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Social media use and adolescent oral health: A scoping review

Devarasa Murugeshappa[1], Rana Dahlan[1], Arnaldo Perez[1], Gordon Gow[2] and Maryam Amin[1]

Abstract

Introduction: Social media has revolutionized information sharing, particularly among adolescents who frequently use it for health-related content. However, their use of social media concerning oral health remains unclear. This scoping review aims to map available literature on the use of social media regarding oral health among adolescents.

Methods: Following Arksey & O'Malley's framework and PRISMA-SCR guidelines, comprehensive searches were conducted in Medline (Ovid), PubMed, and Scopus databases from January 2013 to December 2024. Reference lists of relevant studies were also reviewed. Two researchers independently screened and extracted relevant data from eligible studies. The data included publication year, authors, country, study design, aims, social media platforms, comparisons, assessed outcomes, and key findings. Descriptive statistics were used to summarize quantifiable aspects and content analysis was employed to define categories and report the key findings.

Results: Of 1938 records, 1312 titles and abstracts and 73 full-text articles were screened. Seventeen relevant studies were identified, including 2 reviews and 15 primary studies. These studies included six clinical trials and five cross-sectional studies. Three studies didn't indicate the study design. In addition to social media's effectiveness in improving oral health literacy, behaviors, and outcomes, such as plaque, gingival, and caries indices, the studies reported on patient compliance and sharing treatment-related experiences.

Conclusion: This review highlights the growing influence of social media on adolescents' oral health literacy and practices. Further research is necessary to explore adolescents' perspectives on social media use for oral health and develop effective interventions that address the unique needs of this demographic.

Keywords

Adolescent oral health, oral health literacy, oral health behavior, oral health outcomes, oral health experiences, social media

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Author summary

In this scoping review, we explored how social media influences oral health practices among adolescents, an area that is both timely and under-researched. Our findings reveal that social media has the potential to enhance oral health literacy and behaviors among adolescents. Platforms like YouTube and Instagram were particularly effective in improving knowledge retention through engaging audiovisual content. Social media also demonstrated its ability to promote behaviors such as regular toothbrushing and reduced sugar intake. However, we found risks associated with excessive social media use, including exposure to misinformation, reduced dental visits, and increased sugar consumption, which can negatively impact oral health outcomes.

This review underscores disparities in access to credible oral health information, particularly in underserved populations. It also highlights a lack of rigorous studies examining

[1]Mike Petryk School of Dentistry, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, AB, Canada
[2]Faculty of Arts, University of Alberta, Edmonton, AB, Canada

Corresponding author:
Maryam Amin, Mike Petryk School of Dentistry, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, AB, Canada.
Email: maryam.amin@ualberta.ca

the long-term impacts of social media on oral health. Despite its promise, social media interventions often fail to sustain user engagement or translate knowledge into lasting behavior change.

We recommend further large-scale, longitudinal research to better understand the nuanced relationship between social media use and adolescent oral health. This work offers valuable insights for public health initiatives aiming to leverage digital platforms to deliver equitable, engaging, and effective oral health education to adolescents.

Introduction

Social media (SM) has been broadly defined as an online environment where users can generate content and consume content mostly generated by other users.[1] SM has significantly increased communication and information exchange in different areas.[2] For example, it has been increasingly used to acquire and transmit health-related information and experiences among the public and healthcare providers.[2,3] Some of the uses of SM in health include medical education, surveillance of disease outbreaks, conducting health campaigns, health interventions, and health education, promotion, and behavior changes.[1] It is used by various users including healthcare providers, health institutions, and the public. Social media services in the public domain include seeking and sharing health information, providing a social support network, and a platform to track health status or activities.[1–3]

SM platforms like Facebook (FB), YouTube, Twitter, and Blogs have significantly impacted patients' and healthcare professionals' perceptions, practices, and attitudes.[2,4,5] The impact of SM in dentistry has been demonstrated in various "dental" fields including oral cancer, dental trauma, dental implants, root canal treatment, gingival recession, networking, advertising, and recruitment.[6–8] Patients (females) nowadays are more likely to use social networking sites to obtain information about dental practice and to choose their dentist.[6] They prefer to look at the facilities and technology available at the clinic, dentist qualifications, and the clinic reviews provided by patients.[6]

A significant amount of dental pain-related content is shared on SM, especially Twitter, where users express distress, coping strategies, and treatment experiences. Research on publicly available tweets highlights these trends, showing SM as a space for support and discussion. However, algorithm-driven content visibility may affect the prominence of such posts. Despite the limits on the characters for each tweet, the users share their experiences of dental pain, its impact on daily activities, and the measures they took to combat pain. With the ease of sharing and the growing ubiquity of user-generated content on SM platforms like Twitter, FB, and Yelp, it is evident that there is a revolution in the way information is communicated and shared.[7] SM has been used as a tool by both dental practitioners and patients to deliver and receive information. The information shared includes oral health information (OHI), marketing information including promotions, patients' opinions, and information related to the practitioner's training and treatment skills. Patients often contact the health care provider and make appointments through SM platforms including Twitter, Instagram (IG), FB etc.[8] Over the past few years, the use of SM has increased among adolescents. The various SM platforms provide more opportunities for social interactions, allowing adolescents to communicate, develop skills, gain knowledge, and receive information about health.[9,10] Individuals using SM find the digitally displayed health information to be more influencing, motivating, and engaging.[11] One of the major advantages of SM lies in its ability to creatively disseminate information.[12] In the United States, 73% of adolescent internet users are connected to a social network site (SNS),[13,14] and only about 31% use SM to gather health information. Interestingly, 17% of adolescents try to obtain information on topics they prefer not to discuss with others such as sexual health or drug use.[14–16] With the increasing usage of SNSs, most teenagers use SM to access content related to dieting, fitness and body image, anxiety, stress, and depression.[17,18]

