pressing/massaging the jaw from the outside with the palm of the hand, Fb1: formal use of prescription medicine (systemic), Fb2: formal use of over-the-counter medicine (systemic), Fb3: formal use of antibiotic + analgesic combination, Fb4: formal use of over-the-counter medicine (local, topical), NSAID: nonsteroidal anti-inflammatory drug, API: active pharmaceutical ingredient

ATTACHMENT-4. (continued) Published Article

H Bengü et al.

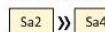
9

Pain relief statistical comparisons (all patients)**№1. Overall comparison between the S and F blocks**


$p < 0.001$ (Wilcox. test, 1-sided)

№2. Comparison among the groups within the S and F blocks

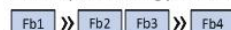

$p < 0.001$ (K-W test), $p < 0.001$ (B-H test)
Sc and Fa were not included since $n < 10$ in each

№3. Comparison among self-medication (Sa) subgroups


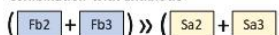
$p = 0.003$ (Wilcox. test; 1-sided)
Sa1 and Sa3 were not included since $n < 10$ in each

№4. Comparison among home remedies (Sb)

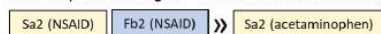

$p = 0.001$ (K-W test), $p = 0.001$ (B-H test)
Sb4, Sb9 and Sb12 were not included since $n < 10$ in each

№5. Comparison among professionally prescribed/advised medication


$p < 0.001$ (K-W test), $p < 0.001$ (B-H test)

№6. Comparison between self- and formal use of an analgesic alone or in combination with antibiotic


$p < 0.001$ (Wilcox. test, 1-sided)

№7. Comparison among self- or formal use of NSAIDs or acetaminophen


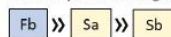
$p < 0.001$ (K-W test), $p < 0.001$ (B-H test)
Fb2 (acetaminophen) was not included since $n < 10$

№8. Comparison between systemic use of professionally prescribed/advised antibiotic and NSAIDs

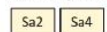

$p = 0.071$ (Wilcox. test, 1-sided)

Pain relief statistical comparisons restricted to SIP patients only**№1. Overall comparison between the S and F blocks**


$p < 0.001$ (Wilcox. test, 1-sided)

№2. Comparison among the groups within the S and F blocks


$p < 0.001$ (K-W test), $p < 0.001$ (B-H test)
Sc, Sd and Fa were not included since $n < 10$ in each

№3. Comparison among self-medication (Sa) subgroups


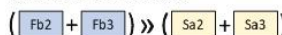
$p = 0.112$ (Wilcox. test; 1-sided)
Sa1 and Sa3 were not included since $n < 10$ in each

№4. Comparison among home remedies (Sb)

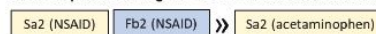

$p = 0.008$ (K-W test), $p = 0.008$ (B-H test)
Sb3, Sb4, Sb5, Sb9 and Sb12 were not included since $n < 10$ in each

№5. Comparison among professionally prescribed/advised medication


$p = 0.026$ (K-W test), $p = 0.026$ (B-H test)

№6. Comparison between self- and formal use of an analgesic alone or in combination with antibiotic


$p = 0.0015$ (Wilcox. test, 1-sided)

№7. Comparison among self- or formal use of NSAIDs or acetaminophen


$p < 0.001$ (K-W test), $p < 0.001$ (B-H test)
Fb2 (acetaminophen) was not included since $n < 10$

№8. Comparison between systemic use of professionally prescribed/advised antibiotic and NSAIDs


$p = 0.404$ (Wilcox. test, 1-sided)

