

Oral health literacy, knowledge, practice and beliefs among Asian Americans: A scoping review

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Abstract

Objectives: The Asian American (AsA) population is at high risk for poor oral health outcomes and remains an underserved and understudied community. Low oral health literacy could explain poor oral health behaviours, practices and outcomes in this population. The aims were as follows: (i) provide a scoping review of oral health literacy, knowledge, practice and beliefs among AsA individuals residing in the United States; (ii) identify any instruments or tools translated into participants' language and (iii) determine whether the translated instruments had been assessed for validity and reliability.

Methods: The current study used a scoping review framework based on PRISMA-ScR that included rigorous eligibility criteria, search strategy, independent selection process with adjudication, and standardized reporting of outcomes. The search was conducted on March 14, 2022, and updated on February 25, 2023 and February 13, 2024, in the following databases: Ovid MEDLINE, Embase, Web of Science and CINAHL.

Peer-reviewed original research on oral health literacy, knowledge, awareness, practice, and beliefs related to oral health care in AsA subgroups published in English were included.

Two reviewers independently assessed whether titles and abstracts should be included for review, with discrepancies adjudicated by a third reviewer. Data extracted from articles used a standard template that included study design, and measurement tools of oral health, knowledge, awareness, practice and beliefs, as well as results and conclusions of the publication. In addition, the template captured whether the translated and original measurement tools were assessed for reliability and validity.

Results: Of the 367 papers identified, 10 studies that met eligibility criteria were included in the final review. Of these, four studies used previously validated tools to assess oral health measurements in AsA. Only five of the studies translated the tools into the participants' native language. Although AsA exhibited lower oral health literacy than Whites but higher than Hispanics and African Americans, none of the translated tools were assessed for reliability and validity. Acculturation and country of birth

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were factors influencing oral health behaviours related to good oral health practice and utilization, with AsA born in the United States exhibiting higher oral health utilization than those born in their country of origin. Oral health beliefs played a significant role in dental care utilization among AsA populations.

Conclusions: The scoping review on oral health in Asian American communities identifies a significant research gap, particularly in the lack of validated tools for assessing oral health literacy, which varies across ethnic groups. It notes that AsA generally have lower oral health literacy compared to Whites, but higher than Hispanics and African Americans. AsA born in the United States shows better oral health practices, influenced by acculturation and birth country. The findings emphasize the need for more thorough and culturally adapted research methods to address oral health disparities in this diverse group.

KEYWORDS

behavioural science, dental health, disparities, oral health, public health, Asian Americans, health literacy

1 | INTRODUCTION

Poor oral health such as dental caries (e.g. tooth decay) and periodontitis (e.g. gum disease) impose a significant burden on individuals and societies.¹ A report by the centers for Disease Control and Prevention highlights concerning trends: 9 in 10 US adults aged 20–64 years have experienced caries, with one in four having untreated tooth decay.² Dental pain and discomfort stemming from poor oral health can affect the quality of life (QOL), leading to difficulty in eating, speaking and socializing.³ Furthermore, untreated dental problems can result in infections, which can spread to other parts of the body and become life-threatening. Poor oral health has also been linked to increased healthcare costs, with the cost of treating dental problems estimated to be \$136 billion annually in the United States (US) alone.⁴ There is a significant body of evidence to support independent associations between severe periodontitis and chronic diseases, such as diabetes and cardiovascular disease,⁵ which can further exacerbate healthcare costs and reduce QOL. Overall, it is a significant public health issue that requires attention and action from policymakers, healthcare providers, and individuals themselves, given that one of the Healthy People 2030 initiatives in the United States is to reduce tooth decay and other oral health conditions and increase access to oral health care.⁶

Significant racial/ethnic disparities in poor oral health, including diagnoses, treatment, and access to care have been well documented in the US.⁷ Studies consistently show that people from racial and ethnic minority groups have poorer oral health outcomes compared to their White counterparts.^{2,7} They are less likely to receive timely and appropriate diagnoses, which can lead to worse oral health outcomes.^{2,7} AsA are a diverse group of people living in the US that can trace their roots to 20 countries in East and Southeast Asia and the Indian subcontinent Asian Americans (AsA) experience unique oral health challenges. Each subgroup has its own history,

language, culture, and lived experiences. Yet, most conventional research in the US has classified AsA as a single racial/ethnic group.^{2,7} Compared to other ethnic groups, AsA as a group report poorer oral health problems and lower health literacy, which is a critical component to awareness and knowledge of oral health.^{8,9}

Recent research highlights the impact of discrimination' on oral health among older Chinese Americans acculturation in dental service utilization.¹⁰ AsA face numerous barriers in assessing oral health care, including costs, limited access, and low utilization of services.^{10,11} Previous research has estimated several disparities in utilization of oral health care services among specific AsA subgroups.¹² Compared with 7.8% in US White group, 13.9% of Native Hawaiians and Other Pacific Islanders (NHOPi), 7.1% of Vietnamese, 6.7% of Korean, and 6.1% of Japanese had unmet dental care needs between 1997 and 2000 due to cost in the US.¹² The same relationship applies to other health discrepancies (e.g. access to care) in AsA, which exacerbates health inequities and widens disparities. However, two major barriers to healthcare among AsA include language and culture, and health literacy.¹³ These barriers are likely to parallel those in oral health, emphasizing the need for culturally competent care and targeted interventions to address the oral health disparities experienced by AsA.

The Theory of Planned Behaviour (TPB) serves as the most influential theoretical framework for describing, predicting, and changing oral health outcomes.¹⁴ According to TPB, attitudes, subjective norms, and perceived behavioural control all act together to influence oral health behaviours.¹⁴ A recent review by Batra, Gupta, & Erbas highlights that among South Asian immigrant populations who came mostly from India and Bangladesh, several factors predispose these diasporas from not using oral health care services, including a lack of trust in oral healthcare providers, poor oral health knowledge, and lower perceived behavioural control, due to already held religious and cultural beliefs.¹⁵ Thus, oral health literacy, knowledge, practice and beliefs are all important factors that can influence oral

health outcomes. Low oral health literacy is associated with poorer oral health outcomes, including poorer oral hygiene practices, higher rates of dental disease, delayed treatment, poorer self-reported oral health and lower utilization of preventive services.^{16,17} A lack of oral health knowledge such as not understanding the importance of fluoride in preventing tooth decay¹⁸ may increase the risk of developing dental caries, while people with high oral health knowledge are more likely to engage in preventive behaviours and seek appropriate care when needed.¹⁹ Good oral health practices, such as frequent brushing or dental care, can lead to lower rates of dental disease and better oral health.²⁰ People who believe that oral health is not important may be less likely to engage in preventive behaviours or seek dental care when they experience dental problems. Improving these factors can help to promote better oral health outcomes and reduce oral health disparities. The scoping review represents a crucial step towards understanding and alleviating oral health challenges faced by Asian American populations, contributing substantially to the fields of community health, healthcare policy and healthcare service design through its findings and methodology.