A recent systematic review demonstrated the potential of SM in promoting oral health by improving clinical outcomes such as plaque and gingival indices and enhancing knowledge and behaviors.[19] However, its focus on randomized controlled trials involving general populations provides limited insights into adolescents, who have unique SM usage patterns and specific health needs.[19] Adolescence, being a critical period for establishing lifelong health habits, necessitates understanding how SM influences their engagement with OHI. While clinical trials offer robust evidence, they often miss broader behavioral, psychosocial, and contextual factors that cross-sectional studies can capture, providing deeper insights into adolescents' preferences, challenges, and perceptions. Research on SM and oral health is growing but often overlooks adolescent-specific factors influencing their SM use, the risks of misinformation, and emerging SM trends.[20] Additionally, these risks may disproportionately affect adolescents with limited decision-making autonomy, particularly those reliant on parental approval for adopting new oral health practices or attending dental appointments.[21]

An adolescent-focused scoping review is required to comprehensively map existing evidence, identify gaps, and inform the development of engaging, sustainable, and effective interventions that promote lifelong oral health habits in this pivotal demographic.

This scoping review seeks to address existing gaps by mapping the literature on adolescents' use of SM for oral health and summarizing trends, risks, and opportunities. The findings aim to inform future research directions and interventions that leverage SM to purposefully and effectively improve adolescents' oral health behaviors and outcomes.

Methods

This scoping review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses-Extension for Scoping Review (PRISMA-ScR) and follows the methodological framework for conducting scoping reviews suggested by Arksey and O'Malley.[22,23] This framework encompasses several stages, including (1) Formulating a research question, (2) searching relevant literature, (3) identifying relevant studies, (4) data extraction, and (5) reporting the results.

Stage 1: Formulating research question

Our scoping review intended to answer the following questions:

1. What are the main characteristics of the studies investigating the use of SM in relation to oral health among adolescents?
2. What are the main results of these studies?

Stage 2: Searching for relevant studies

The search strategy for this scoping review focused on locating both primary research studies and secondary reviews examining the role of SM in adolescent oral health. Comprehensive systematic electronic searches of the Medline (Ovid), PubMed, Cochrane Library, ISI Web of Science, CINAHL, and Scopus databases were performed up to November 2024. The search strategy for MEDLINE was developed by two authors (DG and RD) in collaboration with a librarian at the University of Alberta. PubMed and Web of Science found nearly all the selected abstracts. In addition to the search engines, the references list of included papers from examined articles was screened for any potentially missed papers. Repeated author names were also specifically searched. Search terms for both oral health and SM were used according to the PCC (population, concept, and context) framework. For oral health, the following terms were searched: Oral health behaviors, oral health, dental caries, dental plaque, tobacco use, smoking, fermentable sugars, tooth brushing, dental flossing, and mouth rinsing. For SM, the following terms were searched: SM, Snapchat, IG, TikTok, FB, Social networking, YouTube, Twitter, Pinterest, and Discord. The search strategy was adapted to fit different databases.

Stage 3: Identifying relevant studies

Screening and data extraction were conducted using Covidence, a web-based systematic review management software (Covidence, Veritas Health Innovation, Melbourne, Australia). The search results from each database were imported into Covidence, a software designed to streamline the systematic review process. Duplicate citations were removed using both automated and manual methods. The selection process involved two phases: first, screening of titles and abstracts; then, a thorough review of the full texts of potentially relevant studies to assess eligibility. Each phase was conducted independently by two reviewers (DG and RD), with any disagreements resolved by reaching a consensus between them. To ensure consistency between the two reviewers during the screening and data extraction process, we conducted a calibration exercise. Both raters independently screened a pilot set of articles and extracted data, followed by a discussion to resolve discrepancies and align criteria. This iterative process continued until consensus was achieved, ensuring reliability in the final screening and data collection phases. Studies were included if they reported on the use of SM in relation to oral health among adolescents aged between 13 and 18 years. No restrictions were applied to the research design; however, only studies published in English were included. Editorials, expert opinions, and conference abstracts were excluded. Articles focusing on Dentists' SM use for participant recruitment were also excluded.

Stage 4: Data extraction

A literature-informed data collection form was developed to extract data. Two trained researchers (DM and RD) independently conducted the data extraction. Consensus was obtained by mutual discussion. Extracted data included publication details (year of publication, country of publication), study characteristics (objective, inquiry, methodology, participants, means of data collection, measurements), usage of SM, intervention (content area, comparator, and length of the exposure), and main findings.

Stage 5: Reporting the results

Data Analysis and Presentation: Data were primarily summarized using descriptive statistics to present study characteristics, including publication details and study focus areas. Content analysis of study objectives was conducted to identify their primary focuses around which the main findings were organized. Results were reported based on publication year, authors, country, study design, objectives, SM platforms used, and key study outcomes, providing a structured overview of the research landscape on adolescent oral health and SM usage.

Results

Figure 1 displays a flow chart illustrating the selection process of the included studies, following the PRISMA-ScR (scoping review) guideline. A total of 1938 records were