Figure 3. Statistical comparisons of pain relief (left panel: regardless of the pulpal status, right panel: only of the SIP patients). The symbol “»” designates the presence and direction of the statistical significance ($\alpha = 0.05$ for all analyses). Abbreviations; S: self-care, F: formal care, Sa: self-medication, Sb: home remedies, Sc: Speaking with a relative, friend, or neighbor, Sd: alternative healthcare, Fa: professional services, Fb: medication use by prescription or professional advice, Sa1: self-medication with prescription medicine (systemic), Sa2: self-medication with OTC medicine (systemic), Sa3: self-medication with antibiotic + analgesic combination, Sa4: self-medication with OTC medicine (local, topical), Sb1: OTC dental products (Listerine was the only product used by the patients), Sb2: rinsing the mouth with combinations of warm water, salt, vinegar and carbonate, Sb3: placing ice on the affected area or rinsing the mouth with cold water, Sb4: placing aspirin or another analgesic on the affected area, Sb5: massaging the gums, Sb6: drinking alcohol/liquor or applying it to the tooth with a cotton ball, Sb7: putting spices such as cloves, ginger, garlic, thyme and mint on the tooth or applying the oil or tea forms of these substances to the tooth, Sb8: putting olives on the tooth, Sb9: putting toothpaste on the tooth, Sb10: brushing the tooth, Sb11: placing cold/warm compresses on the jaw, Sb12: pressing/massaging the jaw from the outside with the palm of the hand, Fb1: formal use of prescription medicine (systemic; antibiotics were the only medicine prescribed), Fb2: formal use of OTC medicine (systemic), Fb3: formal use of antibiotic + analgesic combination, Fb4: formal use of OTC medicine (local, topical), NSAID: non-steroidal anti-inflammatory drug, Wilcox. test: Wilcoxon rank sum test with continuity correction, K-W test: Kruskal-Wallis test, B-H test: Benjamini-Hochberg Correction for post-hoc pairwise comparisons

DISCUSSION

Maximum pain level, age, and pattern of dental clinic attendance were the variables that predicted the home remedy use. The statistical significance of these three variables increased when the dependent variables were extended to include speaking with a relative, friend, or neighbor and alternative healthcare in addition to home remedies. Further, when we looked at variables affecting self-medication, two of these variables (maximum pain and age) remained in the models, suggesting maximum pain and age as the common predictors of self-care.

As expected, the frequency of self-care increased as the maximum pain score increased. This finding is similar to the findings of a previous study in which dental pain sufferers reported increased use of OTC medication and home remedies parallel to an increase in their pain intensity.⁹ Also, in line with our findings, among a variety of oral health problems, oral pain was associated with greater odds of self-use of OTC medicine in dentate rural older adults.⁶

The younger-aged patients resorted to self-care more frequently than the older patients. One explanation may be that younger patients were more familiar with the internet and could easily obtain self-care information from there. A previous study reported that looking for information about home remedies in the media, including the internet, was a typical behavior among patients,⁸ and patients even share their dental problems and seek advice on online social platforms.⁷ Our finding contrasts with a previous study where the elderly more often applied self-care methods for dental pain.⁹ In another study concerning toothache, age had no significant effect on using a self-care method.³ These disparate findings may be due to socio-cultural and economic differences among the study populations.

Unexpectedly, those who occasionally or regularly made dental visits more frequently applied at least one of the following self-care methods: home remedies, speaking with a relative, friend, or neighbor, and alternate healthcare. This finding can be explained by the possible motivation of regular dental attenders to take a more active interest and role in their health.⁸

ATTACHMENT-4. (continued) Published Article

10

Self-care and pain relief

Regarding sex, previous studies have found in univariate analyses that females more often applied various forms of self-care strategies.^{6,9-10} This trend was seen in our study, too. However, when controlled with the other variables, sex was not statistically significant. In another multivariate modeling study, sex and income, similar to our study, were not significant variables when tested for various self-care applications.³

Greater pain relief scores were found with the use of formally prescribed medicine compared to the self-use of medicine [N=2]. When analyzed further in detail, formally prescribed analgesics alone or in combination with antibiotics still revealed greater pain relief scores compared to the self-use of the same [N=6]. However, pain relief was comparable between the formal and self-use of NSAIDs, and greater for these two groups compared to the self-use of acetaminophen [N=7]. Thus, one reason for the significant difference between the formal- and self-medication groups may be the greater number of acetaminophen use in the self-medication group (97 versus 3 observations), which decreases the group's median score.

Consistent with the findings of a previous study,²⁰ dentists preferred the prescription of NSAIDs to acetaminophen. The finding that pain relief with NSAIDs was greater than with acetaminophen is consistent with the findings of previous studies in which acute postoperative pain after third molar surgery or endodontic treatment was evaluated.^{21,22}

Unexpectedly, among the prescribed medicines, antibiotics (alone) revealed greater pain relief scores compared to antibiotic + analgesic combinations when all patients' data were analyzed [N=5]. Interestingly, a similar finding was reported in another study, where penicillin alone controlled postoperative endodontic pain more effectively than penicillin and ibuprofen combination.²¹ Incompatibility of the combination may be the reason for the unexpected finding. Conversely, when the data was restricted to include only the patients with symptomatic irreversible pulpitis, no significant difference existed between the two [N=5].