Research that explores oral health literacy, knowledge, practice, and beliefs among AsA individuals can provide insights into the barriers and facilitators to good oral health within this population. This knowledge can then be used to develop targeted interventions that promote good oral health. Therefore, this scoping review was conducted to: (1) determine the scope of research conducted on oral health literacy, knowledge, practice and beliefs among AsA individuals residing in the US; (2) whether scales have been translated into participant's native language and (3) whether the translated scales have been assessed for validity and/or reliability.

2 | METHODS

A scoping review framework was used to systematically synthesize literature on oral health literacy, knowledge, practice, and beliefs. This methodology facilitated the investigation of an exploratory research question aimed at mapping key concepts in oral health and identifying gaps in the current literature. Previous research methodologies,²¹ as well as the rigour of the Preferred Reporting Items for Systematic Reviews and Meta Analyses extension for Scoping Reviews (PRISMA-ScR)²² were used. This included the use of clearly defined eligibility criteria, a comprehensive search strategy, a rigorous selection process, and clearly defined outcomes. The extraction and synthesis of data from relevant studies provided a comprehensive understanding of the current state of knowledge in this area.

2.1 | Search strategy and screening

A professional librarian (HY) designed and conducted a search on 14 March 2022, using Ovid MEDLINE, Embase, Web of Science, and CINAHL electronic databases. A date limiter of 01 January 1990, was applied to each search. The search was repeated on 25 February

2023 and again on 13 February 2024 to update the review. This search included three categories: terms related to AsA populations, terms related to health literacy, and terms related to oral health. AsA populations for this search were defined by the American Community Survey (ACS) and included AsA subgroups with roots from 20 countries in East, Southeast Asia and the Indian subcontinent including Native Hawaii and Pacific Islanders.²³ The full search strategy, including all the Asian American subgroups, can be viewed in [Table 1](#). Endnote X9 (Clarivate, London, U.K) was used to remove duplicates. A total of 538 records were identified (476 from March 14, 2022 and 37 from February, 23, 2023 and 25 from February 13, 2024) and were screened by two reviewers (SB and RB) independently based on the inclusion and exclusion criteria. An adjudicator (UN) made final determinations on entries in which the reviewers did not agree. A detailed breakdown of the search methodology is presented in [Figure 1](#).

2.2 | Eligibility criteria

Studies were screened based on specific inclusion and exclusion criteria outlined in [Table 2](#). Briefly, peer-reviewed and original research studies in English were included. Only research conducted in the US on AsA sub-populations living in the US and published in English were included. All study designs were eligible except case studies, case-series and White or grey literature. Studies were excluded if they did not address oral health literacy and/or knowledge, awareness, practice or beliefs related to oral health care. Papers that focused on oral lesions, oral cancer, dry mouth, tonsillitis, dental school admission, mandible, and hepatitis B unrelated to oral health care were excluded. Specifically, 347 papers were excluded during the initial screening. The reasons for their exclusion were as follows: studies published before 1990, non-English publication, studies in a Non-Asian American population, case studies, case series and grey literature and studies unrelated to oral health literacy, knowledge and practice.

2.3 | Data charting

After screening studies, eligible studies were reviewed for data extraction. Data were charted into a form with the following headings: Reference, Population, Sample size, Where Study was conducted, Study design, Instrument-Oral health literacy knowledge awareness practice, Estimate of association, Covariates, Instrument validation (if available), Details of instrument, Result, Conclusion, Notes and Reviewer. The data were then summarized in a smaller table that included the following headings ([Table 3](#)): Authors, Year, Aim, Sample, N, Study Design Setting, Tool used, Translation (translation tool checked for validity & reliability), Original instrument in English is validated and reliable, Results, Oral Health Domain and Conclusions. To ensure accuracy, the articles were re-evaluated to confirm compliance with the established eligibility criteria.

TABLE 1 Example of Search Strategy for OVID MEDLINE.

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1990 to March 14, 2022>		
1	exp Asian Americans/ or asian america*.ab,ti. or (asian* and america*).ab,ti. or chinese america*.ab,ti. or vietnamese america*.ab,ti. or hmong america*.ab,ti. or korean america*.ab,ti. or japanese america*.ab,ti. or south asian indian america*.ab,ti. or pakistani america*.ab,ti. or bengali america*.ab,ti. or malaysian america*.ab,ti. or indonesian america*.ab,ti. or (asian american and pacific islander).ab,ti. or AAPI.ab,ti. or filipino america*.ab,ti. or laotian america*.ab,ti. or cambodian america*.ab,ti. or south east asian america*.ab,ti. or indian america*.ab,ti. or native hawaii*.ab,ti. or pacific island* america*.ab,ti. or mongolia* america*.ab,ti. or burmese america*.ab,ti. or nepalese america*.ab,ti. or sri lanka* america*.ab,ti. or bhutan* america*.ab,ti. or asian* india* america*.ab,ti. or taiwan* america*.ab,ti. or thai* america*.ab,ti.	24808
2	exp Health Literacy/ or exp Awareness/ or exp Health Knowledge, Attitudes, Practice/ or exp Knowledge/ or exp Knowledge Bases/ or exp Patient Medication Knowledge/ or exp Attitude/ or exp "Attitude to Health"/ or exp Patient Participation/ or health literacy.af. or aware*.af. or knowledge*.af. or attitude*.af. or engage*.af.	1824853
3	exp oral health/ or exp Dental Health Services/ or exp Dental Care/ or exp Health Education, Dental/ or exp Stomatognathic Diseases/ or exp Stomatognathic System/ or exp Temporomandibular Joint Disorders/ or exp Dental Occlusion/ or exp Aggressive Periodontitis/ or exp Chronic Periodontitis/ or exp Periapical Periodontitis/ or exp Periodontitis/ or exp Gingivitis/ or exp Gingivitis, Necrotizing Ulcerative/ or exp Periodontal Diseases/ or exp Mouth Diseases/ or exp Dental Caries/ or exp Tooth Loss/ or exp Gingival Hemorrhage/ or exp Tooth Mobility/ or exp "root caries"/ or exp dental caries susceptibility/ or exp Malocclusion/ or exp Oral Hygiene/ or exp Cracked Tooth Syndrome/ or exp Tooth/ or exp Tooth Abrasion/ or exp Tooth Attrition/ or exp Tooth Avulsion/ or exp Tooth Demineralization/ or exp Tooth Diseases/ or exp Tooth Erosion/ or exp Tooth Extraction/ or exp Tooth Fractures/ or exp Tooth, Impacted/ or exp Tooth Remineralization/ or exp Tooth Replantation/ or exp Tooth Resorption/ or exp "Tooth Root"/ or exp Tooth Socket/ or exp Tooth Wear/ or exp Tooth Abnormalities/ or exp Tooth Ankylosis/ or exp Tooth, Artificial/ or exp Tooth Crown/ or exp Tooth Eruption/ or exp Tooth Exfoliation/ or exp Tooth Germ/ or exp Tooth Injuries/ or exp Tooth Preparation/ or exp Tooth Preparation, Prosthodontic/ or exp Tooth, Unerupted/ or exp Tooth Migration/ or exp Tooth Permeability/ or exp Toothbrushing/ or exp Dental Plaque/ or exp Dental Equipment/ or exp Dental Devices, Home Care/ or exp Preventive Dentistry/ or exp Dentistry/ or oral health.ab,ti. or dental health.ab,ti. or dental disease.ab,ti. or periodontitis.ab,ti. or gingivitis.ab,ti. or tooth loss.ab,ti. or loose teeth.ab,ti. or bleeding gum*.ab,ti. or oral lesion*.ab,ti. or loose tooth.ab,ti. or tooth mobility.ab,ti. or teeth mobility.ab,ti. or cavit*.ab,ti. or carie*.ab,ti. or tooth decay.ab,ti. or teeth decay.ab,ti. or malocclusion.ab,ti. or dental hygiene.ab,ti. or oral hygiene.ab,ti. or toothbrush*.ab,ti.	1204490
4	1 and 2 and 3	69

