

An Exploration of the Oral Health-Seeking Behaviour of Adults *A Mixed-Methods Systematic Literature Review*

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Abstract

Background: Despite oral diseases being preventable, they affect nearly half of the global population. However, it is estimated that 46% of individuals do not routinely visit the dentist. The delayed utilisation of dental services results in irreversible morbidity, reduced quality of life, loss of economic productivity, and mortality.

Objectives: To assess the oral health-seeking behaviour (OHSB) of adults and explore factors influencing it.

Methods: Following the Johanna Briggs Institute (JBI) guidelines, a systematic search of PubMed, Medline, Scopus, CINAHL, and Google Scholar was conducted for articles from 2015 to 2025 that included adults aged 18 and older. Quantitative, qualitative and mixed-methods studies were included and assessed for inclusion using the JBI appraisal tools. The thematic analysis approach was used to synthesize and present findings.

Results: Three themes emerged regarding the OHSB of adults: the delayed use of dental services, non-utilisation of dental services, and enablers of dental service utilisation (DSU). Sub-themes emerging under delayed use of dental services were socioeconomic and psychosocial factors. Under non-utilisation of dental services, sociodemographic, intrapersonal factors and the use of alternative treatment pathways were sub-themes. Sub-themes emerging under enablers of DSU were need and health system factors.

Conclusion: Poor OHSB of adults results in morbidity, reduced quality of life, and mortality. The avoidance of dental services is influenced by sociodemographic, intrapersonal factors and the use of alternative treatment pathways. Delayed DSU is driven by socioeconomic and psychosocial factors, and need and health system factors are enablers of DSU. However, further in-depth research is required on how social, cultural, and health system factors influence OHSB in varying contexts.

Keywords: oral health, health seeking behavior, dental service utilization, adults

1. Introduction

Oral diseases greatly affect the quality of life of affected persons, resulting in difficulty eating, talking, smiling and breathing (Salvador & Toassi, 2021). Despite being largely preventable, oral diseases are highly prevalent globally, affecting nearly half the global population (Jain et al., 2023). The most common oral diseases, dental caries and periodontitis, are preventable through good oral hygiene practices, a healthy diet, avoidance of smoking and alcohol use and regular screening (Benzian et al., 2023). However, it is estimated that 46% of individuals have poor oral health seeking behaviour (OHSB). Specifically, they do not routinely visit the dentist for dental check-ups (Kailembo et al., 2018; Reda et al., 2018).

OHSB has been defined as the actions or inactions one takes when faced with a health problem related to their oral cavity or its supporting structures (Uguru et al., 2021). Some scholars have expanded this definition to include the measures one takes to maintain good oral health (Deolia et al., 2020). It, therefore, encompasses preventive dental

visits, dental visits for treatment of disease, and the use of home remedies and alternative medicine.

Routine dental check-ups allow for the early detection and treatment of oral problems before they progress. For instance, incipient dental caries can be detected and reversed through the application of topical fluoride to the affected teeth, while gum disease can be reversed or controlled through scaling and polishing performed by a dental professional at routine dental visits (Erbaş Unverdi et al., 2024; Matthews & Al-Waeli, 2025). Another illustration of the advantage of these check-ups is in the preventive treatment of oral cancer. Early signs of oral cancer can be detected during these check-ups and early initiation of treatment can avert the advancement of cancer, which may ultimately result in death (Warnakulasuriya & Kerr, 2021).

It has been demonstrated that oral diseases have an impact that is beyond the oral cavity. Recent research has linked oral disease with heart disease, diabetes, respiratory disease, erectile dysfunction and cancer (Ahmad & Haque, 2021; Gupta et al., 2024; Huang et al., 2022; Kavarthapu & Gurumoorthy, 2021; Zaman et al., 2025). Furthermore, oral diseases have been linked to mental health conditions such as Alzheimer's and dementia (Pruntel et al., 2024; Wang et al., 2023). Therefore, the maintenance of good oral health is of paramount importance as it promotes the prevention of disease and overall health and well-being.

In spite of the known benefits of regularly visiting the dentist, many adults have never been to the dentist, with a large proportion only visiting when they perceive that something is wrong with their teeth or oral cavity (Chamut et al., 2021; Mohd Khairuddin et al., 2024; Patel et al., 2021). Furthermore, the use of unscientifically proven alternate treatment pathways has been observed in some contexts; the use of these may result in delayed use of dental services (Abuzenada et al., 2021; Foláyan et al., 2024). Untreated dental disease results in needless pain, the loss of hours of productivity, morbidity and, in some cases, mortality (Agudelo-Suárez et al., 2019; de Abreu et al., 2021; Lin et al., 2020; Sato et al., 2023). However, little to no systematic literature reviews (SLR) have been conducted focused on the OHSB of adults. Therefore, this SLR sought to explore what the OHSB of adults is and what factors influence and drive these behaviours.

2. Method

This SLR was conducted following the Joanna Briggs Institute (JBI) guidelines for conducting mixed-methods SLRs (Santos et al., 2018). The following steps were followed. Firstly, the scope of SLR was determined. Then, a search strategy and inclusion and exclusion criteria for studies were developed. A search was then performed in relevant databases; data were extracted and quality assessments performed. Lastly, findings were synthesized (Stern et al., 2021).

2.1 Scope of the SLR

This SLR sought to address two research questions: (1) What are the OHSBs of adults globally? (2) How are various factors related to the OHSB of adults globally? The scope of this SLR was determined using the PICO framework shown in Table 1 below.

Table 1. The PICO framework this study utilised

[P] - Population	Adults, aged 18 or older
[I] – Phenomenon of interest	Oral health-seeking behaviour
[Co] – Study Context	Global

Then the inclusion and exclusion criteria for the SLR were decided. Studies that were original, peer-reviewed and published in English were included in this paper. Furthermore, the studies had to have been published between January 1 2015 and 11 May 2025. The studies included could be quantitative, qualitative or mixed-methods studies. Lastly, the studies had to be focused on the OHSB of adults. Studies that were not peer-reviewed and reviews were excluded from this SLR. Additionally, studies published in languages other than English, those published before January 1 2015 and those focused on children, adolescents or exclusively on one gender were excluded from this SLR.

2.2 The Search Strategy

A search based on the following combination of keywords was conducted:

("oral health" OR "dental health" OR "oral hygiene" OR "dental care") AND ("health seeking" OR "healthcare seeking" OR "service utilization" OR "dental visit" OR "access" OR "barrier" OR "access to care" OR "barriers*

to care" OR "healthcare access" OR "dental care access") AND ("adult" OR "adults" OR "young adult" OR "middle aged").

This search was conducted in the following databases: PubMed, Medline, Scopus, CINAHL, and Google Scholar. These databases were chosen due to their use in previous studies focused on health-related behaviours (Heath et al., 2022; Oermann et al., 2021). The search yielded 21 459 records. Firstly, articles were screened through the use of the Rayyan semi-automated tool, wherein based on a predetermined inclusion and exclusion criteria, relevant articles were excluded and duplicates removed (Khalil et al., 2022, 2024; Scott et al., 2021). Then, 788 records had their title and abstracts screened for inclusion by two reviewers. Resultantly, 59 articles were shortlisted for full article screening. All 59 records were obtained and screened; however, 39 were excluded for various reasons. Ultimately, 20 studies were included in this SLR. Figure 1 below shows a detailed breakdown of the screening process.