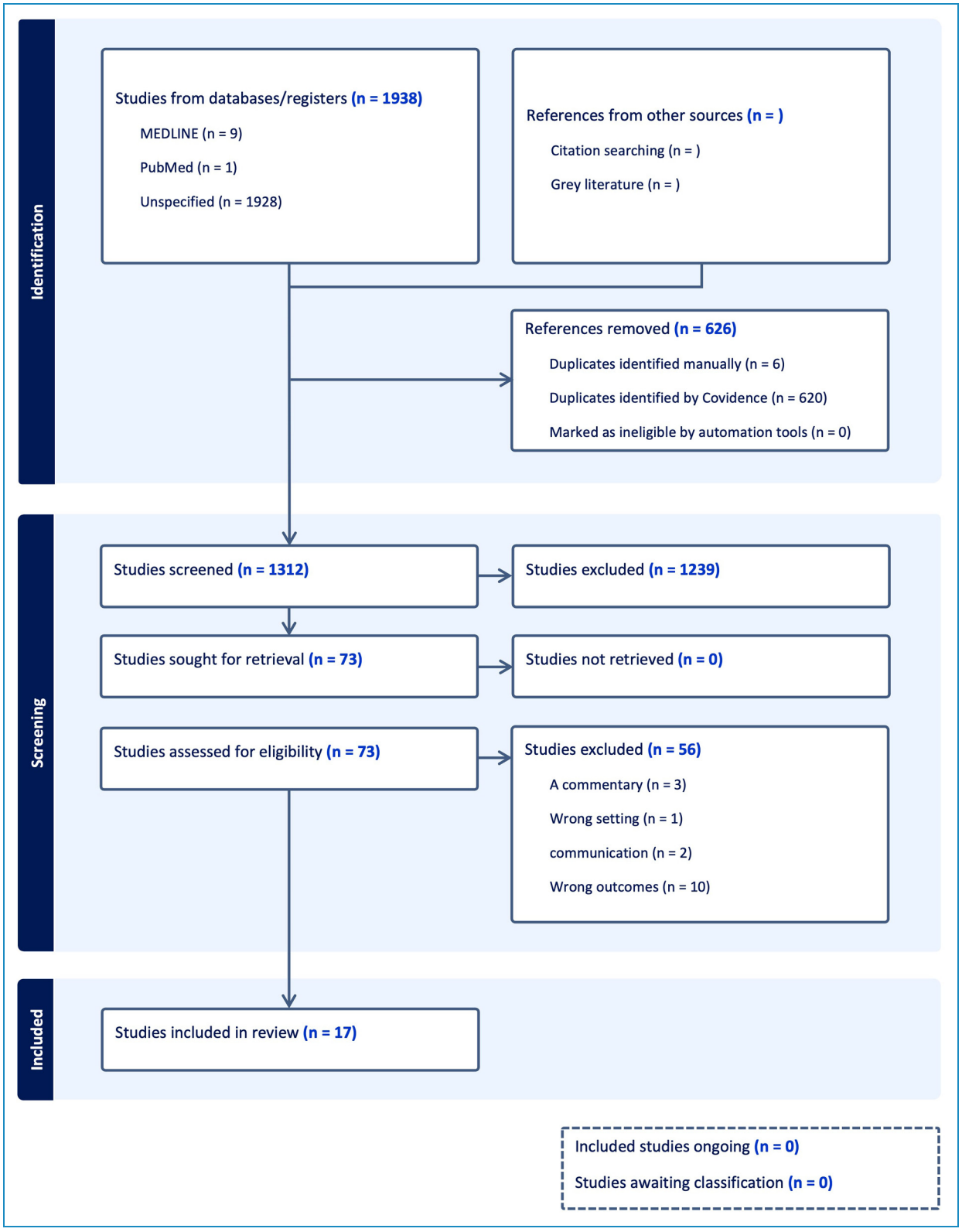

Figure 1. PRISMA flow diagram of the study selection process, generated using Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia).

Table 1. Summary of characteristics of the included studies.

Year	Authors	Country	Study design	Aims	Social media reported	Outcome
2022	Almoddahi et al.	United Kingdom	Cross-sectional survey	To assess association of dental caries with use of internet and social media to gain information on oral health and to evaluate the impact of this practice on oral health inequalities among 12 and 15-year-olds in England, Wales, and Northern Ireland.	Not specified	Oral health indicators
2019	Tantawi et al.	Saudi Arabia	Cross-sectional survey	To assess adolescents' preference to receive OHI through SM and the factors associated with this preference.	Google, IG, Twitter, FB	Oral health literacy
2021	Maharani et al.	Indonesia	Cross-sectional survey	To assess the use of different internet platforms to obtain OHI by adolescents in Jakarta and the factors associated with this use	Google, SM (YouTube IG, FB, Twitter)	Oral Health literacy, Oral Health behaviors
2019	Sharif et al.	United Kingdom	Not reported	To assess patients' awareness of orthodontic apps.	Google, You-Tube, FB, Blogs.	Oral health services
2013	Henzell M, Knight A, Antoun JS, Farella M	New Zealand	Cross-sectional survey	To investigate how orthodontic patients, use internet-based SM sites to share treatment-related experiences and attitude.	FB Twitter Bebo Tumblr	Oral health services, treatment experience
2015	Tse et al.	Hong Kong	Randomized controlled trial	To evaluate the efficacy of three major social media outlets in supporting adolescents' oral health literacy (OHL) education.	You-Tube, FB, Twitter.	Oral Health literacy.
2021	S. Sarwer-Foner, J. C. Barasuol, R. S. Vieira	Brazil	Randomized controlled trial	To evaluate the effectiveness of oral health education (OHE) methods on oral hygiene habits and outcomes in children and adolescents.	WhatsApp (Conventional OHE and reminder messages via WhatsApp)	Clinical evaluation (Plaque Index, Gingival bleeding index, DMFT), Oral health behaviors
2020	Scheerman et al.	Iran	Randomized controlled trial	To test the efficacy of a theory-based program delivered by the online social media platform (Telegram) to promote good oral hygiene behaviour and oral health outcomes.	Telegram	Oral health behaviors, Oral health Indicators

(continued)

Table 1. Continued.