2.4 | Definition of terms

Oral health literacy is the ability of an individual to access, understand, and use oral health information and services to promote and maintain good oral health.³⁴ Oral health knowledge refers to an individual's understanding of oral health, oral hygiene, oral diseases, and their prevention, and proper oral care habits, such as brushing, flossing, and regular dental check-ups.³⁵ Oral health practice involves consistent implementation of good oral hygiene habits, such as brushing teeth at least twice a day, flossing daily, using mouthwash and visiting the dentist regularly for check-ups and cleanings.³⁵ Oral health beliefs are the values, attitudes, and perceptions that influence an individual's approach to oral health, shaped by cultural, social and personal factors. These beliefs can significantly impact oral health habits, with positive beliefs encouraging good practices and misconceptions or negative beliefs leading to poor oral hygiene.³⁶

3 | RESULTS

3.1 | Descriptive

Based on the predetermined inclusion and exclusion criteria, a total of 10 papers were identified and included in this scoping review. These studies explored oral health literacy, knowledge, practices or beliefs

in AsA. The included studies had a combined sample of 3877 AsA participants. The largest study had a sample of 2763 participants, while the smallest study included 18 participants.²⁵ The studies primarily focused on Vietnamese-Americans,³¹ Chinese-Americans,³³ Korean-Americans,^{26,29} and Japanese-Americans.²⁷ Eight papers examined oral health beliefs,^{24,25,27-31,33} while two papers focused on oral health knowledge,^{26,28} of which one did not analyse AsA due to low sample size.²⁸ Three papers evaluated oral health practices, including utilization of oral health services, dental visits, and oral health habits.^{28,30,31} One paper examined oral health literacy.³² Oral health beliefs included measures of self-efficacy and attitudes to oral health.^{24,25,27-29,31,33} Overall, Oral health literacy scores were lower among Asians compared to Whites but higher than Hispanics and African Americans.³² Specifically, the average scores were: Whites (17.76), Asians (17.58), Hispanics (16.00), and Blacks (15.80) ($p < .05$).³² Oral health knowledge, as well as good oral health practice, was associated with English proficiency, acculturation and being born in the US,²⁹⁻³¹ while oral health beliefs were linked with country of origin.^{25,26,31,33} The review also found that oral health beliefs in certain groups of AsA were negatively associated with good oral health practices.^{24,25,27,29,31,33} Details of results from the individual articles were outlined in Table 3. More specific results for Asian American subgroups are as follows: among Japanese-Americans, second generation and those younger, more educated had more favourable attitudes towards preventive oral health care and more likely to visit

FIGURE 1 PRISMA Flowchart of Study Selection.