Among the home remedies, drinking alcohol or applying it to the tooth was the most effective pain relief method [N=4]. Alcohol, when taken systemically, elevates the pain threshold and provides analgesia in a dose-response relationship, probably by anxiolytic and central NMDA-receptor blocking mechanisms.²³ Locally, ethanol, being a TRPV1 (capsaicin receptor) agonist, activates the TRPV1 receptors when tested on isolated neurons of the peripheral nervous system and potentiates responses to capsaicin and other agonists (e.g., heat, protons).²⁴ Following the initial excitation, a so-called 'capsaicin desensitization' occurs as the neuron transitions to a lasting refractory state, other types of sensory receptors are also cross-desensitized, and so the neuron becomes reversibly inactivated.²⁵

Placing ice on the affected area or rinsing the mouth with cold water was the second most effective

self-applied pain relief method [N=4]. Cold tests are often used clinically to identify the diseased tooth by provoking hypersensitivity; but ironically, here, intraoral cold applications provided moderate pain relief. The relief mechanisms can be explained by the vasoconstriction of pulpal blood vessels or the outward hydrodynamic movement of the tubular fluid in response to the cold stimulus, resulting in intrapulpal pressure decrease.²⁶ Patients who reported relief from intraoral cold application in this study were likely in the earliest stages of irreversible pulpitis.

The remaining home remedies (except OTC dental products and putting olives on the tooth, which ranked as the least effective) ranked after intraoral cold applications in terms of pain relief, had similar effects among each other and provided mostly non to minimum pain relief [N=4].

The limitations of this study include recall bias since the obtained pain relief scores relied on the patient's memory. However, this risk is diminished as it is assumed that dental pain is not quickly forgotten,²⁷ and research reveals that postoperative pain relief (24 hours) correlates highly with recalled relief (6 weeks) in emergency endodontic patients.²⁸ Another limitation was the inability to know the actual pulpal/periapical status of the tooth at the time the patient sought relief. The possibility of their change over time should be considered when interpreting the results. Another bias is that this study was carried out on patients who applied to our clinic for definitive treatment. Therefore, this study lacks the information of those who did not seek such treatment. Speculatively, these non-observed patients may be quite satisfied with whatever pain-coping method they are using, and their inclusion could change, at least, the pain relief findings in this study.

Regarding the generalizability of the findings, although patients with a wide age range were included over a relatively long time, the setting in which this study was conducted was an urban location. Therefore, the rural population was underrepresented in this study. Again, generalizability in this study is limited considering the lack of patients who did not seek or did not have access to dental care in some way and so could not be interviewed.

CONCLUSION

Before applying to the dental school hospital, most patients used various self-care methods to relieve their toothache. Maximum pain level and age were the common covariates of various self-care orientations. Overall, formal care relieved pain better than self-care. Medication under the guidance of a professional was more effective than self-use (except for NSAIDs, which provided relief equally either way). Home remedies generally provided little relief, while few of them provided moderate to much relief.

ATTACHMENT-4. (continued) Published Article

H Bengü et al.

11

ACKNOWLEDGMENTS

This work is part of the PhD thesis of Hande Bengü at Gazi University. We remember with love and respect our friend and colleague, Professor Dr. Bülent Altunkaynak, who contributed to the analytical aspects of this study but passed away on October 22, 2022.