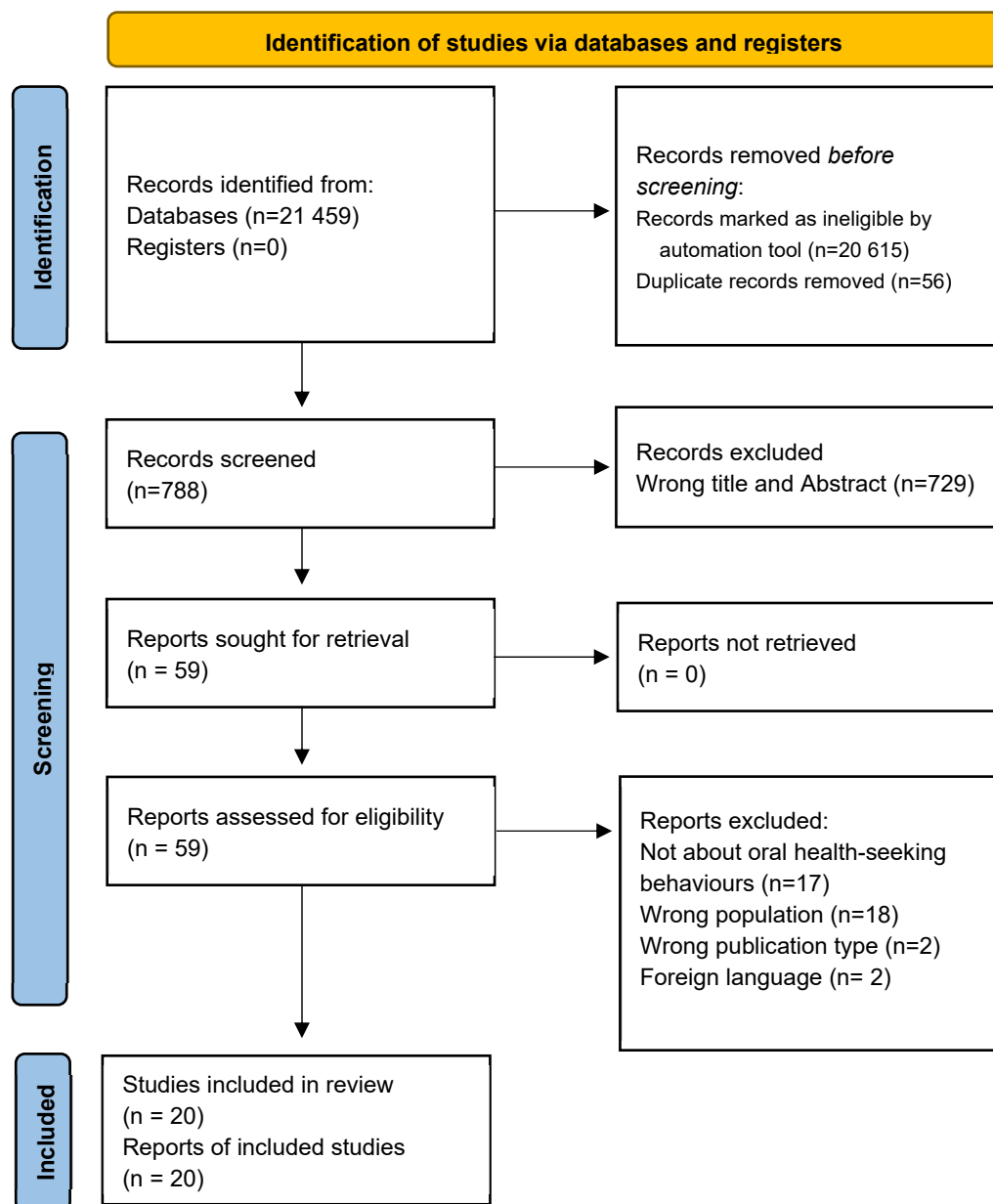


Figure 1. Identification of studies via databases and registers

2.3 Data Extraction

Following review of the 20 studies, data highlighting the study title, context, objectives, population, methods and findings were extracted into a table (Munn et al., 2014). Language as close as possible to the original wording used by the authors of the articles was used, and only supplemented where doing so would make the findings clearer (Aromataris et al., 2024). Data extraction was performed by the two reviewers and where there were differing opinions on how to present the data, they discussed until a resolution was achieved. Table 3 below shows the data extracted from the studies.

Table 2. Data Extracted from Studies included in this Paper

Study author and year	Region/Country	Study aim or title	Sample size and participant characteristics	Study Approach and methodology	Oral Health-Seeking Behaviours	Main findings
Leggett et al. (2025)	Europe/ UK, Ireland, Denmark, Germany, Netherlands and Hungary	An exploration of the relationship between attitudes and experiences of prevention and oral health behaviours of the public within six European countries	Adults aged 18+ from the UK, Ireland, Denmark, Germany, the Netherlands and Hungary	Quantitative, Cross-sectional using an online questionnaire	29% brushed their teeth less than twice a day; 30% had visited a dentist a year or more ago	Attitude and Knowledge were linked with improved oral hygiene practices and more frequent visits to the dentist. Cost was a significant barrier to regular dental visits.
Amedari et al. (2025)	North America/ USA	The association between predisposing, enabling and need factors and oral health care utilization among U.S. working age adults	US Adults aged 18 to 64	Quantitative, Cross-sectional household survey across 50 states	20% delayed dental visits due to costs and 36% had not visited the dentist for a year or longer	Lack of insurance, not having primary care provider, low income, unemployment, no college education and difficulty engaging in social interactions linked to delayed dental visits
Balraj et al. (2025)	Asia/ India	Assessment of Oral Health Status, Care Seeking Behaviours, and Oral Health-Related Quality of Life among Indian Adults Using the Dental Federation's Digital Application	1 049 patients from India (61% male, 39% female), aged 18 and older	Quantitative, Cross-sectional survey using digital application	48% had not visited the dentist in the past 12 months, 8% had never visited a dentist	No relationship between age and dental visits; Perceiving teeth to be okay and being busy top reasons for not visiting a dentist
Khuong et al. (2024)	Asia/ Vietnam	The Barriers in Using Oral Health Services of People Aged 18 or Over in Danang in 2023: A Cross-sectional Study	386 people in Danang, Vietnam (62% female, 38%) aged 18 and older	Quantitative, Cross-sectional survey using face-to-face interviews	58% had not used a dental facility in the last 12 months or never accessed one	Physical accessibility of facilities, affordability, scheduling, poor knowledge and lack of individual skills regarding oral health main barriers to using oral health services
Tan et al. (2019)	Asia/ Malaysia	Oral healthcare seeking behavior of Malaysian adults in	10 134 Malaysian adults aged 18+	Quantitative, Cross-sectional survey using	46% of those with dental problems sought oral healthcare and	Among urban dwellers, ethnicity was related to using dental services and self-medication; among

		urban and rural areas: findings from the National Health and Morbidity Survey 2019		face-to-face interviews	21% self- medicated	rural dwellers income was associated with dental services use and education was associated with self-medication
Edlibi Al Hage et al. (2022)	Europe/ Romania	Trends in Access to Oral Health Care among Adults from the N-E Region of Romania	696 participants (56% females, 44% male) Romanian, aged 18 or older	Quantitative, Retrospective cross- sectional study through administered questionnaires	60% of participants visited the dentist once or more a year, 34% visited when needed, 5% visited less than once a year and 2% had never been to the dentist	Reasons for women not attending dental clinic were costs (24%) and fear (10%) while top reasons for men were costs (26%) and lack of time (6%). Additionally, monthly income was related to oral hygiene
Ghanbarza degan (2023)	Australia	The effect of education on dental service utilization patterns in different sectors: A multiple mediation analysis	4 494 adults from South Australia	Quantitative, Cross- sectional survey among randomly selected participants	42% of participants had not accessed dental services in the past 12 months. 60% visited for a check-up while 40% visited for emergencies.	Persons with lower education levels were less likely to have visited the dentist in the past 12 months. Furthermore, low education was related to emergency dental care rather than routine access.
Ocwia (2021)	Africa/ Uganda	Oral health seeking behaviors of adults in Nebbi District, Uganda: a community- based survey	400 (230F: 170M) adults aged 18 to 65 in Uganda	Quantitative, Cross- sectional community survey through simple random sampling of households	Only 52% of those who had experienced dental pain in the past year had accessed dental services. 87% reported seeking services due to dental pain.	Marital status was linked with greater odds of visiting the dentist. Cost was the leading barrier to oral care. Long waiting time, distance to facility, fear of pain and the attitudes of dentist were also mentioned.
Pengpid and Peltzer (2021)	Africa/ Sudan	Prevalence and correlates of dental service utilisation among a national general adult population sample in Sudan	7 722 adult participants, 18- 69-year-old Sudanese	Quantitative, Cross- sectional survey representative of Sudan	65% had never visited the dentist, 22% had visited more than 12 months earlier and 13% had visited in the past 12 months. The main reason for utilising dental services was pain (67%) while 22% visited for follow- up treatment and 5% visited routinely.	Education attainment, higher income, urban residence, poor self-rated oral health, oral pain, the use of toothpaste, difficulty eating and being screened for hypertension were positively related to OHSB. Male sex was negatively associated with OHSB.
Mariño et al (2021)	Australia	Patterns of use of oral health care services in	574 adults in rural area of Australia	Quantitative, Cross- sectional	51% had use dental services in the past 12	Age, underlying chronic conditions, and having a health card were