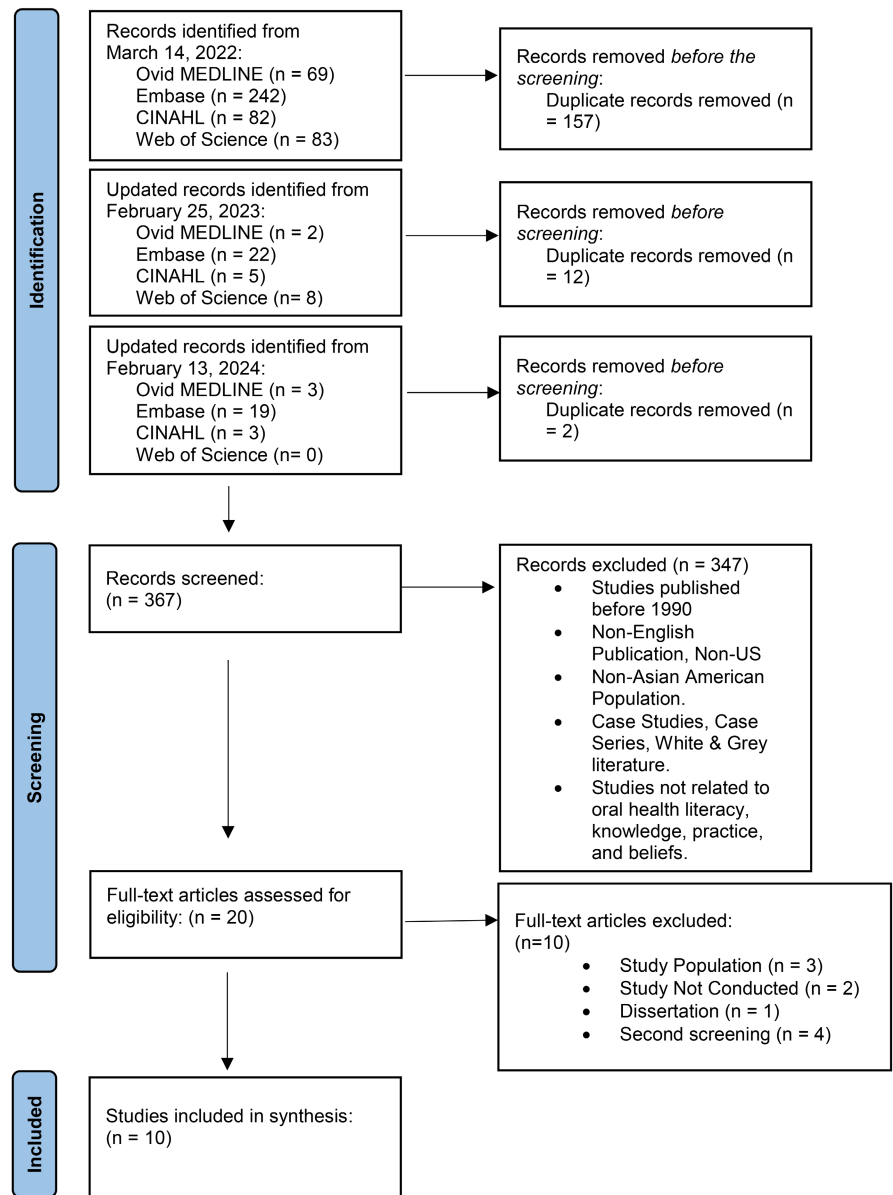


TABLE 2 Search Criteria.

Criteria	Inclusion	Exclusion
Publication Type	Peer-reviewed, original research	Case Studies, Case Series, White or Grey Literature
Dates	1990-Present	Before 1990
Language	English	Non-English
Population	Asian American Populations, All Age Groups	Non-Asian American Populations, American Indian
Location	United States	Studies conducted outside of United States
Content	Oral Health Literacy or Knowledge, Awareness, Practice, Beliefs Related to Oral Health Care: bleeding gums, gingivitis, periodontitis, tooth loss, mobile teeth, missing teeth, oral lesions, malocclusions, dental caries/cavities/tooth decay, cleft lip/palate	Oral Lesions, Oral Cancer, Dry Mouth, Tonsillitis, Dental School Admissions, Mandible, Hepatitis B unrelated to Oral Health Care
Measurement	Mention of appropriate tools measuring health literacy and/or knowledge, awareness, practice, beliefs relating to oral health care	No mention of tools used to measure health literacy.

TABLE 3 Overview of studies measuring oral health literacy, knowledge, practice, and beliefs among Asian Americans.

Authors	Aim	Sample	N (Asian Americans)	Study Design	Setting	Tool used
Bogges et al., 2011 ²⁴	To assess and compare maternal oral health knowledge and beliefs and to determine if maternal race and ethnicity or other maternal factors contributed to women's knowledge or beliefs	Pregnant women, White, Black, Hispanic and Asians	18	Cross-Sectional	The study took place at University of North Carolina Chappell-Hill, participants were recruited from the UNC women's Clinic Ultra-Sound Unit for clinically indicated prenatal ultrasonography)	Oral health knowledge was assessed using a questionnaire that could be answered in the form of True, False or not sure Belief was assessed using a 5-point scale
Chang et al., 2018 ²⁵	To determine how ethnicity influences parental acceptability of behaviour management techniques (BMTs) used during dental treatment of children.	Caucasian, Hispanic, Asian parents	30	Cross-Sectional	Parents recruited from the UTHealth Houston Pediatric Dentistry Clinic	Visual Acuity Scale to assess acceptability
Chi, et al., 2014 ²⁶	To evaluate the effectiveness of a bilingual educational flipchart oral health-related knowledge and self-efficacy	Korean American caregivers of preschoolers	219	Prospective	Korean American caregivers of preschoolers recruited in person at churches, community centers, and Korean ethnic festivals in the Seattle metropolitan area.	A 19-item pre-intervention survey and a 13-item post-intervention survey.
Deihnelt et al., 1990 ²⁷	To determine and examine the predictors of oral health behaviours among older Japanese Americans	Japanese Americans	81	Cross-sectional	Seattle, Washington	Ten Belief items were developed based on previous research with the elderly. Rotter's locus of control scale was used to measure the individual's generalized expectancies of reinforcement.
Kelesidis et al., 2014 ²⁸	To recognize and determine whether sociocultural factors impact oral health practices, and how these relate to oral health care perceptions among African American (AA) and Asian American (AsA) comparison groups.	Patients seeking treatment	139	Cross-sectional	All new enrolling patients at New York University College of Dentistry (NYUCD)	The Kentucky Oral Health Survey
Lee et al., 1992 ²⁹	To compare the oral health beliefs, practices, and objective oral health status of elderly Korean immigrants to the US with that of younger Korean immigrants to the US with that of younger Korean immigrants	Elderly Korean immigrants to the US with that of younger Korean immigrants.	20 younger and 23 elderly Korean Americans	Cross-Sectional	The elderly was recruited from patient files of the Seattle King County Public Health Department, whereas the younger sample was obtained through contacts in the local Korean community	Eight items regarding dental beliefs and their corresponding eight importance values (Dental attitudes); Open-ended questions probed for respondents' perceptions of the etiology and impact of oral diseases, and their perceived role in preventing and managing these conditions (Definitions of disease processes); A series of questions was asked to assess frequency of brushing, flossing, removing and soaking dentures; recency of last dental visit; and frequency of oral cancer self-exams (Self-reported dental practises)