REFERENCES

1. Stoller EP, Gilbert GH, Pyle MA, Duncan RP. Coping with tooth pain: a qualitative study of lay management strategies and professional consultation. *Spec Care Dentist*. 2001;21:208-15.
2. Cohen LA, Harris SL, Bonito AJ, Manski RJ, Macek MD, Edwards RR, et al. Coping with toothache pain: a qualitative study of low-income persons and minorities. *J Public Health Dent*. 2007;67:28-35.
3. Cohen LA, Bonito AJ, Akin DR, Manski RJ, Macek MD, Edwards RR, et al. Toothache pain: behavioral impact and self-care strategies. *Spec Care Dentist*. 2009;29:85-95.
4. Anwar M, Green JA, Norris P, Bukhari NI. Self-medication, home remedies, and spiritual healing: common responses to everyday symptoms in Pakistan. *Health Psychology and Behavioral Medicine*. 2015;3:281-95.
5. Gilbert GH, Stoller EP, Duncan RP, Earls JL, Campbell AM. Dental self-care among dentate adults: contrasting problem-oriented dental attenders and regular dental attenders. *Spec Care Dentist*. 2000;20:155-63.
6. Arcury TA, Bell RA, Anderson AM, Chen H, Savoca MR, Kohman T, et al. Oral health self-care behaviors of rural older adults. *J Public Health Dent*. 2009;69:182-9.
7. Heavilin N, Gerbert B, Page JE, Gibbs JL. Public health surveillance of dental pain via Twitter. *J Dent Res*. 2011;90:1047-51.
8. Parisius LM, Stock-Schröder B, Berger S, Hermann K, Joos S. Use of home remedies: a cross-sectional survey of patients in Germany. *BMC Fam Pract*. 2014;15:116.
9. Jaiswal AK, Pachava S, Sanikommu S, Rawlani SS, Pydi S, Ghanta B. Dental pain and self-care: a cross-sectional study of people with low socio-economic status residing in rural India. *Int Dent J*. 2015;65:256-60.
10. Nusstein JM, Beck M. Comparison of preoperative pain and medication use in emergency patients presenting with irreversible pulpitis or teeth with necrotic pulps. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2003;96:207-14.
11. Touré B, Kane AW, Diouf A, Faye B, Boucher Y. Preoperative pain and medications used in emergency patients with irreversible acute pulpitis or acute apical periodontitis: a prospective comparative study. *J Orofac Pain*. 2007;21:303-8.
12. Emad S, Abedi S, Dehghani Z, Ghahramani Y. Prevalence of Self-Medication with Antibiotics amongst Clients Referred to Outpatient University Dental Clinics in Iranian Population: A Questionnaire-Based Study. *Iran Endod J*. 2020;15:1-5.
13. De-Paula KB, Silveira LS, Fagundes GX, Ferreira MB, Montagner F. Patient automedication and professional prescription pattern in an urgency service in Brazil. *Braz Oral Res*. 2014;28:S1806-83242014000100250.
14. Vandenbroucke JP, von Elm E, Altman DG, Gotzsche PC, Mulrow CD, Pocock SJ, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): explanation and elaboration. *Epidemiology*. 2007;18:805-35.
15. Bernstein SL, Bijur PE, Gallagher EJ. Relationship between intensity and relief in patients with acute severe pain. *Am J Emerg Med*. 2006;24:162-6.
16. American Society of Anesthesiologists (ASA). Physical Status Classification System. Available at <https://www.asahq.org/standards-and-guidelines/asa-physical-status-classification-system>. Accessed March 16, 2024.
17. American Association of Endodontists (AAE). Glossary of Endodontic Terms <https://www.aae.org/specialty/clinical-resources/glossary-endodontic-terms/>. Accessed March 16, 2024.
18. R Core Team (2022). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>.
19. Peduzzi P, Concato J, Kemper E, Holford TR, Feinstein AR. A simulation study of the number of events per variable in logistic regression analysis. *J Clin Epidemiol*. 1996;49:1373-9.
20. Mickel AK, Wright AP, Chogle S, Jones JJ, Kantorovich I, Curd F. An analysis of current analgesic preferences for endodontic pain management. *J Endod*. 2006;32:1146-54.
21. Torabinejad M, Cymerman JJ, Frankson M, Lemon RR, Maggio JD, Schilder H. Effectiveness of various medications on postoperative pain following complete instrumentation. *J Endod*. 1994;20:345-54.
22. Chou R, Wagner J, Ahmed AY, Blazina I, Brodt E, Buckley DI, et al. Treatments for Acute Pain: A Systematic Review [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2020 Dec. Report No.: 20(21)-EHC006. PMID: 33411426.
23. Thompson T, Oram C, Correll CU, Tsementseli S, Stubbs B. Analgesic Effects of Alcohol: A Systematic Review and Meta-Analysis of Controlled Experimental Studies in Healthy Participants. *J Pain*. 2017;18:499-510.
24. Trevisani M, Smart D, Gunthorpe MJ, Tognetto M, Barbieri M, Campi B, et al. Ethanol elicits and potentiates nociceptor responses via the vanilloid receptor-1. *Nat Neurosci*. 2002;5:546-51.
25. Fischer MJM, Cloutier CI, Szallasi A. The Mysteries of Capsaicin-Sensitive Afferents. *Front Physiol*. 2020;11:554195.
26. Cecic PA, Hartwell GR, Bellizzi R. Cold as a diagnostic aid in cases of irreversible pulpitis. Report of two cases. *Oral Surg Oral Med Oral Pathol*. 1983;56:647-50.
27. Cohen LA, Bonito AJ, Akin DR, Manski RJ, Macek MD, Edwards RR, et al. Toothache pain: a comparison of visits to physicians, emergency departments and dentists. *J Am Dent Assoc*. 2008;139:1205-16.
28. Wu LT, Lin CS, Yang SF. Association between pain, anxiety, and pain relief in patients receiving emergent endodontic treatment. *Clin Oral Invest*. 2022;26:275-85.