Year	Authors	Country	Study design	Aims	Social media reported	Outcome
2015	Fadi M. Al-Silwadi, Daljit S. Gill, Aviva Petrie, and Susan J. Cunninghamd.	United Kingdom	Randomized controlled trial	To determine whether presenting audiovisual information through YouTube to orthodontic patients results in improvements in the knowledge related to appropriate care of the teeth and the appliances during treatment.	You-Tube (Standard verbal instructions plus video contents through YouTube)	Oral health literacy, care of the orthodontic appliances.
2016	Zotti et al.	Italy	Not Reported	To test the efficacy of an app-based approach applied to a protocol for domestic oral hygiene maintenance in improving hygiene compliance and oral health in a group of adolescent patients wearing fixed multibracket appliances	WhatsApp	PI, GI, White spots, Caries,
2019	Zotti et al.	Italy	Not Reported	To assess differences in relapse rate, patient compliance to attend appointment and wear retainers.	WhatsApp	Loss of Intercanine width.
2021	Scribante et al.	Italy	Randomized Controlled Trial	To investigate the effect of IG in improving knowledge and compliance of oral hygiene among young patients with fixed orthodontic appliances.	IG (verbal instructions plus multimedia contents on IG)	Oral health literacy, Oral health behaviors, Oral health Indicators (PI, MGI, BI)
2016	Xue Li et al.	China	Non-blinded randomized controlled trial	To know if mobile messaging using WeChat can shorten the treatment time by promoting compliance of orthodontic patients.	WeChat	Duration of orthodontic treatment, Orthodontic compliance, Oral hygiene condition.
2020	A. Papadimitriou et al.	Greece	Systematic review		Not specified	Orthodontic treatment perceptions and experiences
2022	Dalya Al-Moghrabi, Aslam Alkadhimi, Aliki Tsichlaki, Nikolaos Pandis, and Padhraig S. Fleming	Saudi Arabia	Systematic review	To assess the effectiveness of mobile applications and social media-based interventions in inducing behavior change among Orthodontic patients.	Social media apps like YouTube, IG, WhatsApp, Telegram, Mobile apps	Oral hygiene, Oral health behaviors, Oral health literacy. Orthodontic compliance,
2022	Zareban I, Rahmani	Iran		To evaluate a Telegram delivered oral health	Telegram	Perceived Self-Efficacy,

(continued)

Table 1. Continued.

Year	Authors	Country	Study design	Aims	Social media reported	Outcome
	A, Allahqoli L, Ghanei Gheshlagh R, Hashemian M, Khayyati F, Wai-chi Chan S, Volken T, Nemat B.		Randomized controlled trial	education program on the gingival index, perceived benefits, perceived barriers, self-efficacy, and motivational beliefs regarding DCB in Iranian students with gingivitis.		Perceived Barriers, Perceived Benefit, Motivational Beliefs, Gingival Index
2021	Elahe Soltanmohamadi Borujeni, Fatemeh Sarshar, Maryam Nasiri, Samaneh Sarshar, Leila Jazi	Iran	Randomized controlled trial	To evaluate the effect of teledentistry on the oral health status of patients undergoing fixed orthodontic treatment at the first three follow-up appointments.	Telegram	Plaque index and bleeding on probing (BOP), Gingival color and consistency

identified, of which 1312 titles and abstracts and 73 full-text articles were screened for eligibility. Seventeen papers were included in the review. The main characteristics and findings of the included studies are summarized in Table 1.

Characteristics of the included studies

Of the 17 papers included in the study, 15 were primary studies and two were review studies published between 2013 and 2024. These studies originated from various countries, including Italy,[24–26] United Kingdom,[27–29] Iran,[30–32] Saudi Arabia,[33,34] Brazil,[35] Indonesia,[36] Hongkong,[37] New Zealand,[38] Greece,[39] China.[40] Among the 14 primary studies, 3 did not report their study designs,[24,25,29] 6 were clinical trials,[26,28,30,31,35,40] and 5 were cross-sectional studies.[27,33,36–38] None of the included studies employed qualitative or mixed methods design.

The included studies examined several aspects of SM usage, including rates of usage, preferences, and purposes. They focused on examining the intersection of SM with oral health literacy and behaviors, its impact on oral health outcomes, and individuals' experiences related to oral health. The two review papers adopted a systematic review approach, evaluating the effectiveness of mobile apps and SM in influencing orthodontic patient behavior and assessing their impact on patient-reported outcomes. These reviews further explored how SM usage and information shared through these platforms affect patient-centred outcomes and treatment experiences. The outcome evaluated in both primary and review studies included health indicators, such as plaque index, gingival index, and caries index ($n = 8$); oral health behaviors, including toothbrushing, sugar intake, and frequency of dental visits ($n = 7$); oral health literacy ($n = 7$); patient treatment experience ($n = 3$); and treatment compliance, especially regarding keeping appointments and maintaining hygiene ($n = 3$). Data collection methods involved observations,[8] interviews,[1] and surveys.[8]

Recent statistics indicate a significant shift in SM usage trends among adolescents, moving away from primarily text-based platforms like Facebook and Twitter toward visually driven, short-form, and video-audio platforms such as YouTube, Instagram, and TikTok. This transition reflects changing content consumption preferences, with adolescents favoring interactive, visually engaging, and algorithm-driven formats over traditional textual SM experiences. Over time, the preferred SM platforms have shifted from Facebook to YouTube and Instagram.[33,36,38] YouTube is reported as the most favored platform with 40.7% of adolescents preferring it, followed by Instagram with preferences ranging from 24% to 31.1%. In contrast, the popularity of platforms like Facebook and Twitter has significantly declined from 96.2% to 5.5% and 21.9% to 1.7%, respectively.[33,36,38] Among SM users, the most common purpose was entertainment [83.1%], followed by

communication [71.3%], seeking information [45.8%], accessing news [30.7%], shopping [24.3%], and education [22.4%]. Only 16.9% of users reported using the Internet specifically for OHI,[33] and among these, 57.4% found it easy to obtain.[33] Overall, the perceived usefulness of the retrieved OHI from the internet was rated as moderate, with an average score of 5.1 out of 10.[33]

Characteristics of SM platforms used for adolescent oral health purpose

Despite the vast availability of health-related content on SM, only 16.9% of users specifically sought OHI on these platforms.[33] Among this group, 57.4% reported that they found it easy to access relevant OHI,[33] suggesting that while such content is readily available, it may not be a primary area of interest for most users. However, the overall perceived usefulness of the OHI retrieved from the internet was rated as moderate, with an average score of 5.1 out of 10,[33] suggesting that while information is accessible, concerns may remain regarding its credibility, accuracy, or applicability.