Translation (translation tool checked for validity & reliability)	Original instrument in English is validated and/or reliable	Results	Oral Health Domain	Conclusions
No	No	3% of the sample were Asian. No Analysis was done with respect to the Asian population due to small sample size.	Oral Health Beliefs, Oral Health Knowledge	Not applicable
No	Yes. Validated by eight faculty members at the UTHealth School of Dentistry Advanced Education Program in Pediatric Dentistry	There were statistically significant differences between the acceptance of various forms of BMTs ($p < 0.001$) among Asians parents. Furthermore, conscious sedation was less likely to be accepted by Asian parents compared with other ethnic groups ($p = 0.047$)	Oral Health Beliefs	It is important that pediatric dentists consider the cultural background of patients and their caregivers when providing care to children.
Conducted in both Korean and English "standardized" by bilingual respondents. (No)	No	Self-efficacy (lower score is better): Pre: 1.16 (0.38), Post: 1.07 (0.25), Difference: 0.09 (0.32) $p < 0.001$; Various measures of knowledge: improvement in knowledge measures related to fluoride toothpaste safety Difference: (0.50, $p < 0.001$) and dental visit frequency Difference (0.08) ($p < 0.001$), knowledge about the bacterial etiology of cavities (0.26, $p = 0.02$), the ability to transmit cavities from mother to child Difference (0.41, $p = 0.03$), and the age at which a child's first dental visit should take place Difference (0.09, $p = 0.006$). Heterogeneity in outcomes by acculturation.	Oral Health Knowledge	Brief educational intervention delivered by trained students using bilingual flipcharts improves the oral health-related knowledge and self-efficacy of Korean American caregivers of preschool-aged children. Improvements in caregivers' knowledge, beliefs, and self-efficacy.
The instruments were translated into Japanese by the first author, the answers were back translated to English by a native English speaker. Translation was continuously adjusted if there were discrepancy between the first author and the native Japanese speaker. (No)	No	Mean belief scores ranged from 27.2 to 100 (possible score of 0-100); mean importance ranged 1.8-5.0 (possible score 1-5); mean overall attitude 96.9-500 (possible 0-500); 2nd gen Japanese had significantly higher importance scores compared to 1st generation; 2nd gen Japanese had more favorable attitudes compared to 1st generation; younger, more educate and people without complete dentures are more likely to visit the dentist (higher overall attitude).	Oral Health Beliefs	The study provides valuable insights into barriers to seeking dental care by elderly Japanese Americans. Highly significant results, even within the limitations of the sample show that ethnic and age factors, as well as attitudes towards oral health factors must be considered further when developing appropriate dental health services for older persons. Further research is needed in this area before extensive policy recommendations are set forth.
No	No	African Americans were more likely to visit the dental office due to pain and tooth extraction compared to Asian Americans (18.60% vs 5.66, $p < 0.001$)	Oral Health Practice, Oral Health Beliefs	African Americans exhibited more negative oral health perceptions and a higher prevalence of dental disease compared to AsA. Cultural factors can influence perceptions and behaviours that potentially impact oral health, emphasizing the importance of fostering cultural competence among oral health professionals.
Interviews conducted in English and Korean. (No)	No	Older Korean Americans have, better self-efficacy (difference in mean levels 12.4,) $p < 0.05$ but less preventive dental care (difference in mean levels-0.26) $p < 0.02$ and lower positive beliefs towards oral health (Difference in mean levels-1.6) $p > 0.05$ (non-significant)	Oral Health Beliefs	Worse oral health for older Korean Americans; large scale education necessary

(Continues)

TABLE 3 (Continued)

Authors	Aim	Sample	N (Asian Americans)	Study Design	Setting	Tool used
Luo et al., 2023 ³⁰	To examine the association between acculturation and dental floss, regular dental visits, and unmet dental care needs among Asian Americans	Asian Americans	2763	Cross-Sectional	Participants of the National Health and Nutrition Examination Survey	Variables extracted from the survey questionnaire
Nguyen et al., 2017 ³¹	Vietnamese oral health beliefs and practises and their relationship to the utilisation of Western preventive oral health care services among Vietnamese Americans	Vietnamese Americans	140	Cross-sectional	Dorchester, Massachusetts, participants were recruited from a Vietnamese-owned business.	A questionnaire consisting of 28 questions
Tam et al., 2015 ³²	To assess adult patients' ability to read and understand two communication tools at the University of California, Los Angeles, School of Dentistry	Adults seeking treatment:100	100	Cross-sectional	University of California, Los Angeles, School of Dentistry	REAL-MD 20 (literacy); Two health literacy screening indicator items developed by Chew
Wu et al., 2020 ³³	To examine the association among immigrant status, resilience, and perceived oral health for Chinese American older adults in Hawaii	Chinese Americans	430	Cross-sectional	Honolulu, Hawaii	Perceived oral health: Two ways as follows; (i) self-rated oral health was measured by one question with responses coded on a scale 0 (very poor/ very often) to 4 (very good/ never) (ii) Oral health problems were measured using three questions and the responses were coded on a scale from 1 (very poor/ very often) to 5 (very good/ never) Immigrant status: coded 0-foreign born; 1-U.S. born Resilience: Measured using the Connor-Davidson Resilience Scale (CDRISC) which is a 25-item scale that assesses one's reserve capacity to overcome stress and adversity.

^aHigher is better.

dentists than first generation Japanese-Americans who were older or less educated²⁷; among Korean-Americans, those who were older had lower positive beliefs towards oral health and had less preventive care compared with younger counterparts²⁹; among Vietnamese-Americans, there was a strong association between individual's beliefs and dental utilization, with 50% travelled back to Vietnam for dental treatments³¹; and among Chinese-Americans, those who were foreign-born had poorer oral health outcomes compared with US-born, as those born in US were more likely to visit the dentists in the past year and less likely to have tooth loss.³³

3.2 | Validity/reliability, standardization, feasibility of original tool

As presented in Table 3, various tools were identified for measuring oral health outcomes in the 10 studies included in this scoping review. Among these studies, four utilized tools in the original English version, which were either standardized tools that had previously been validated,³² or were constructed and validated during the studies.^{25,31,33} One such study using a validated tool was by Tam et al.,³² which assessed oral health literacy using the Rapid Estimate of

Translation (translation tool checked for validity & reliability)	Original instrument in English is validated and/or reliable	Results	Oral Health Domain	Conclusions
No	No	Individuals with higher acculturation scores were more likely to have visited a dentist in the last year in both crude (OR = 1.63, 95% CI: 1.30–2.04) and adjusted models (OR = 1.41, 95% CI: 1.09–1.84). More acculturated individuals were approximately twice as likely to use dental floss or a dental device compared to less acculturated individuals, both in crude (OR = 2.41, 95% CI: 1.92–3.01) and adjusted models (OR = 1.98, 95% CI: 1.50–2.62).	Oral Health Beliefs, Practice	Asian Americans with high acculturation scores were more likely to engage in dental flossing and visit the dentist regularly compared to those with low acculturation scores.
Questions were translated and back translated. (No)	Yes. The original scale was tested for validity and reliability	97.85% of the participants decided to complete the survey in Vietnamese. 45.71% of the participants were born in Vietnam. 50% of participants said they travelled to Vietnam for dental treatment. The results from the analysis indicate a strong association between individual's beliefs and dental care utilization. Oral health beliefs such as regular dental visits will prevent dental is associated with utilisation of dental services (OR = 1.95, $p < 0.05$)	Oral Health Beliefs, Oral Health Practice	Dentist are recommended to engage with Vietnamese population to educate them about the importance of western oral health care.
No	Yes. The scale was tested for validity and reliability	Results of this study showed an association between the participants' oral health literacy, as measured by the REALMD-20 or REALM-D List 3, and their ability to locate and understand information on the dental school website and their knowledge about dental health. REAL MD-20 (oral health literacy score) ^a Black 15.80, white 17.76, Hispanic 16.00, Asian 17.58, $p < 0.05$	Oral Health Literacy	Findings from this study found an association among the participants' oral health literacy, education level, and ability to understand information from a website, written education materials, and basic dental knowledge.
Questions were translated into Chinese and was pilot tested with some Chinese speaking older adults. (No)	Yes. The original scale was tested for validity and reliability	Chinese Americans that were born in the U.S are more likely to have a dental visit in the past year (88.5% vs 56.2%) and they are also less likely to have a tooth loss (15.7% vs 36.1%) compared to Chinese Americans that were not born in the U.S Additionally, resilience was found to be associated with better self-related oral health among Chinese Americans that were born in the U.S compared to those that were born outside the U.S.	Oral Health Beliefs	Chinese Immigrants that are foreign born have poorer oral health outcomes compared to Chinese Americans that were born in the U.S. Health care providers should provide culturally specific health strategies to improve oral health knowledge in older Chinese immigrants with low socio-economic status