Endodontik ağrılı hastalarda öz-bakım eğilimleri ve bunların ağrıyı rahatlatma etkinlikleri

ÖZET

AMAÇ: Endodontik hastalarda öz bakım yönelimlerini öngören sosyodemografik/dental modelleri araştırmak ve uygulanan yöntemlerin ağrıyı gidermedeki etkinliğini araştırmaktır.

GEREÇ VE YÖNTEM: Gazi Üniversitesi endodonti kliniğine başvuran, endodontik ağrı öyküsü olan hastalara anket uygulandı. Hastaların sosyodemografik ve klinik verileri alındı. Öz-bakım veya formal bakım yöntemlerinden hangisine başvurdıklarını yapılandırılmış bir listeden seçmeleri istendi. Ağrı rahatlaması 5 noktalı standart Likert ölçeği kullanılarak ölçüldü. İstatistiksel analizler çok değişkenli lojistik regresyon, Wilcoxon ve Kruskal-Wallis testleri ve Benjamini-Hochberg düzeltmesi kullanılarak yapıldı.

BULGULAR: Toplam 356 hastanın %90'ı öz-bakımı tek başına veya formal bakımla birlikte uyguladı. Maksimum ağrı düzeyi, yaş ve diş hekimine gitme düzeni, öz-bakım yönelimlerini öngören değişkenlerdi; bunların ilk ikisi, test edilen tüm koşullarda istatistiksel veya marjinal olarak anlamlı bulundu ($P < .05$ veya $< .10$). Ev tedavileri arasında, alkol içmek veya yerel olarak alkol uygulamak ve hasta tarafından yapılan ağız içi soğuk tedavisi, ağrıyı diğer yöntemlere göre anlamlı olarak daha fazla rahatlatı

ATTACHMENT-4. (continued) Published Article

12

Self-care and pain relief

($P = .001$). Bir sađlık profesyonelinin rehberliđinde ila tedavisi, kendi kendine ila tedavisinden daha etkiliydi ($P < .001$; her iki durumda da benzer řekilde etkili olan non-steroidal anti-inflamatuar ilalar hari).

SONU: Hastaların ođu diř hekimliđi fakltesi hastanesine bařvurmadan nce diř ađrısını hafifletmek iin eřitli z-bakım yntemlerini kullandılar. Maksimum ađrı ve yař,

eřitli z-bakım ynelimlerinin ortak deđiřkenleriydi. Genel olarak formal bakım, z-bakımdan daha iyi rahatlama sađladı. Ev tedavileri genellikle ok az iře yaradı.

ANAHTAR KELİMELE: Diř ađrısı; endodonti; ev tedavisi; geleneksel tıp; halk sađlıđı; uygunsuz ila kullanımı

RESUME

Personal Information

Surname, name : BENGÜ, Hande
 Nationality : T.C.
 Birth Date and place :
 Marital status :
 Telephone :
 e-mail :

Educational Degree	School/Program	Year of Graduation
PhD	Gazi University/Endodontics	Ongoing
Master's	Başkent University/ Dentistry	2019
Bachelor's	Başkent University/ Dentistry	2019
Highschool	Gaziosmanpaşa Highschool	2013

Work Experience, Years	Place of Employment	Position
-	-	-

Languages

English
 Swedish

Publications

Bengü, H., Gürel Ekici, M., İlk, Ö. and Kayaoğlu, G. (2025). Self-care tendencies and their pain-relieving effects in patients with endodontic pain: a descriptive survey. *Acta Odontologica Turcica*, 42(1), 1-12. <https://doi.org/10.17214/gaziaot.1454105>

Hobbies

Knitting and Crocheting
 Coding
 Gaming



GAZİLİ OLMAK AYRICALIKTIR...