Summary of main results

Based on the study objectives, the findings were categorized into three key themes: (1) SM and oral health literacy and behaviors, which explores how adolescents use SM to access OHI, their preferred platforms, and its influence on their knowledge, attitudes, and self-care habits; (2) SM and oral health outcomes, which assesses the impact of SM on measurable oral health indicators, such as plaque index, gingival health, and dental caries, as well as its role in shaping risk behaviors like diet and hygiene practices; and (3) SM and treatment-related experiences, which investigates how adolescents use SM to share and seek information about dental treatments, adherence, and peer influence on treatment decisions. While interconnected, these categories offer distinct insights into how adolescents engage with oral health content on SM, from acquiring information to behavioral outcomes and treatment experiences.

Social media and oral health literacy and behaviors. Among the 17 included papers, 5 cross-sectional studies,[27,29,33,36,38] and 1 randomized trial[31] examined adolescents' preferred SM platforms and their impact on improving their oral health literacy and promoting positive behaviors.[27,29,31,33,36,38] These studies focused on unintended exposure, where participants unintentionally encountered OHI while engaging with SM. Findings showed that 58% of adolescents favored receiving OHI)through SM, with YouTube being the most preferred platform (40.7%), followed by Instagram (24–31.1%), Facebook (5.0–6.6%), Twitter (1.7–15.1%), and other platforms (9.2%).[33,36] Awareness and use of SM for OHI were significantly higher (21%) compared to orthodontic apps, with only 7% of adolescents being aware of their existence and actual usage dropping to nearly zero.[29] Among adolescents who had previously used SM for orthodontic-related information, YouTube (7%) was the most preferred platform, followed by Facebook (5%) and blogs (5%).[29]

Some studies focused on intended seeking, where individuals deliberately searched for OHI on SM. Adolescents used these platforms to find information about oral diseases, with 49.3% reporting searches for treatment, 47.6% for prevention, 43.4% for causes, and 14.6% for symptoms.[36] Those who maintain regular dental attendance were less likely to use SM for OHI, with a significantly lower likelihood observed in this group. However, no such association was found among those who used Google alone or in combination with SM.[36] The exclusive users of either Google or SM were significantly more likely to seek information specifically about oral diseases and treatment. In contrast, those who used both Google and SM together were significantly more likely to search for OHI across multiple categories, including symptoms, prevention, causes, and treatments.[36]

Several studies examined structured interventions, where SM platforms were deliberately used as tools to promote oral health. The efficacy of major platforms such as Twitter, Facebook, and YouTube in supporting oral health education among adolescents aged 14–16 years has been reported.[37] YouTube and Facebook were found to be more effective in increasing oral health literacy levels compared to Twitter's short text-message format.[37] These platforms appeared to be more efficient for oral health promotion and education among adolescents.[37] In another study, providing orthodontic patients with audiovisual information through YouTube significantly improved their knowledge.[28] Patients in the intervention group (YouTube) scored higher than those in the control group, representing approximately a 6% increase in knowledge.[28]

Clinical trials also investigated the effectiveness of structured oral health education programs delivered via SM platforms such as Telegram.[30,31] The use of audiovisual media, lectures, and meetings on Telegram promoted improved dental cleaning behaviors. The platform provided unique communication experiences, easy access to updated information, diverse educational content, social support, and enhanced perceived benefits of the behavior.[31] In contrast, an intervention using WhatsApp in another study found no significant differences in toothbrushing frequency or dental visit frequency between participants in the intervention and control groups.[35]

Studies analyzing how broader SM habits influence oral health behaviors have shown both positive and negative effects. While the use of SM has been associated with a significantly greater likelihood of brushing twice daily, particularly among those who use both Google and SM,[36]

extended screen time on these platforms has been linked to negative behavioral factors, such as increased sugar intake, reduced toothbrushing frequency, and fewer dental visits, ultimately affecting the prevalence of dental caries among children.[27,36]

Additionally, SM use has been negatively associated with regular dental attendance. Individuals who maintain consistent dental visits are less likely to rely on SM for OHI, with a significantly lower likelihood of SM use observed in this group. However, no such association was found among those who used Google alone or in combination with SM.[36]

Social media and oral health outcomes. The influence of SM on oral health outcomes presents a complex picture, with both beneficial and detrimental effects reported. Five studies measured oral health outcomes like the decayed, missing, and filled teeth (DMFT) index, plaque index, gingival index, gingival bleeding index, and oral health-related quality of life. Social media's impact on these outcomes varies depending on how individuals engage with it. Unintended exposure and intended seeking both contribute to oral health behaviors and outcomes. When used for oral health education, SM has been associated with increased awareness of oral hygiene methods and reduced sugar intake, leading to a decrease in dental caries prevalence.[36]

However, excessive general SM use, particularly for non-health-related content, has been linked to negative effects such as greater exposure to unhealthy dietary habits and poor oral hygiene practices.[27]