Adult Literacy in Medicine and Dentistry-20 (REAL-MD20). Another study by Kelesidis²⁸ utilized the Kentucky Oral Health Survey to examine oral health perceptions and sociocultural factors impacting oral health.²⁸ The Kentucky Oral Health Survey was initially used for older adults in 2010 to assess their oral health status, and the oral health measures were constructed from a newly designed set of questions for the remainder of the studies.²⁸ A summary of the papers identified through the current scoping review is provided in [Table 3](#).

3.3 | Translation of tools

When translating survey instruments, cross-cultural influences can impact the accuracy of the translated tools.³⁷ Phrases or jargon may not carry the same meaning when translated into a participant's native language, which could lead to incorrect measurements and potentially bias results. Additionally, there may be issues with measurement invariance, where the translated instrument may not be measuring the same construct as the original

instrument. This is critical as researchers could draw erroneous conclusions regarding health disparities in this AsA population. Five of the studies included in the review translated the tools into the participants' native language,^{26,27,29,31,33} but none of the translated tools were assessed for reliability or validity measures.^{26,27,29,31,33} Wu et al. translated the questionnaire to Chinese and pilot tested the instrument with 'some Chinese speaking adults', but there was no indication that the translated tool underwent any validity and reliability assessment.³³

4 | DISCUSSION

4.1 | Principal findings

This scoping review indicates that oral health literacy was associated with oral health knowledge and beliefs; and cultural beliefs and perceptions influence oral health practices in certain AsA sub-populations. However, findings from this review also highlight the lack of rigour in oral health research in AsA groups. Specifically, none of the translated instruments were assessed for major psychometric properties (e.g. reliability and validity). One study assessed oral health literacy of AsA and found it lower than that of Whites but higher than that of Hispanics and African Americans. Oral health knowledge, practice, and beliefs were influenced by the country of birth and US acculturation/assimilation, with Chinese-Americans born in the U.S. having greater oral health utilization than those not born in the US, and second-generation Japanese-Americans having more favourable views of preventive dental care than first-generation counterparts. Dental care utilization among different AsA was influenced by their oral health beliefs, with Japanese-Americans and Korean-Americans who had more favourable views towards preventive oral health were more likely to visit their dentists and more preventive care, while Vietnamese-Americans beliefs resulted in their going back to their country of birth for dental treatments. Moreover, the rigorous and extensive search found that many AsA sub-populations have never been studied. These findings underscore the need for more research to improve oral health literacy and promote better oral health outcomes among AsA populations.

4.2 | Findings in context

Previous research has shown that health literacy is a strong social determinant of health in AsA immigrants. Low health literacy was associated with poor self-reported health in Japanese, Filipinos, Other AsA and Pacific Islanders, and with depression in Hawaiians,³⁸ Chinese and Koreans.³⁹ Moreover, Chinese, Koreans, and Vietnamese had the lowest health literacy, while Filipinos and South Asians scored the highest. However, the association between oral health literacy and oral health outcomes remains less well-understood.

The potential racial/ethnic differences in oral health could be due to differences in factors that can impact preventive care and other dental services utilization.⁴⁰ From the person-level perspective, being female, longer US length of stay, and having dental insurance were positively associated with preventive dental services utilization.⁴⁰ From the neighbourhood perspective, living in an area with high density of dental offices⁴¹ was also associated with more frequent preventive dental services utilization. While oral health literacy can empower patients to improve their oral health,⁴² the association between oral health literacy and dental service utilization is less understood. Studies that measured oral health literacy using the Comprehensive Measure of Oral Health Knowledge⁴³ or the 30-item Rapid Estimate of Adult Literacy in Dentistry (REALD-30)⁴⁴ found no association with dental service utilization. However, in examining oral health literacy and dental utilization, investigators adjusted for dental knowledge; thus, possibly removing the effect of oral health literacy on dental service utilization mediated through knowledge.

Oral health literacy, cultural perceptions and beliefs, and knowledge and awareness are inter-connected with dental health practice and preventive dental services utilization. The TPB notes that attitudes and subjective norms that may stem from cultural beliefs may influence health behaviours and practices. For example, a study done among Norwegian adults found that attitudes were the strongest predictor of oral health behaviour change.⁴⁵ The few publications on oral health literacy, KAP (knowledge, attitude, and practice), and beliefs have predominantly focused on Japanese-, Chinese-, Koreans- and Vietnamese Americans. The findings from this scoping review corroborate that attitudes and beliefs were associated with preventive oral health care practice and utilization. In addition, country of origin and assimilation into US culture also impacts oral health care practices. Indeed, a systematic review of oral health literacy in migrant and ethnic minority populations found only two studies.⁴⁶ The authors concluded that 'oral health promoting behaviour, attitudes, capabilities, and beliefs as well as the cultural and ethnic background of persons should be considered in medical education and oral health prevention programs'.⁴⁶ However, to fully understand and address these oral health disparities in AsA, any instruments used that have been translated for the targeted AsA sub-group must be assessed for reliability and validity. Assessing reliability and validity of the instruments are the cornerstone of scale development and translated instruments.⁴⁷ A critical evaluation of the validity of the translated instruments is necessary to reduce potential measurement error, as bias could be introduced when translated instruments are used but not yet validated in that group.⁴⁸ More comprehensive research on oral health literacy, KAP, and beliefs in relation to oral health care in Asian American subgroups are needed. This will help to understand barriers to provide more targeted interventions, especially for more vulnerable subgroups.

The scoping review addressed an important gap in the existing literature by focusing on AsA, a population that is both at high risk

for poor oral health outcomes and considerably understudied. The lack of oral health research in AsA is a significant concern. Despite being one of the fastest-growing minority groups in the US, AsA are often overlooked in health research,⁴⁹ resulting in a paucity of literature examining oral health outcomes among this population. This lack of research limits the understanding of the specific needs and challenges faced by AsA individuals when it comes to maintaining good oral health. Given the diversity of the AsA population in terms of language, culture, lived experience, and socioeconomic status, it is essential to include this population in health research to ensure that interventions are tailored to their unique needs.