		Australian rural adults: the Crossroads-II Dental sub-study	(female 55%, male 45%)	survey	months. 20% had used the service between 12 months and 2 years ago. 30% had not visited for more than 2 years, 2% had never visited the dentist.	associated with recent dental visits while a lower number of teeth and perceived barriers to care decreased the odds of dental visits.
Uguru et al. (2021)	Africa/ Nigeria	Oral health-seeking behavior among different population groups in Enugu Nigeria	774 adults (42% male, 58% female)	Quantitative, Cross-sectional descriptive study	99% of participants had sought treatment for themselves or family member in the past. 37% from private dental clinics, 40% from public clinics, 14% from patent medicine dealers, 1% from traditional healers, and 7% had used home remedies	Recommendations from friends (49%), severity of dental problem (22%), cost (19%), distance from health facility, qualifications of professionals, staff attitude and previous dental experience influenced where participants sought treatment first for dental problems.
van der Zande et al. (2020)	Europe/ United Kingdom	Disentangling a web of causation: An ethnographic study of interlinked patient barriers to planned dental visiting, and strategies to overcome them	97 participants (56 male, 41 females)	Qualitative, Ethnographic study through observation (155 hours), interviews (97) and follow-up interviews (19)	Most participants experienced more than one barrier to dental visiting.	Five barriers to dental visiting emerged: available resources; importance of oral health; trust in dentists; dental anxiety; and embarrassment.
Lutfiyya et al. (2019)	North America/ USA	Dental care utilization: examining the associations between health services deficits and not having a dental visit in past 12 months	Adults aged 18 or older in the US, weighted n=60,512,412, 43% male, 57% female	Quantitative, Cross-sectional (using data from the Behavioral Risk Factor Surveillance System survey)	30% had not visited the dental clinic for 12 months or more. Males and rural adults had greater odds of not visiting the dentist in the past 12 months.	Last routine medical examination, having a personal healthcare provider, having health insurance, and delayed medical care were significantly related to not visiting the dentist in the past 12 months
Siljak et al. (2018)	Europe/ Republic of Srpska	Dental service utilisation among adults in a European developing country: findings from a national health survey	4 128 adults aged 18 or older in the Republic of Srpska	Quantitative, Cross-sectional study (using data from the National Health Survey	Only 20% had visited the dentist in the past 12 months. Females visited more often than males (21 vs 18%)	Females, those residing in urban areas, those who were employed and those who had NCDs were more likely to visit a dentist. The poor, those with low and middle education, and people with an average SROH

						were less likely to visit the dentist.
Jones et al (2019)	Australia	Factors Relating to Access to Dental Care for Indigenous South Australians	44 adults (18 males and 26 females)	Qualitative, Semi-structured interviews followed by thematic analysis	Increased self-efficacy, higher health literacy, social cohesion and previous use of dental services increased likelihood of completing dental treatment	Those who partially completed treatment reported systemic barriers and desired the relief of oral pain.
Dahal et al. (2025)	Asia/ Nepal	Utilization of oral health care services and perceived barriers among adults residing in Jiri, Nepal: a cross-sectional study	725 Adult heads of households aged 18 or older	Quantitative, Cross-sectional study through interviews conducted using a tool	82% of participants had not visited the dentist in the past year, 12% had visited in the past 6 months	Main reason for visiting a dentist was pain (86%). Age and occupational status were significantly associated with increase in dental visits. Main barriers include: High cost (65%), Lack of awareness (58%), Scarcity of dental facilities (54%), perceiving dental services as time-consuming (52%) and distance to dental facility (49%).
Bhoopathi et al. (2021)	North America/ USA	Unmet Dental Care Need and Associated Barriers by Race/Ethnicity among US Adults	10 029 adults aged 19 or older in the USA	Quantitative, Cross-sectional study through data obtained from the 2003-2004 and 2015-2016 National Health and Nutrition Examination Surveys	The most common barriers to dental care were financial and cognitive. Structural barriers were less cited	Adults aged 19 to 64 more likely to report unmet dental needs than elderly, women were more likely than men, non-hispanic blacks and Hispanic adults more likely to report unmet needs. Adults with less than a highschool education, or just highschool more likely than those with college education. Poor and near poor adults were more likely to report unmet dental care need.
Akram et al. (2020)	Asia/ Pakistan	Barriers to the access of oral health care facilities among adults: an exploratory study from Lahore	400 adults aged 18 or older (200M: 200F) visiting outpatient department of public hospital in Lahore, Pakistan	Quantitative, cross-sectional study using structured questionnaire confirmed by asking open-ended	Only 13% of respondents visited the dentist routinely, 5% had never been to the dentist	Cost was the foremost barrier to dental care (65%) followed by difficulty accessing healthcare facilities (28%) and dental fear (20%). Being illiterate, having a rural background and low income were

				questions		significantly associated with not visiting the dentist regularly
Qu et al. (2020)	Asia/China	Disparities in Dental Service Utilization among Adults in Chinese Megacities: Do Health Insurance and City of Residence Matter?	4 835 Adults aged between 18 and 65 from 10 megacities in China	Quantitative, cross-sectional analysis of the 2019 New Era and Living Conditions in Megacities Survey	Only approximately 30% of participants visited the dentist at least once a year,	Those residing in megacities with greater GDP had lower probability of never visiting the dentist. Type of medical insurance was also significantly associated with dental visits.
Lambert et al. (2017)	Africa/South Africa	“It was pain. That’s it. It was pain.” Lack of oral health care among otherwise healthy young adults living with HIV in South Africa: A qualitative study	25 Adults aged 18 to 35 in South Africa who are recently diagnosed with HIV but otherwise healthy (>350 cells/mm)	Qualitative interviewing of participants of longitudinal adherence to ART study	Analysis revealed (1) no experience with dental care, (2) the use of medical clinics instead of dental clinics, (3) the use of home remedies	Barriers to oral care included misconceptions of oral care, dental fear, and poverty.

2.4 Quality Assessment

Included studies were rated for inclusion by the two reviewers using the JBI checklist for analytical cross-sectional studies or the JBI critical appraisal tool for qualitative studies. The JBI tools have items which can be rated as Not clear, yes, or no. Items rated as no were awarded 0 point, those rated yes were awarded 1 point, and those rated as not clear were awarded half a point. The maximum possible scores for cross-sectional studies and qualitative studies were 8 and 10, respectively. Quantitative studies with scores of 6-8 were considered of high quality, and qualitative studies with scores of 8-10 were considered of high quality. All studies included in this SLR were rated to be of high quality (See Appendix A and B).

2.5 Synthesis of Findings

Because the research questions posed by this SLR could be answered by the quantitative and qualitative research approaches, findings were synthesized alongside each other through the use of the convergent integrated approach. Firstly, the findings from quantitative studies were qualitized by providing descriptions of the findings in word form. Then, thematic analysis was performed on the findings of both these studies, as well as the findings from qualitative studies. However, findings from qualitative and quantitative research were presented in a manner that highlighted the commonalities and differences between them (Aromataris et al., 2024; Stern et al., 2021).

Three main themes emerged: the delayed use of dental services, the non-use of dental services and enablers of OHSB. Sub-themes related to the delayed use of dental services were socioeconomic and psychosocial factors; those related to the non-use of dental services were sociodemographic and intrapersonal factors. The use of alternate treatment pathways was also a sub-theme related to the non-use of dental services. Need factors and Health system factors were sub-themes emerging as enablers of OHSB.

3. Results

3.1 Characteristics of Included Studies

Of the 20 studies included in this paper, most of them (85%) were quantitative studies. With regards to world regions, 30% of studies were conducted in Asia, 20% in Africa, 20% in Europe, 15% in Australia and 15% in North America. Table 3 summarises the characteristics of included studies.

Table 3. Characteristics of Studies Included

Type of Studies	Frequency	Percentage
Quantitative	17	85
Qualitative	3	15
Region of the Studies Conducted		
Africa	4	20
Asia	6	30
Australia	3	15
Europe	4	20
North America	3	15
Total	20	100

3.2 The Delayed Use of Dental Services

The delayed use of dental services was a theme occurring globally, howbeit to differing extents. In Africa, routine use of dental services was a rarity with only 13% of Sudanese having visited the dentist in the past year (Pengpid & Peltzer, 2021). This finding is echoed by a study in Uganda, which found that 48% of those who experienced dentalgia in the past year had not utilized dental services (Ocwia et al., 2021). This was supported by a qualitative study conducted in South Africa in which the delayed use of dental services to address excruciating pain was identified as an occurring theme (Lambert et al., 2017).