The effectiveness of structured interventions using SM to improve oral health outcomes has also been explored.[30,31,35] Findings indicate that different platforms vary in their impact. WhatsApp, for example, demonstrated limited influence on overall oral health outcomes.[35] Although it increased flossing frequency among adolescents who received OHI and reminders, it did not significantly improve broader oral health indicators.[35] Both the WhatsApp intervention group and the control group exhibited a 30% reduction in plaque index post-intervention, but there were no notable differences in DMFT/dmft scores or gingival bleeding index between the groups.[35] In contrast, Telegram proved to be a more effective platform for oral health education and behavior change. Studies reported significant improvements in tooth-brushing behavior, clinical oral health indicators, and social cognition among adolescents.[30–32] The use of Telegram for educational interventions resulted in statistically significant differences in gingival index scores between intervention and control groups.[31] While perceived barriers to maintaining oral health behaviors remained unchanged, participants found web-based training sessions to be more informative, satisfactory, and effective for patient evaluation, referral, and treatment compared to other methods.[31] These findings suggest that while WhatsApp may support specific oral hygiene practices, Telegram offers more comprehensive and sustained improvements in oral health education, behavior, and clinical outcomes.[30,31,35]

Social media and treatment-related experiences. Seven studies explored treatment-related experiences, perceptions, attitudes toward treatment, and compliance with dental care.

Intended Seeking of SM *to Share Experiences:* SM platforms have become key spaces for individuals to share their treatment-related experiences and connect with others. For example, Henzell et al. examined adolescents' use of SM to share their orthodontic treatment experiences and search for treatment-related information.[38] Approximately 50% of the participants in this study expressed a willingness to post photos of their teeth after treatment. Among those who shared their experiences, 60% were aged 14–17 years, 70% were female, and Facebook (FB) was the most preferred platform (96.2%), followed by Twitter (21.9%).[38]

For many patients undergoing orthodontic treatment, SM has proven to be an influential tool in seeking care and sharing personal experiences. About one-quarter of the patients in the study had viewed comments posted by their peers, indicating a positive impact of SM on their decision to seek orthodontic care. Patients preferred sharing their experiences with friends or fellow patients via SM rather than discussing them directly with their orthodontist.[39] The shared experiences often included challenges such as poor oral hygiene, chewing disorders, pain, and difficulties in wearing retainers, as well as the benefits of completing treatment, including improved aesthetics and better occlusion.[39] Social media also allowed patients to express positive perceptions such as enthusiasm, boosted self-esteem, pleasure, excitement about the aesthetic results, and joy after the removal of braces. These positive feelings were more frequently shared than negative emotions like antipathy, frustration, reduced self-esteem, and impatience for removing orthodontic devices.[39]

Structured interventions to assess the effectiveness of SM in improving treatment compliance: Compliance with orthodontic treatment was measured in terms of maintaining good oral hygiene and health, maintaining appointments, orthodontic success rate and relapse, and use of retainers.[24–26,34,40] Dalya Al-Moghrabi systematically reviewed the effectiveness of mobile applications and SM-based interventions in improving patient compliance during orthodontic treatment.[34] The evidence to measure the effectiveness of mobile-based and SM-based interventions on plaque and gingival scores among orthodontic patients was very weak or limited. Interventional studies to assess the use of SM included YouTube, IG, and moderated chat groups like WhatsApp or Telegram.[34] While the potential benefits of FB and Twitter on health behavior change are evident, their application in orthodontic literature is lacking. The review indicated a short-term positive effect of mobile-based or SM-based interventions on positive behavioral changes among orthodontic patients. However, long-term

studies reported no significant difference between treatment groups in terms of oral hygiene.[34]

Two clinical trials aimed to test the efficacy of a WhatsApp-based approach in improving orthodontic patients' compliance and oral hygiene maintenance. It also assessed differences in oral hygiene, relapse rate, defined as any change in orthodontic stability, and patient compliance with both retainer wearing and visit attendance in a group of adolescents wearing fixed multibracket appliances.[24,25] Participants in the experimental group exhibited a decrease in both plaque index and gingival index scores between appointments, and their incidence of new carious lesions decreased over time compared to the control group.[25] Another study reported that weekly sharing of smile selfies in a WhatsApp-based chat room contest was an effective and long-lasting method to improve oral hygiene compliance in adolescent orthodontic patients.[25] All patients in the study group actively participated in the chat room, regularly shared their snapshots, and attended scheduled check-ups throughout the entire observation period. In contrast, 8 out of 30 patients in the control group discontinued their visits after 8 months from the start of the follow-up.[24] Overall, results for inter-canine widths were better among the study group as well as attendance at follow-up visits, confirming the positive effect of the use of WhatsApp chat in patient involvement and adherence.[24]

Instagram, the most used SM app among young adults,[26] effectively improved patients' knowledge of oral health, proper oral practices, and healthy dietary habits. However, it did not enhance compliance with oral hygiene among young patients with fixed orthodontic appliances.[26] In contrast, text message reminders and regular educational messages on messaging apps like WeChat improved both patient compliance with oral hygiene and shortened treatment duration.[26] Another clinical trial aimed to determine the effectiveness of WeChat in improving patient compliance and reducing the duration of orthodontic treatment as well as orthodontic plaque index and modified gingival index.[40] The duration of treatment in the WeChat group was significantly shorter compared to the control group, with a mean difference of 7.3 weeks, and there was no significant difference between the two groups in orthodontic plaque index and modified gingival index, in either baseline or endpoint evaluation.[40]

Discussion

This study aimed to offer a comprehensive overview of published research on the utilization of SM for oral health and related practices among adolescents. A total of 17 papers were selected for inclusion in the review process. Although numerous studies have investigated the relationship between SM and oral health, many have targeted different age demographics. Our review identified key insights related to SM's role in adolescent oral health. First, SM serves as a significant source of OHI for adolescents, influencing their knowledge and behaviors. Second, engagement with SM platforms is associated with both positive and negative oral health outcomes, with some studies reporting improved hygiene practices while others highlight risks linked to unhealthy behaviors. Finally, SM plays a growing role in treatment-related experiences, particularly in shaping patient expectations, adherence to care, and decision-making. These interconnected categories provide insights into adolescents' engagement with oral health content.