4.3 | Cultural barriers

The diversity of Asian culture necessitates a multifaceted approach in addressing the barriers within this racial group. A recurrent theme in the review is that many Asian subgroups are less likely to seek oral healthcare. For example, Kim et al. found that Vietnamese-Americans are less likely to visit a dentist and are more likely to rely on home remedies for oral health conditions.³¹ Similar findings were reported by Deihnelt et al. among Japanese-Americans.²⁷

4.4 | Strengths and limitations

Several limitations and strengths of this scoping review warrant discussion. First, it is possible that the methods used may not capture all publications currently available on this topic. While this is not a systematic review, this scoping review was comprehensive in the years covered, terms used, the AsA sub-populations included, and the review of abstracts and titles were systematically conducted by two independent reviewers. Second, this scoping review was restricted to articles written in English and carried out in the US. It is possible that other measures of oral health literacy or knowledge, awareness, and practice could have been published in English outside the US and/or published in languages other than English. Third, only one of the 10 studies included in the scoping review assessed oral health literacy; thus, highlighting the paucity of evidence. Fourth, there was a lack of adjustment for SES so that the role of deprivation cannot be ruled out. Fifth, the studies included in the scoping review were not critically appraised for quality, thereby caution should be exercised when interpreting the findings. Finally, the findings of studies in which measures of oral health literacy, as well as measures of knowledge, awareness, practice, and beliefs in specific AsA sub-groups have not been assessed for reliability and validity may provide findings that are misleading. Nevertheless, the lack of assessment for reliability and validity in the instruments are critical information to the scientific community and to public health professionals working to decrease oral health disparities in AsA sub-populations. Despite these limitations, the strengths of the scoping review is that it is the first to explore AsA sub-populations, modelled after the US Census.

Also, excluded case studies and non-peer-reviewed publications that could reduce scientific rigour and compromise the findings. Ultimately, the search was comprehensive and included not only oral health literacy but also cultural beliefs, knowledge, awareness, and practice; crucial factors that impact good oral health.

5 | CONCLUSIONS

The scoping review on oral health in Asian American communities identifies a significant research gap, particularly in the lack of validated tools for assessing oral health literacy, which varies across Asian American ethnic groups. Only one study explored the association of oral health literacy with oral health highlighting the paucity of literature. It notes that AsA generally have lower oral health literacy compared to Whites, but higher than Hispanics and African Americans. AsA born in the U.S. shows better oral health practices, influenced by acculturation and birth country. The findings emphasize the need for more thorough culturally and linguistically adapted research methods to address oral health disparities in this diverse group.

AUTHOR CONTRIBUTIONS

In compliance with the International Committee of Medical Journal Editors (ICMJE) criteria for authorship, we confirm that all authors have met the three essential conditions: substantial contributions to the study's conception and design, acquisition of data, or analysis, and interpretation of data; drafting the article or revising it critically for important intellectual content; and final approval of the version to be published.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to disclose.

DATA AVAILABILITY STATEMENT

As this study is a scoping review, the data analysed were collected from previously published research articles and reports. These sources are publicly available and can be accessed through relevant databases, journals, and institutional repositories. Detailed information about the specific sources, search terms, and selection criteria used in this review can be found in the supplemental files and methods section of the manuscript. No original or unpublished data were generated or analysed for this review.