On the other hand, studies in Asia revealed mixed findings; in China and Vietnam, 30-42% had routinely visited the dentist (Khuong et al., 2024; Qu et al., 2020). While in studies in Nepal and Pakistan reported 13-18% of participants visiting the dentist in the past year (Akram et al., 2020; Dahal et al., 2025). Findings from Australia, Europe and North America provided a striking contrast to those from Low to Middle-Income (LMIC) settings. They revealed routine utilization of dental services at rates of 51% to 70% (Amedari et al., 2025; Edlibi Al Hage et al., 2022; Leggett et al., 2025; Lutfiyya et al., 2019; Mariño et al., 2021). However, a study from a developing European country obtained a routine utilization rate of 20% (Šiljak et al., 2019).

3.2.1 Socioeconomic factors

Both quantitative and qualitative studies included in this paper revealed socioeconomic factors as related to the delayed use of dental services. The leading barrier to DSU was its associated cost (Akram et al., 2020; Dahal et al., 2025; Edlibi Al Hage et al., 2022; Khuong et al., 2024; Ocwia et al., 2021). Furthermore, socioeconomic status was linked to where individuals first sought relief of dental pain, with persons of lower income more likely to explore alternate treatment before seeking a dentist (Uguru et al., 2021). Qualitative studies conducted in the UK and in South Africa supported these findings, revealing that a lack of resources resulted in delayed DSU (Lambert et al., 2017; van der Zande et al., 2021).

3.2.2 Psychosocial factors

Dental fear and anxiety based on past experiences or avoidance of the unknown may result in adults delaying visiting the dentist. Quantitative studies included in this paper found that dental fear was related to avoidance of DSU, leading to individuals only visiting when it was inevitable (Akram et al., 2020; Edlibi Al Hage et al., 2022; Ocwia et al., 2021). Qualitative studies supported these findings with Lambert and colleagues (2017) finding dental fear as an emerging reason for delayed DSU. A study conducted in the UK found dental anxiety to be a significant driver of delayed DSU (van der Zande et al., 2021).

Social interactions and networks have also been found to contribute towards the OHSB of adults, with recommendations from persons within one's social network determining where they seek help and how soon they visit the dentist (Khuong et al., 2024; Uguru et al., 2021). On the other hand, fear of awkward social interactions due to dental problems can lead one to seek dental care (Amedari et al., 2025).

3.3 The Non-Use of Dental Services

While most studies included in this study did not distinguish between delayed DSU and never having utilized dental services, a few studies highlighted this distinction. Of these, a study in Sudan found that 65% had never been to the dentist in their lifetime (Pengpid & Peltzer, 2021). Other studies in Pakistan and India revealed 5% and

8% of adults had never visited the dentist (Akram et al., 2020; Balraj et al., 2024). In Australia and Romania, only 2% had never used dental services (Edlibi Al Hage et al., 2022; Mariño et al., 2021). One included qualitative study revealed a key emerging theme of never having been to the dentist; furthermore, it revealed poor health-related knowledge and misconceptions as emerging themes.

3.3.1 Sociodemographic Factors

Quantitative studies highlighted age, gender, ethnicity, and residence as related to the non-use of dental services. There was no clear link between age and non-use of dental services; two studies revealed an increase in the likelihood of DSU positively related to age (Dahal et al., 2025; Mariño et al., 2021). However, other studies have revealed no link between age and the likelihood of DSU (Balraj et al., 2024; Bhoopathi et al., 2021). Males were less likely to use dental services than their female counterparts; those of minority ethnic groups were less likely to use dental services (Bhoopathi et al., 2021; Peltzer & Pengpid, 2018; Šiljak et al., 2019). Furthermore, rural residence was linked to the non-use of dental services (Pengpid & Peltzer, 2021; Šiljak et al., 2019; Tan et al., 2023). None of the qualitative studies included explored the link between sociodemographic characteristics of participants and their OHSB.

3.3.2 Intrapersonal Factors

The lack of knowledge related to oral health was demonstrated to be a key driver of the non-use of dental services by both quantitative and qualitative studies (Dahal et al., 2025; Lambert et al., 2017). Furthermore, poor attitudes concerning oral health, such as perceiving oral health to be of low importance and lacking time, were related to non-DSU (Lambert et al., 2017; Leggett et al., 2025). Additionally, the lack of individual skills and the belief in one's ability to maintain their oral health may result in the avoidance of dental services (Khuong et al., 2024). Beyond the use and non-use of dental services, self-efficacy has been linked to the completion of initiated dental treatment, which requires multiple visits (Jones et al., 2016).

3.3.2 Alternative Treatment Pathways

The use of self-medication, home remedies and traditional and complementary medicines to address oral disease contributes to the non-use and delayed use of dental services. A quantitative study conducted in Nigeria revealed that 14% self-medicated, 7% used home remedies and 1% had visited traditional healers concerning toothaches (Uguru et al., 2021). This phenomenon of the use of alternate treatment pathways in Africa was supported by findings of Lambert and colleagues (2017) whose qualitative study revealed that when South African adults avoided dental visits, the use of home remedies was employed. In a related study in Malaysia, Tan and colleagues (2023) found that only 46% of persons experiencing dental pain sought professional treatment. On the other hand, 21% of them had self-medicated. Therefore, the use of alternate treatment pathways contributes to the non-use of dental services.

3.4 Enablers of Positive OHSB

3.4.1 Health System Factors

The physical accessibility of healthcare facilities offering dental services promotes DSU among adults (Akram et al., 2020; Dahal et al., 2025; Khuong et al., 2024). Furthermore, the attitudes dental professionals express may encourage the use of dental services (Ocwia et al., 2021; Uguru et al., 2021). Whereas, where there is a lack of trust in dental professionals, DSU may be limited (Leggett et al., 2025). Thus, both the presence of healthcare facilities and healthcare professional behaviours seem to be related to the OHSB of adults.

3.4.2 Need Factors

Oral pain is the most reported enabler of DSU, especially in low-income settings. For instance, a study in Sudan revealed that 86% of DSU was due to pain (Pengpid & Peltzer, 2021). This is echoed by a study in Nepal that found 70% of DSU to be due to pain. Furthermore, the perceived severity of the dental problem promotes DSU (Uguru et al., 2021). Loss of teeth and difficulty eating have also been linked to increased DSU (Mariño et al., 2021; Tan et al., 2023). These findings were supported by qualitative studies conducted among South Africans and Indigenous Australians that highlighted pain to be an enabler of seeking dental services (Jones et al., 2016; Lambert et al., 2017). Perceived need can, therefore, enable DSU among adults.

4. Discussion

This SLR revealed the OHSB of adults is below desirable. It is largely characterized by the delayed use of dental services and the non-use of dental services, driven by various factors. Additionally, factors influencing these behaviours and enablers of positive OHSB were identified.

4.1 Delayed Use of Dental Services

While delayed DSU appears to be a global phenomenon, it is more pronounced in LMIC contexts where routine DSU is a rarity (Bastani et al., 2021; Osuh et al., 2024). DSU seems to occur along a socioeconomic gradient, with those of lower educational attainment and lower socioeconomic status having delayed DSU (Amedari et al., 2025; Šiljak et al., 2019; Uguru et al., 2021). This occurrence is observed even when the price of dental services has been subsidized (Monteiro et al., 2016; Sahab et al., 2022).

Additionally, psychosocial factors, including dental fear and anxiety, drive delayed DSU (Åström et al., 2024; da Rosa et al., 2020; Yuan et al., 2020). On the other hand, perceived aesthetics, self-rated oral health, and embarrassment may drive timely DSU (Amedari et al., 2025; Šiljak et al., 2019; van der Zande et al., 2021). However, while recommendations from friends have been cited as a driver for positive OHSB, little to no studies have explored the effect of social networks and interpersonal relationships on delayed DSU by adults. There is a need for mixed-methods studies that provide in-depth explanations of these phenomena in varying contexts.

4.2 The Non-Use of Dental Services

The non-use of dental services is highly prevalent in Africa (Bogale et al., 2021; Hewlett et al., 2022; Pengpid & Peltzer, 2021; Songa et al., 2024). Factors such as the lack of dental facilities, limited professionals, and the non-existence of oral health-related policies in the region may be contributory factors (Folayan et al., 2021; Gallagher et al., 2023; Kaguru et al., 2022). However, it is not limited to Africa and has been observed to varying extents globally (Akram et al., 2020; Balraj et al., 2024; Edlibi Al Hage et al., 2022; Mariño et al., 2021).