Overall, adolescents showed a preference for Instagram and YouTube, whereas older adults tended to favor platforms like Facebook.[17,18] A significant number of adolescents who choose not to use SM for OHI primarily use these platforms for entertainment and communication purposes.[33] This reluctance may stem from privacy concerns or a lack of awareness regarding SM's potential role in disseminating health information.[36] Additionally, the risks of misinformation and emerging SM trends may disproportionately affect adolescents with limited decision-making autonomy, particularly those reliant on parental approval for adopting new oral health practices or attending dental appointments.[21] YouTube's video format is particularly effective for enhancing information retention by engaging multiple senses at the same time.[36] Engaging multiple senses simultaneously, such as through multisensory learning approaches, could enhance information retention and recall.[36]

Despite the potential benefits of SM in promoting oral health awareness and behaviors, its excessive use and the associated challenges, such as internet overuse and societal inequalities, can lead to negative oral health outcomes.[27] This phenomenon may be attributed to a positive correlation between internet overuse and unhealthy behaviours such as increased sugar intake, poor oral hygiene, or infrequent toothbrushing.[24–26,40] Furthermore, societal inequalities limit access to high-speed internet connectivity in underprivileged areas, thereby depriving residents of crucial OHI and making them more vulnerable.[41] Adolescents who frequently used the internet and found it easy to obtain OHI online were more likely to use it for that purpose. In contrast, those who primarily used SM for entertainment and socializing with friends did not engage with it for oral health-related information.[33,42] Additionally, some users were hesitant to use online platforms altogether.[33] The low preference for using SM among these users can also be attributed to concerns about privacy and a reluctance to share health information online.[42] These users may prefer seeking information and assistance directly from friends rather than through SM platforms.[42] In comparing the use of SM for general health versus oral health among adolescents, it's notable that only a quarter viewed SM as a useful source of health information.[43] This limited trust and engagement might help explain why public health

campaigns on SM often struggle to capture the interest of this demographic.[43] Adolescent's difficulty in evaluating the reliability and relevance of online health information can contribute to this challenge.[43]

Understanding the broader social and historical contexts is crucial to explaining how SM shapes adolescent engagement with health information and behavior. Life-course analysis suggests that age, social structures, and historical changes play significant roles in shaping life decisions and behaviors.[44,45] Social media platforms like FB have brought about a historical shift in human interaction and the delivery format of information, with the extensive use of audio-visual content distinguishing them from text-based platforms such as Twitter.[44] While most SM serve a common purpose, formats like videos hold greater value in terms of educating the public.[42] Furthermore, beyond information dissemination, SM platforms keep adolescent learners engaged and interactive, thereby enhancing their health literacy and providing real-time updates on disease surveillance.[46,47] Therefore, the strategic use of SM can significantly influence public health by improving knowledge, engagement, and timely access to critical health information.

Building on this, SM platforms have effectively enhanced oral hygiene practices, showcasing the practical impact of SM on improving dental health outcomes. Social media platforms such as YouTube, IG, and low-cost applications like WhatsApp have been utilized to deliver oral hygiene instructions, leading to improvements both in daily hygiene practice and clinical indicators like plaque index and gingival index.[35,48] Sharing oral hygiene instructions and videos via WhatsApp led to a significant increase in dental flossing frequency among users compared to traditional methods.[35] Integrating direct communication and instructional videos on platforms like WhatsApp shows promise for health promotion, enhancing the reach and impact of dental health education.[35] This approach allows teenagers to seek specific information independently, fostering motivation, and skill development crucial for oral health maintenance.

It is essential to compare SM with traditional online sources like Google for health information and further explore their broader impact. Although Google remains the primary platform for oral health-related information, YouTube offers an advantage by engaging multiple senses simultaneously, resulting in a knowledge retention rate of 50%.[28,49] Social media has proven effective in disseminating OHI and enhancing clinical indicators.[26,28,37,40] However, existing studies have focused on smaller groups, highlighting the need for longitudinal studies with validated questionnaires across a wider population.[26,28,37,40] Such studies should include public outreach programs that target the general population rather than individuals already undergoing dental treatments and are motivated toward maintaining good oral health.[34,38] Social media has proven successful in outreach programs targeting poor sexual health outcomes, such as unplanned pregnancies and infections like HIV, particularly among high-risk youth.[50] Their results have demonstrated that SM can effectively prevent short-term declines in condom use, with outcomes comparable to traditional HIV prevention programs while achieving strong short-term retention rates.[50] However, while SM has been leveraged to raise awareness about adolescent health concerns, it has yet to demonstrate a significant or sustained impact on improving oral health outcomes. This gap underscores the need for more effective and targeted interventions in adolescent oral health programs through SM platforms.

To further understand the influence of SM, it is important to consider its impact not only on the dissemination of health information but also on treatment compliance and patient experiences, particularly in specialized areas like orthodontic care. For general health, a significant portion of adolescents and young adults are actively sharing health-related content on SM, particularly about mood, wellness, and acute medical conditions.[51] This sharing is often motivated by a desire to connect with others, seek advice, and receive support.[51] As SM platforms demonstrate unique health education advantages, their potential extends into dental care. For example, orthodontic patients rarely share treatment experiences on SM, with less than 10% posting comments, but nearly a quarter viewing peer comment.[38] This suggests that SM influences patient perceptions and experiences, offering support and shaping expectations. While the engagement is modest, it raises questions about the quality of shared information and its impact on patient adherence and satisfaction. Orthodontic professionals should be aware of online communities' influence on treatment outcomes, as SM can motivate others by showcasing positive results, though it may also create unrealistic expectations. Further research is needed to understand how these interactions affect patient decision-making and satisfaction, highlighting the growing role of SM in orthodontic care.