Most studies have focused on how sociodemographic factors and intrapersonal factors are linked to the non-use of dental services, and fewer studies have highlighted how the use of alternative treatments could contribute. While quantitative studies have highlighted that gender, ethnicity, age, and marital status are related to non-DSU, little to no studies have explored why or how they are related. Furthermore, the role of culture in these relationships remains unexamined. Additionally, while knowledge and attitudes regarding oral health have been explored as drivers of OHSB, fewer studies have focused on self-efficacy, motivation, cultural and religious beliefs and how they are linked to the OHSB of adults, despite these factors being proven to influence health-related behaviours (Kalonga et al., 2023; Xu et al., 2024).

Despite few studies exploring the use of alternative treatment routes as related to OHSB of adults, it appears to occur across the globe (Akaji, 2023; Álvarez-Vásquez et al., 2022). While a study that examined this aspect in Nigeria reported only 1% of individuals using traditional healers to address toothache, James and colleagues (2018) have estimated that over 50% of people in the African region use traditional and complementary medicine. The use of traditional medicine could be underreported due to desirability bias or due to the study design (Ayo-Yusuf & Naidoo, 2016). Given that they are often used concurrently with Western medicine, a question that asks one to choose one or the other could result in underreporting. Furthermore, while self-medication for oral disease has been reported as contributing to the non-use of dental services (Ocwia et al., 2021; Tan et al., 2023; Uguru et al., 2021). There is a paucity of studies focused on the social and cultural factors that drive its practice. Such studies are of relevance because, on the one hand, culture has been observed to contribute positively towards OHSB in contexts such as the Sub-Saharan Africa context, where the mouth has great cultural and spiritual significance; where it is seen as the vehicle for blessing or cursing others (Folayan et al., 2025). Such beliefs can be a springboard for the promotion of good oral hygiene and regular use of dental services. However, cultural beliefs and myths have a negative effect on OHSB. For example, the belief that it is impossible to keep teeth throughout the life cycle, myths that normalize mobile teeth due to untreated periodontitis, or the belief that evil spirits cause oral disease can result in the non-use of dental services (Aliyu et al., 2025; World Health Organization, 2022). The link between cultural determinants and the non-use of dental services remains to be explored in various contexts through in-depth mixed-methods research.

4.3 Enablers of OHSB

The study revealed two main drivers of positive OHSB. Firstly, perceived need drove individuals to utilise dental services. It has been demonstrated that oral pain, the desire to look better and interact more naturally encourage DSU (Almutairi et al., 2023; Hajek et al., 2021). Furthermore, in harmony with the social determinants of health theory, findings highlighted how health infrastructure, availability of services and the attitudes of health providers play an important role in encouraging routine DSU. There is a need for health systems that provide accessible, equitable, and acceptable dental services. Additionally, the approachability of dental professionals is an enabler of adult OHSB (Uguru et al., 2021; van der Zande et al., 2021). However, there is a dearth of literature concerning how broader health system factors, such as the integrated dental services, quality of services, capacitated health

workforce, and healthcare professional behaviour, relate to adult OHSB.

4.4 Study Limitations

This paper is not without its limitations; firstly, only studies conducted in English were included in this review. However, scholars have argued that results of SLRs conducted only in English and those including multiple languages yielded comparable results (Dobrescu et al., 2021; Nussbaumer-Streit et al., 2020). Secondly, the search strategy was tailored to seek studies specifically focused on the OHSB of adults. Therefore, other studies that may have provided valuable insight but fell outside the scope of the study's focus were not included in this paper (Williams et al., 2021). Thirdly, to accommodate both quantitative and qualitative studies included in this paper, the qualitzation of numeric findings was conducted. This may limit the statistical insights that may be obtained. However, it was necessitated because the research questions posed were addressed in the literature by both qualitative and quantitative studies (Lizarondo et al., 2025; Stern et al., 2020).

5. Conclusion

Delayed DSU and non-use of dental services appear to be a global phenomenon. They are driven by various sociodemographic, socioeconomic, and intrapersonal factors. However, few studies have explored how social and cultural factors contribute towards these phenomena. The use of alternative treatment routes has been explored as a barrier to OHSB. Nonetheless, little to no studies have focused on the drivers of alternative treatment routes within the context of oral disease. Health system factors and need factors have been identified as drivers of adult OHSB, and yet not much in-depth mixed-methods research has been conducted focused on how health system factors contribute towards adult OHSB. The use of a mixed-methods study approach to assess the OHSB of adults is recommended. Additionally, studies focused on how health system factors, social and cultural factors, drive various OHSBs among adults, including the use of alternative treatment routes, are recommended.

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The data that support the findings of this study are available on request.

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The authors declare that there are no competing or potential conflicts of interest.

References

- Abuzenada, B. M., Pullishery, F., Elnawawy, M. S. A., Alshehri, S. A., Alostath, R. M. B., Bakhubira, B. M., & Amerdash, W. F. (2021). Complementary and Alternative Medicines in Oral Health Care: An Integrative Review. *Journal of Pharmacy and Bioallied Sciences*, 13(Suppl 2), S892. https://doi.org/10.4103/jpbs.jpbs_92_21
- Agudelo-Suárez, A. A., Vivares-Builes, A. M., Muñoz-Pino, N., Martínez-Martínez, J. M., Reid, A., & Ronda-Pérez, E. (2019). Oral Health-Related Quality of Life in Native and Immigrant Populations in the PELFI Study in Spain. *International Journal of Environmental Research and Public Health*, 16(10), 1796. <https://doi.org/10.3390/ijerph16101796>
- Ahmad, R., & Haque, M. (2021). Oral Health Messiers: Diabetes Mellitus Relevance. *Diabetes, Metabolic Syndrome and Obesity*, 14, 3001-3015. <https://doi.org/10.2147/DMSO.S318972>
- Akaji, E. A. (2023). Complementary and Alternative Medicine. In *Pharmacological Studies in Natural Oral Care* (pp. 61–81). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781394167197.ch4>
- Akram, S. J., Yasmin, R., Atif, S., Rathore, A., Anjum, O., Arshad, M. B., & Khaliq, I. H. (2020). Barriers to the access of oral health care facilities among adults: An exploratory study from Lahore. *Journal of Fatima Jinnah Medical University*, 14(03), Article 03. <https://doi.org/10.37018/iyvh7026>
- Aliyu, T. K., Titus, O. S., Bernard, O. T., Alade, O. T., Ehizele, A. O., & Foláyan, M. O. (2025). Cultural Themes Related to Oral Health Practices, Beliefs, and Experiences in Nigeria: A Scoping Review. *Oral*, 5(2), Article

2. <https://doi.org/10.3390/oral5020023>

- Almutairi, M., McKenna, G., & O'Neill, C. (2023). A comparative examination of the role of need in the relationship between dental service use and socio-economic status across respondents with distinct needs using data from the Scottish Health Survey. *BMC Public Health*, 23(1), 159. <https://doi.org/10.1186/s12889-023-15078-z>
- Álvarez-Vásquez, J. L., Parra-Solano, N. F., Saavedra-Cornejo, G. E., & Espinosa-Vásquez, X. E. (2022). Global use of Ethnomedicinal Plants to Treat Toothache. *Biomedical and Pharmacology Journal*, 15(2), 847-881.
- Amedari, M. I., Atanda, A. J., Amedari, I. K., Monger, M., & Walker, B. H. (2025). The association between predisposing, enabling and need factors and oral health care utilization among U.S. working age adults. *BMC Oral Health*, 25(1), 501. <https://doi.org/10.1186/s12903-025-05821-w>
- Aromataris, E., Lockwood, C., Porritt, K., Pilla, B., & Jordan, Z. (Eds.). (2024). *JBIM Manual for Evidence Synthesis*. JBI. <https://doi.org/10.46658/JBIMES-24-01>
- Åström, A. N., Agdal, M. L., & Sulo, G. (2024). Exploring avoidance of dental care due to dental fear and economic burden –A cross-sectional study in a national sample of younger adults in Norway. *International Journal of Dental Hygiene*, 22(1), 148-157. <https://doi.org/10.1111/idh.12657>
- Ayo-Yusuf, I. J., & Naidoo, S. (2016). Social gradient in the cost of oral pain and related dental service utilisation among South African adults. *BMC Oral Health*, 16(1), 117. <https://doi.org/10.1186/s12903-016-0313-x>
- Balraj, L., Oswal, K. C., Reddy, R. B. V., Kunjan, P. D., Chandu, V. C., & Mathur, M. R. (2024). Assessment of Oral Health Status, Care Seeking Behaviours, and Oral Health-Related Quality of Life among Indian Adults Using the World Dental Federation's Digital Application. *Indian Journal of Dental Research: Official Publication of Indian Society for Dental Research*, 35(4), 390-394. https://doi.org/10.4103/ijdr.ijdr_423_24
- Bastani, P., Mohammadpour, M., Mehraliain, G., Delavari, S., & Edirippulige, S. (2021). What makes inequality in the area of dental and oral health in developing countries? A scoping review. *Cost Effectiveness and Resource Allocation*, 19(1). <https://doi.org/10.1186/s12962-021-00309-0>
- Benzian, H., Daar, A., & Naidoo, S. (2023). Redefining the non-communicable disease framework to a 6 × 6 approach: Incorporating oral diseases and sugars. *The Lancet Public Health*, 8(11), e899-e904. [https://doi.org/10.1016/S2468-2667\(23\)00205-0](https://doi.org/10.1016/S2468-2667(23)00205-0)
- Bhoopathi, V., Luo, H., Moss, M., & Bhagavatula, P. (2021). Unmet Dental Care Need and Associated Barriers by Race/Ethnicity among US Adults. *JDR Clinical and Translational Research*, 6(2), 213-221. <https://doi.org/10.1177/2380084420923576>
- Bogale, B., Engida, F., Hanlon, C., Prince, M. J., & Gallagher, J. E. (2021). Dental caries experience and associated factors in adults: A cross-sectional community survey within Ethiopia. *BMC Public Health*, 21(1), 180. <https://doi.org/10.1186/s12889-021-10199-9>
- Chamut, S., Boroumand, S., Iafolla, T. J., Adesanya, M., Fazio, E. M., & Dye, B. A. (2021). Self-Reported Dental Visits Among Older Adults Receiving Home- and Community-Based Services. *Journal of Applied Gerontology*, 40(8), 902-913. <https://doi.org/10.1177/0733464820925320>
- da Rosa, S. V., Moysés, S. J., Theis, L. C., Soares, R. C., Moysés, S. T., Werneck, R. I., & Rocha, J. S. (2020). Barriers in Access to Dental Services Hindering the Treatment of People with Disabilities: A Systematic Review. *International Journal of Dentistry*, 2020(1), 9074618. <https://doi.org/10.1155/2020/9074618>
- Dahal, S., Dahal, S., Khapung, A., & Poudel, P. (2025). Utilization of oral health care services and perceived barriers among adults residing in Jiri, Nepal: A cross-sectional study. *BMC Public Health*, 25(1), 1602. <https://doi.org/10.1186/s12889-025-22873-3>
- de Abreu, M. H. N. G., Cruz, A. J. S., Borges-Oliveira, A. C., Martins, R. de C., & Mattos, F. de F. (2021). Perspectives on Social and Environmental Determinants of Oral Health. *International Journal of Environmental Research and Public Health*, 18(24), Article 24. <https://doi.org/10.3390/ijerph182413429>
- Deolia, S. G., Kela, K. S., Sawhney, I. M., Sonavane, P. A., Nimbalkar, G., & Reche, A. (2020). Evaluation of oral health care seeking behavior in rural population of central India. *Journal of Family Medicine and Primary Care*, 9(2), 886. https://doi.org/10.4103/jfmpc.jfmpc_990_19
- Dobrescu, A., Nussbaumer-Streit, B., Klerings, I., Wagner, G., Persad, E., Sommer, I., Herkner, H., & Gartlehner, G. (2021). Restricting evidence syntheses of interventions to English-language publications is a viable

- methodological shortcut for most medical topics: A systematic review. *Journal of Clinical Epidemiology*, 137, 209-217. <https://doi.org/10.1016/j.jclinepi.2021.04.012>
- Edlibi Al Hage, W., Dascălu, C. G., Balcoş, C., Agop-Forna, D., & Forna, N. C. (2022). Trends in Access to Oral Health Care among Adults from the N-E Region of Romania. *Medicina (Kaunas, Lithuania)*, 59(1), 74. <https://doi.org/10.3390/medicina59010074>
- Erbas Unverdi, G., Ballikaya, E., & Cehreli, Z. C. (2024). Clinical comparison of silver diamine fluoride (SDF) or silver-modified atraumatic restorative technique (SMART) on hypomineralised permanent molars with initial carious lesions: 3-year results of a prospective, randomised trial. *Journal of Dentistry*, 147, 105098. <https://doi.org/10.1016/j.jdent.2024.105098>
- Foláyan, M. O., Bernard, O. T., Titus, O. S., Alade, O., Aliyu, T. K., Bhayat, A., Ndembi, N., Fasiku, G., & El Tantawi, M. (2025). Cultural practices, oral health service utilisation and oral health policy and guidelines development in Africa: Insights from the yorùbá ethnic group. *Frontiers in Oral Health*, 6. <https://doi.org/10.3389/froh.2025.1539827>
- Folayan, M. O., Ibigbami, O. I., Oloniniyi, I. O., Oginni, O., & Aloba, O. (2021). Associations between psychological wellbeing, depression, general anxiety, perceived social support, tooth brushing frequency and oral ulcers among adults resident in Nigeria during the first wave of the COVID-19 pandemic. *BMC Oral Health*, 21(1), 520. <https://doi.org/10.1186/s12903-021-01871-y>
- Foláyan, M. O., Olagunju, M. T., Abodunrin, O. R., & Alade, O. T. (2024). A scoping review on the use of traditional medicine and oral health in Africa. *PLOS ONE*, 19(5), e0297570. <https://doi.org/10.1371/journal.pone.0297570>
- Gallagher, J. E., Mattos Savage, G. C., Crummey, S. C., Sabbah, W., Varenne, B., & Makino, Y. (2023). Oral Health Workforce in Africa: A Scarce Resource. *International Journal of Environmental Research and Public Health*, 20(3), Article 3. <https://doi.org/10.3390/ijerph20032328>
- Gupta, A., Saleena, L. M., Kannan, P., & Shivachandran, A. (2024). The impact of oral diseases on respiratory health and the influence of respiratory infections on the oral microbiome. *Journal of Dentistry*, 148, 105213. <https://doi.org/10.1016/j.jdent.2024.105213>
- Hajek, A., Kretzler, B., & König, H.-H. (2021). Determinants of Healthcare Use Based on the Andersen Model: A Systematic Review of Longitudinal Studies. *Healthcare*, 9(10), 1354. <https://doi.org/10.3390/healthcare9101354>
- Heath, A., Levay, P., & Tuvey, D. (2022). Literature searching methods or guidance and their application to public health topics: A narrative review. *Health Information & Libraries Journal*, 39(1), 6-21. <https://doi.org/10.1111/hir.12414>
- Hewlett, S. A., Blankson, P.-K., Aheto, J. M. K., Anto, F., Danso-Appiah, T., Sackeyfio, J., Koram, K., & Amoah, A. G. B. (2022). Assessment of oral health status in a Ghanaian population: Rationale, methods, and population characteristics. *BMC Oral Health*, 22(1), 67. <https://doi.org/10.1186/s12903-022-02090-9>
- Huang, N., Li, C., Sun, W., Yang, Y., Tang, Q., & Xiao, F. (2022). Association Between Chronic Periodontal Disease and Erectile Dysfunction: A Case–Control Study. *American Journal of Men's Health*, 16(2), 15579883221084798. <https://doi.org/10.1177/15579883221084798>
- Jain, N., Dutt, U., Radenkov, I., & Jain, S. (2023). WHO's global oral health status report 2022: Actions, discussion and implementation. *Oral Diseases*, odi.14516. <https://doi.org/10.1111/odi.14516>
- James, P. B., Wardle, J., Steel, A., & Adams, J. (2018). Traditional, complementary and alternative medicine use in Sub-Saharan Africa: A systematic review. *BMJ Global Health*, 3(5), e000895. <https://doi.org/10.1136/bmjgh-2018-000895>
- Jones, K., Keuskamp, D., Brennan, D. S., & Roberts-Thomson, K. (2016). Understanding barriers and facilitators of access to dental care and completion of treatment for Aboriginal adults. *Journal of Health Care for the Poor and Underserved*, 27(1), 148-160. <https://doi.org/10.1353/hpu.2016.0042>
- Kaguru, G., Ayah, R., Mutave, R., & Mugambi, C. (2022). Integrating Oral Health into Primary Health Care: A Systematic Review of Oral Health Training in Sub-Saharan Africa. *Journal of Multidisciplinary Healthcare, Volume 15*, 1361-1367. <https://doi.org/10.2147/JMDH.S357863>
- Kailembo, A., Preet, R., & Stewart Williams, J. (2018). Socioeconomic inequality in self-reported unmet need for oral health services in adults aged 50 years and over in China, Ghana, and India. *International Journal for*