Building on SM's role in shaping patient experiences, these platforms can further enhance patient engagement in health management and improve their compliance with treatment by providing education, support, reminders, and motivation.[51] Dental health professionals use platforms like WhatsApp, WeChat, and IG to educate patients, resulting in reduced treatment time, lower plaque index scores, decreased gingival bleeding, and fewer new carious lesions.[24,26,40] Traditionally, text messaging has been used to send reminders and notifications about upcoming appointments, and treatment milestones; however, other SM platforms can offer opportunities for patients to connect with other patients facing similar experiences. This interaction enables them to share challenges, successes, and tips for managing treatment, providing valuable support and encouragement.[24,40] Overall, the integration of SM

into dental care not only fosters patient compliance and education but also builds a supportive community, enhancing the overall treatment experience and outcomes. To determine whether messaging apps are superior, effective, and sustainable over the long term, it is essential to conduct further research comparing the outcomes of digital interventions with traditional methods, considering factors such as patient satisfaction, treatment adherence, and overall health outcomes.

Adolescents engage more with SM for general health topics than for oral health, highlighting a gap that needs targeted strategies. In contrast to oral health, where SM engagement is less frequent and impactful among adolescents, platforms like Facebook are often used to gather information on fitness and nutrition, while Twitter serves as a popular resource for sexual health information.[10] Just as adolescents are affected by chronic conditions impacting their general health, such as dental caries and gingival diseases, SM plays a significant role in shaping their perceptions of quality of life, especially during periods of chronic pain.[52] These platforms provide a space for social connection, allowing teens to interact with peers who face similar health challenges.[52] Despite this, most adolescents do not engage with healthcare professionals on SM, highlighting an area ripe for further research and development of targeted SM-based strategies.

Social media's broad reach and engagement make it a powerful tool for adolescent oral health initiatives, but it requires careful management to prevent misinformation. Social media platforms disseminate information widely efficiently and effectively and engage a broader audience, which is beneficial for public health initiatives aimed at improving adolescent oral health outcomes.[36,37] Contrary to text-based platforms, platforms incorporating audiovisual features can enhance user engagement and retention of health information.[36,37] While the accessibility of information is a significant benefit, the growing number of patients relying on SM for information heightens the risk of encountering misinformation, necessitating vigilance from healthcare professionals and relevant organizations.[36,39] The preference for SM platforms can vary between countries, and different age groups and may be influenced by the popularity of specific applications at the time of data collection.[36] It is essential to acknowledge that limiting data collection to specific geographical areas, age groups, genders, and socioeconomic backgrounds could introduce bias or confounding factors.[35]

This study emphasizes the significant role SM can play in enhancing oral health education among adolescents. While the findings demonstrate the effectiveness of these platforms in reaching and educating this age group, there remains a considerable gap in the literature regarding adolescents' perspectives on using SM for oral health purposes. Existing research is often constrained by small sample sizes, which may not be representative of the broader adolescent population. Additionally, selection biases and gender biases present challenges to the generalizability of findings. Furthermore, many studies only captured short-term engagement and outcomes, failing to provide a comprehensive understanding of long-term impacts. To bridge these gaps, more extensive and nuanced research is required. Future studies should explore how adolescents choose and use SM platforms, paying close attention to factors such as privacy concerns, the appeal of different types of content, and the ways in which these platforms can sustain user engagement over time. Additionally, it is crucial to move beyond the traditional methods of data collection, such as closed-ended questionnaires, which may not fully capture the complexity of adolescents' interactions with SM. Instead, incorporating more qualitative approaches could provide richer insights into how SM influences oral health behaviors and attitudes. By addressing these limitations, future research can better inform the development of targeted, effective SM interventions that resonate with adolescents and ultimately improve their oral health outcomes.

Our scoping review has several limitations, including the exclusion of grey literature, broad categorization of results, and lack of quality appraisal. Excluding grey literature may have limited our reflection on the research activity and could have provided additional insights and reduced publication bias. In the search process, some of the terms such as "vaping" or "e-cigarette" were left out that could be included in future research. The broad categorization of results might oversimplify the specific aims of each study. Since, the primary goal of this review was to map the existing literature on a broader note and identify key concepts, gaps, and types of evidence available, we did not appraise the quality of the included studies, so their reliability and validity were not systematically evaluated. These limitations suggest a careful interpretation of our findings and highlight areas for future research to address these gaps.

Conclusion

The results derived from this scoping review highlight the significant role of SM in shaping adolescent's oral health and oral health practices. Further research is needed to gain a deeper understanding of how adolescents perceive and engage with SM for oral health-related matters. By delving deeper into the perspectives of teenagers, we can gain a more comprehensive understanding of their attitudes, behaviors, and preferences regarding the use of SM platforms in relation to oral health. This deeper understanding will enable us to identify and address any underlying factors that may be associated with adolescents' utilization of SM for oral health purposes. Through such exploration and analysis, we can identify the potential risks associated with SM usage and develop more effective strategies and interventions aimed at promoting oral health among adolescents in the digital age.

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ORCID iDs

Devarasa Murugeshappa https://orcid.org/0009-0007-5073-5039
Arnaldo Perez https://orcid.org/0000-0002-7459-2112
Maryam Amin https://orcid.org/0000-0003-2249-5465

Statements and declarations

Ethical Considerations

Ethics approval and consent to participate were not applicable as this study is a scoping review of existing literature and did not involve collecting primary data.

Author Contributions/CRediT

DM: conceptualization (lead), funding acquisition, data curation, investigation, methodology, writing an original draft (lead), writing–review and editing. RD: data curation, investigation, methodology, writing–review and editing. AP: conceptualization, methodology, data curation, formal analysis, writing–review and editing. GG: conceptualization, writing–review and editing. MA: conceptualization, funding acquisition, methodology, data curation, formal analysis, writing–original draft (supporting), and writing–review and editing.

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Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Supplemental material

Supplemental material for this article is available online.

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