- Equity in Health*, 17(1), 99. <https://doi.org/10.1186/s12939-018-0812-2>
- Kalonga, N., Mukwato, P. K., & Wahila, R. (2023). *Self- Efficacy and Self- Care Practices, In Glycemic Control among Adults with Diabetes Mellitus Receiving Care at Kitwe Teaching Hospital, Kitwe, Zambia*.
- Kavarthapu, A., & Gurumoorthy, K. (2021). Linking chronic periodontitis and oral cancer: A review. *Oral Oncology*, 121, 105375. <https://doi.org/10.1016/j.oraloncology.2021.105375>
- Khalil, H., Ameen, D., & Zarnegar, A. (2022). Tools to support the automation of systematic reviews: A scoping review. *Journal of Clinical Epidemiology*, 144, 22-42. <https://doi.org/10.1016/j.jclinepi.2021.12.005>
- Khalil, H., Pollock, D., McInerney, P., Evans, C., Moraes, E. B., Godfrey, C. M., Alexander, L., Tricco, A., Peters, M. D. J., Pieper, D., Saran, A., Ameen, D., Taneri, P. E., & Munn, Z. (2024). Automation tools to support undertaking scoping reviews. *Research Synthesis Methods*, 15(6), 839-850. <https://doi.org/10.1002/jrsm.1731>
- Khuong, A. P., Pham, D. A., Nguyen, H. T., Phan, M. N., Chieu Le, A. D., & Nguyen, T. D. (2024). The Barriers in Using Oral Health Services of People Aged 18 or Over in Danang in 2023: A Cross-sectional Study. *The Journal of Contemporary Dental Practice*, 25(11), 1009-1014. <https://doi.org/10.5005/jp-journals-10024-3776>
- Lambert, R. F., Orrell, C., & Haberer, J. E. (2017). “It was pain. That’s it. It was pain.” Lack of oral health care among otherwise healthy young adults living with HIV in South Africa: A qualitative study. *PLOS ONE*, 12(12), e0188353. <https://doi.org/10.1371/journal.pone.0188353>
- Leggett, H., Mitchell, A., Csikar, J., Vinall-Collier, K., & Douglas, G. V. A. (2025). An exploration of the relationship between attitudes and experiences of prevention and oral health behaviours of the public within six European countries. *BMC Oral Health*, 25(1), 597. <https://doi.org/10.1186/s12903-025-05967-7>
- Lin, Q.-L., Du, H.-L., Xiong, H.-Y., Li, B., Liu, J., & Xing, X.-H. (2020). Characteristics and outcomes of Ludwig’s angina in patients admitted to the intensive care unit: A 6-year retrospective study of 29 patients. *Journal of Dental Sciences*, 15(4), 445-450. <https://doi.org/10.1016/j.jds.2019.10.004>
- Lockwood, C., Munn, Z., & Porritt, K. (2015). Qualitative research synthesis: Methodological guidance for systematic reviewers utilizing meta-aggregation. *International Journal of Evidence-Based Healthcare*, 13(3), 179-187. <https://doi.org/10.1097/XEB.0000000000000062>
- Lutfiyya, M. N., Gross, A. J., Soffe, B., & Lipsky, M. S. (2019). Dental care utilization: Examining the associations between health services deficits and not having a dental visit in past 12 months. *BMC Public Health*, 19(1), 265. <https://doi.org/10.1186/s12889-019-6590-y>
- Mariño, R., Glenister, K., Bourke, L., Morgan, M., Atala-Acevedo, C., & Simmons, D. (2021). Patterns of use of oral health care services in Australian rural adults: The Crossroads-II Dental sub-study. *Australian Dental Journal*, 66(4), 397-405. <https://doi.org/10.1111/adj.12865>
- Matthews, D. C., & Al-Waeli, H. (2025). Benefits of Dental Scaling and Polishing in Adults: A Rapid Review and Evidence Synthesis. *JDR Clinical & Translational Research*, 10(3), 269-281. <https://doi.org/10.1177/23800844241271684>
- Mohd Khairuddin, A. N., Bogale, B., Kang, J., & Gallagher, J. E. (2024). Impact of dental visiting patterns on oral health: A systematic review of longitudinal studies. *BDJ Open*, 10(1), 18. <https://doi.org/10.1038/s41405-024-00195-7>
- Monteiro, C. N., Beenackers, M. A., Goldbaum, M., de Azevedo Barros, M. B., Gianini, R. J., Cesar, C. L. G., & Mackenbach, J. P. (2016). Socioeconomic inequalities in dental health services in Sao Paulo, Brazil, 2003–2008. *BMC Health Services Research*, 16(1), 683. <https://doi.org/10.1186/s12913-016-1928-y>
- Munn, Z., Tufanaru, C., & Aromataris, E. (2014). JBI’s Systematic Reviews: Data Extraction and Synthesis. *AJN The American Journal of Nursing*, 114(7), 49. <https://doi.org/10.1097/01.NAJ.0000451683.66447.89>
- Nussbaumer-Streit, B., Klerings, I., Dobrescu, A. I., Persad, E., Stevens, A., Garritty, C., Kamel, C., Affengruber, L., King, V. J., & Gartlehner, G. (2020). Excluding non-English publications from evidence-syntheses did not change conclusions: A meta-epidemiological study. *Journal of Clinical Epidemiology*, 118, 42-54. <https://doi.org/10.1016/j.jclinepi.2019.10.011>
- Ocwia, J., Olum, R., Atim, P., Laker, F., Okot, J., Sereke, S. G., Baluku, J. B., Kiguli, S., & Bongomin, F. (2021). Oral health seeking behaviors of adults in Nebbi District, Uganda: A community-based survey. *BMC Oral Health*, 21(1), 453. <https://doi.org/10.1186/s12903-021-01824-5>

- Oermann, M. H., Wrigley, J., Nicoll, L. H., Ledbetter, L. S., Carter-Templeton, H., & Edie, A. H. (2021). Integrity of Databases for Literature Searches in Nursing: Avoiding Predatory Journals. *Advances in Nursing Science*, 44(2), 102. <https://doi.org/10.1097/ANS.0000000000000349>
- Osuh, M. E., Oke, G. A., Lilford, R. J., Osuh, J. I., Harris, B., Owoaje, E., Lawal, F. B., Omigbodun, A., Adedokun, B., & Chen, Y.-F. (2024). Systematic review of oral health in slums and non-slum urban settings of Low and Middle-Income Countries (LMICs): Disease prevalence, determinants, perception, and practices. *PLOS ONE*, 19(11), e0309319. <https://doi.org/10.1371/journal.pone.0309319>
- Patel, N., Fils-Aime, R., Li, C.-H., Lin, M., & Robison, V. (2021). Prevalence of Past-Year Dental Visit Among US Adults Aged 50 Years or Older, With Selected Chronic Diseases, 2018. *Preventing Chronic Disease*, 18, E40. <https://doi.org/10.5888/pcd18.200576>
- Peltzer, K., & Pengpid, S. (2018). Prevalence and Determinants of Traditional, Complementary and Alternative Medicine Provider Use among Adults from 32 Countries. *Chinese Journal of Integrative Medicine*, 24(8), 584-590. <https://doi.org/10.1007/s11655-016-2748-y>
- Pengpid, S., & Peltzer, K. (2021). Prevalence and correlates of dental service utilisation among a national general adult population sample in Sudan. *BMC Oral Health*, 21(1), 61. <https://doi.org/10.1186/s12903-021-01422-5>
- Pruntel, S. M., van Munster, B. C., de Vries, J. J., Vissink, A., & Visser, A. (2024). Oral Health as a Risk Factor for Alzheimer Disease. *The Journal of Prevention of Alzheimer's Disease*, 11(1), 249-258. <https://doi.org/10.14283/jpad.2023.82>
- Qu, X., Qi, X., & Wu, B. (2020). Disparities in Dental Service Utilization among Adults in Chinese Megacities: Do Health Insurance and City of Residence Matter? *International Journal of Environmental Research and Public Health*, 17(18), 6851. <https://doi.org/10.3390/ijerph17186851>
- Reda, S. M., Krois, J., Reda, S. F., Thomson, W. M., & Schwendicke, F. (2018). The impact of demographic, health-related and social factors on dental services utilization: Systematic review and meta-analysis. *Journal of Dentistry*, 75, 1-6. <https://doi.org/10.1016/j.jdent.2018.04.010>
- Sahab, D. A., Bamashmous, M. S., Ranauta, A., & Muirhead, V. (2022). Socioeconomic inequalities in the utilization of dental services among adults in Saudi Arabia. *BMC Oral Health*, 22(1), 135. <https://doi.org/10.1186/s12903-022-02162-w>
- Salvador, S. M., & Toassi, R. F. C. (2021). Oral health self-perception: Physical, social and cultural expressions of a body in interaction with the world. *Physis: Revista de Saúde Coletiva*, 31(1). <https://doi.org/10.1590/s0103-73312021310122>
- Santos, W. M. dos, Secoli, S. R., & Püschel, V. A. de A. (2018). The Joanna Briggs Institute approach for systematic reviews. *Revista Latino-Americana de Enfermagem*, 26, e3074. <https://doi.org/10.1590/1518-8345.2885.3074>
- Sato, Y., Yoshioka, E., Takekawa, M., & Saijo, Y. (2023). Cross-sectional associations between oral diseases and work productivity loss among regular employees in Japan. *Industrial Health*, 61(1), 3-13. <https://doi.org/10.2486/indhealth.2021-0274>
- Scott, A. M., Forbes, C., Clark, J., Carter, M., Glasziou, P., & Munn, Z. (2021). Systematic review automation tools improve efficiency but lack of knowledge impedes their adoption: A survey. *Journal of Clinical Epidemiology*, 138, 80-94. <https://doi.org/10.1016/j.jclinepi.2021.06.030>
- Šiljak, S., Janković, J., Marinković, J., Erić, M., Janevic, T., & Janković, S. (2019). Dental service utilisation among adults in a European developing country: Findings from a national health survey. *International Dental Journal*, 69(3), 200-206. <https://doi.org/10.1111/idj.12449>
- Songa, M. A. S., Saliba, T. A., Saliba, N. A., Chiba, F. Y., & Moimaz, S. A. S. (2024). Prevalence of Dental Caries and Periodontal Disease, Access to Dental Services and Perception of Oral Health in Adolescents and Adults from a Rural Community in Angola. *Oral Health & Preventive Dentistry*, 22, 665-670. <https://doi.org/10.3290/j.ohpd.b5877397>
- Stern, C., Lizarondo, L., Carrier, J., Godfrey, C., Rieger, K., Salmond, S., Apostolo, J., Kirkpatrick, P., & Loveday, H. (2021). Methodological guidance for the conduct of mixed methods systematic reviews. *JBIM Evidence Implementation*, 19(2), 120. <https://doi.org/10.1097/XEB.0000000000000282>
- Tan, Y. R., Jawahir, S., & Doss, J. G. (2023). Oral healthcare seeking behavior of Malaysian adults in urban and

- rural areas: Findings from the National Health and Morbidity Survey 2019. *BMC Oral Health*, 23(1), 719. <https://doi.org/10.1186/s12903-023-03470-5>
- Uguru, N., Onwujekwe, O., Uguru, C., Ogu, U., Okwuosa, C., & Okeke, C. (2021). Oral health-seeking behavior among different population groups in Enugu Nigeria. *PLOS ONE*, 16(2), e0246164. <https://doi.org/10.1371/journal.pone.0246164>
- van der Zande, M. M., Exley, C., Wilson, S. A., & Harris, R. V. (2021). Disentangling a web of causation: An ethnographic study of interlinked patient barriers to planned dental visiting, and strategies to overcome them. *Community Dentistry and Oral Epidemiology*, 49(2), 144-157. <https://doi.org/10.1111/cdoe.12586>
- Wang, Y., Xu, H., Geng, Z., Geng, G., & Zhang, F. (2023). Dementia and the history of disease in older adults in community. *BMC Public Health*, 23(1). <https://doi.org/10.1186/s12889-023-16494-x>
- Warnakulasuriya, S., & Kerr, A. R. (2021). Oral Cancer Screening: Past, Present, and Future. *Journal of Dental Research*, 100(12), 1313-1320. <https://doi.org/10.1177/00220345211014795>
- Williams, R. I., Clark, L. A., Clark, W. R., & Raffo, D. M. (2021). Re-examining systematic literature review in management research: Additional benefits and execution protocols. *European Management Journal*, 39(4), 521-533. <https://doi.org/10.1016/j.emj.2020.09.007>
- World Health Organization. (2022). *Global oral health status report: Towards universal health coverage for oral health by 2030*. World Health Organization.
- Xu, Y., Wang, M., Bao, L., Cheng, Z., & Li, X. (2024). A cross-sectional study based on the Comprehensive Model of Information seeking: Which factors influence health information-seeking behavior in patients with periodontitis. *BMC Oral Health*, 24(1), 1307. <https://doi.org/10.1186/s12903-024-05068-x>
- Yuan, S., Freeman, R., Hill, K., Newton, T., & Humphris, G. (2020). Communication, Trust and Dental Anxiety: A Person-Centred Approach for Dental Attendance Behaviours. *Dentistry Journal*, 8(4), Article 4. <https://doi.org/10.3390/dj8040118>
- Zaman, M. S., Alam, S. M. G., & Razzaque, M. S. (2025). Oral Hygiene and Cardiovascular Health. *Hygiene*, 5(2), Article 2. <https://doi.org/10.3390/hygiene5020014>

Appendix A

Critical Appraisal of Analytical Cross-sectional Studies (Aromataris et al., 2024)

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Score	Overall
Uguru et al. (2021)	Y	Y	Y	Y	U	U	Y	Y	7	I
Pengpid and Peltzer (2021)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Ocwia (2021)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Khuong et al. (2024)	Y	Y	Y	Y	Y	U	Y	Y	7.5	I
Qu et al. (2020)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Balraj et al. (2025)	Y	Y	Y	Y	Y	U	Y	Y	7.5	I
Tan et al. (2019)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Dahal et al. (2025)	Y	Y	Y	Y	N	N	Y	Y	6	I
Akram et al. (2020)	Y	Y	Y	Y	N	N	Y	Y	6	I
Ghanbarzadegan (2023)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Mariño et al (2021)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Siljak et al. (2018)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Edlibi Al Hage Hage et al. (2022)	Y	Y	Y	Y	N	N	Y	Y	6	I
Legget et al. (2025)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Ameradi et al. (2025)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Lutfiyya et al. (2019)	Y	Y	Y	Y	Y	Y	Y	Y	8	I
Bhoopathi et al. (2021)	Y	Y	Y	Y	Y	Y	Y	Y	8	I

Key

Y= yes, N= no, U = unclear, NA = not applicable

I = Include, X = Exclude, S = Seek further information

Q1. Were the criteria for inclusion in the sample clearly defined?

Q2. Were the study subjects and setting described in detail?

Q3. Was the exposure measured in a valid and reliable way?

Q4. Were objective, standard, criteria used for measurement of the condition?

Q5. Were confounding factors identified?

Q6. Were strategies to deal with confounding factors stated?

Q7. Were the outcomes measured in a valid and reliable way?

Q8. Was appropriate statistical analysis used?

Appendix B

Critical Appraisal of Qualitative Studies (Lockwood et al., 2015)

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Score	Overall
Jones et al (2016)	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	9.5	I
van der Zande et al (2020)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10	I
Lambert et al (2017)	Y	Y	Y	Y	Y	N	N	Y	Y	Y	8	I

Key

Y= yes, N= no, U = unclear, NA = not applicable

I = Include, X = Exclude, S = Seek further information

Q1. Is there congruity between the stated philosophical perspective and the research methodology?

Q2. Is there congruity between the research methodology and the research question or objectives?

Q3. Is there congruity between the research methodology and the methods used to collect data?

Q4. Is there congruity between the research methodology and the representation and analysis of data?

Q5. Is there congruity between the research methodology and the interpretation of results?

Q6. Is there a statement locating the researcher culturally or theoretically?

Q7. Is the influence of the researcher on the research, and vice-versa, addressed?

Q8. Are participants, and their voices, adequately represented?

Q9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?

Q10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?

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