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REFERENCES

- Dye BA. The global burden of Oral disease: research and public health significance. *J Dent Res*. 2017;96(4):361-363. doi:10.1177/0022034517693567
- Oral Health in America: Advances and Challenges. National Institute of Dental and Craniofacial Research. 2021.
- Gerritsen AE, Allen PF, Witter DJ, Bronkhorst EM, Creugers NH. Tooth loss and oral health-related quality of life: a systematic review and meta-analysis. *Health Qual Life Outcomes*. 2010;8:126. doi:10.1186/1477-7525-8-126
- Prevention CfDca. Health and Economic Benefits of Oral Health Interventions. Accessed March 13, 2023. <https://www.cdc.gov/chronicdisease/programs-impact/pop/oral-disease.htm> 2023.
- Linden GJ, Lyons A, Scannapieco FA. Periodontal systemic associations: review of the evidence. *J Clin Periodontol*. 2013;40(s14):S8-S19. doi:10.1111/jcpe.12064
- Reduce the proportion of adults with active or untreated tooth decay – OH-03 - Healthy People 2030. [health.gov](https://www.health.gov)
- Wu YY, Zhang W, Wu B. Disparities in dental service use among adult populations in the United States. *JDR Clin Trans Res*. 2022;7(2):182-188. doi:10.1177/23800844211012660
- Flores G, Lin H. Trends in racial/ethnic disparities in medical and oral health, access to care, and use of services in US children: has anything changed over the years? *Int J Equity Health*. 2013;12:10. doi:10.1186/1475-9276-12-10
- Weintraub JA, Ramos-Gomez F, Jue B, et al. Fluoride varnish efficacy in preventing early childhood caries. *J Dent Res*. 2006;85(2):172-176. doi:10.1177/154405910608500211
- Mao W, Wu B, Yang W, Chi I. Factors of dental care utilization in foreign-born older Chinese Americans. *J Dent Res*. 2023;102(8):895-900. doi:10.1177/00220345231170845
- Mao W, Wu B, Chi I, Yang W, Dong X. Experiences of discrimination and oral health-related quality of life among foreign-born older Chinese Americans: does resilience play a mediating role? *Community Dent Oral Epidemiol*. 2023;51(2):187-193. doi:10.1111/cdoe.12723
- Qiu Y, Ni H. Utilization of dental care services by Asians and native Hawaiian or other Pacific islanders: United States, 1997-2000. *Adv Data*. 2003;336:1-11.
- Kim W, Keefe RH. Barriers to healthcare among Asian Americans. *Soc Work Public Health*. 2010;25(3):286-295. doi:10.1080/19371910903240704
- Sanaei Nasab H, Yazdani M, Mokhayeri Y, et al. The role of psychological theories in oral health interventions: a systematic review and meta-analysis. *Int J Dent Hyg*. 2019;17(2):142-152. doi:10.1111/idh.12386
- Batra M, Gupta S, Erbas B. Oral health beliefs, attitudes, and practices of south Asian migrants: a systematic review. *Int J Environ Res Public Health*. 2019;16(11). doi:10.3390/ijerph16111952
- Baskaradoss JK. Relationship between oral health literacy and oral health status. *BMC Oral Health*. 2018;18(1):172. doi:10.1186/s12903-018-0640-1
- Fazli M, Yazdani R, Mohebbi SZ, Shamshiri AR. Oral health literacy and socio-demographics as determinants of oral health status and preventive behavior measures in participants of a pre-marriage counseling program. *PLoS One*. 2021;16(11):e0258810. doi:10.1371/journal.pone.0258810
- Walsh T, Worthington HV, Glenny AM, Marinho VC, Jeroncio A. Fluoride toothpastes of different concentrations for preventing dental caries. *Cochrane Database Syst Rev*. 2019;3(3):Cd007868. doi:10.1002/14651858.CD007868.pub3
- Yuen HK, Wolf BJ, Bandyopadhyay D, Magruder KM, Salinas CF, London SD. Oral health knowledge and behavior among adults with diabetes. *Diabetes Res Clin Pract*. 2009;86(3):239-246. doi:10.1016/j.diabres.2009.09.010
- Attin T, Hornecker E. Tooth brushing and oral health: how frequently and when should tooth brushing be performed? *Oral Health Prev Dent*. 2005;3(3):135-140.
- Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol*. 2005;8(1):19-32. doi:10.1080/1364557032000119616
- Tricco AC, Lillie E, Zarin W, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med*. 2018;169(7):467-473. doi:10.7326/m18-0850
- Greenwood S. What it means to Be Asian in America. *Pew Research Center Race & Ethnicity Blog*. 2022;23:40-43.
- Bogges KA, Urlaub DM, Moos MK, Polinkovsky M, El-Khorazaty J, Lorenz C. Knowledge and beliefs regarding oral health among pregnant women. *J Am Dent Assoc*. 2011;142(11):1275-1282. doi:10.14219/jada.archive.2011.0113
- Chang CT, Badger GR, Acharya B, Gaw AF, Barratt MS, Chiquet BT. Influence of ethnicity on parental preference for pediatric dental behavioral management techniques. *Pediatr Dent*. 2018;40(4):265-272.
- Chi DL, Ko A, Kim JY. Bilingual flipcharts help improve oral health-related knowledge and self-efficacy of Korean-American caregivers of preschoolers. *J Public Health Dent Fall*. 2014;74(4):261-265. doi:10.1111/jphd.12073
- Diehnelt D, Kiyak HA, Beach BH. Predictors of oral health behaviors among elderly Japanese Americans. *Spec Care Dentist*. 1990;10(4):114-120. doi:10.1111/j.1754-4505.1990.tb00772.x
- Kelesidis N. A racial comparison of sociocultural factors and oral health perceptions. *J Dent Hyg*. 2014;88(3):173-182.
- Lee J, Kiyak HA. Oral disease beliefs, behaviors, and health status of Korean-Americans. *J Public Health Dent Spring*. 1992;52(3):131-136. doi:10.1111/j.1752-7325.1992.tb02258.x
- Luo T, Beiter K, Tseng TS. Association between acculturation, dental floss use, dental visits and unmet dental needs among Asians in the United States: Findings from National Health and nutrition examination survey (NHANES) 2011-2018. *Community Dent Oral Epidemiol*. 2024;52(1):101-110. doi:10.1111/cdoe.12906
- Nguyen KYT, Smallidge DL, Boyd LD, Rainchuso L. Vietnamese oral health beliefs and practices: impact on the utilization of Western preventive oral health care. *J Dent Hyg*. 2017;91(1):49-56.
- Tam A, Yue O, Atchison KA, Richards JK, Holtzman JS. The association of patients' oral health literacy and dental school communication tools: a pilot study. *J Dent Educ*. 2015;79(5):530-538.
- Wu B, Pei Y, Zhang W, Northridge M. Immigrant status, resilience, and perceived oral health among Chinese Americans in Hawaii. *Res Aging*. 2020;42(5-6):186-195. doi:10.1177/0164027520912493
- Horowitz AM, Kleinman DV. Oral health literacy: a pathway to reducing oral health disparities in Maryland. *J Public Health Dent Winter*. 2012;72(Suppl 1):S26-S30. doi:10.1111/j.1752-7325.2012.00316.x
- Poudel P, Griffiths R, Wong VW, et al. Oral health knowledge, attitudes and care practices of people with diabetes: a systematic review. *BMC Public Health*. 2018;18(1):577. doi:10.1186/s12889-018-5485-7
- Broadbent JM, Zeng J, Foster Page LA, Baker SR, Ramrakha S, Thomson WM. Oral health-related beliefs, behaviors, and outcomes through the life course. *J Dent Res*. 2016;95(7):808-813. doi:10.1177/0022034516634663
- Wang WL, Lee HL, Fetzter SJ. Challenges and strategies of instrument translation. *West J Nurs Res*. 2006;28(3):310-321. doi:10.1177/0193945905284712
- Sentell T, Baker KK, Onaka A, Braun K. Low health literacy and poor health status in Asian Americans and Pacific islanders in Hawai'i. *J Health Commun*. 2011;16(Suppl 3):279-294. doi:10.1080/10810730.2011.604390
- Lee HY, Rhee TG, Kim NK, Ahluwalia JS. Health literacy as a social determinant of health in Asian American immigrants: findings

- from a population-based survey in California. *J Gen Intern Med*. 2015;30(8):1118-1124. doi:[10.1007/s11606-015-3217-6](https://doi.org/10.1007/s11606-015-3217-6)
40. Yoon H, Jang Y, Choi K, Kim H. Preventive dental care utilization in Asian Americans in Austin Texas: Does neighborhood Matter? *Int J Environ Res Public Health*. 2018;15(10). doi:[10.3390/ijerph15102261](https://doi.org/10.3390/ijerph15102261)
 41. Liu M, Kao D, Gu X, Holland W, Cherry-Peppers G. Oral health service access in racial/ethnic minority neighborhoods: a geospatial analysis in Washington, DC, USA. *Int J Environ Res Public Health*. 2022;19(9). doi:[10.3390/ijerph19094988](https://doi.org/10.3390/ijerph19094988)
 42. Horowitz AM, Kleinman DV. Oral health literacy: the new imperative to better oral health. *Dent Clin N Am*. 2008;52(2):333-344. vi. doi:[10.1016/j.cden.2007.12.001](https://doi.org/10.1016/j.cden.2007.12.001)
 43. Macek MD, Haynes D, Wells W, Bauer-Leffler S, Cotten PA, Parker RM. Measuring conceptual health knowledge in the context of oral health literacy: preliminary results. *J Public Health Dent Summer*. 2010;70(3):197-204. doi:[10.1111/j.1752-7325.2010.00165.x](https://doi.org/10.1111/j.1752-7325.2010.00165.x)
 44. Burgette JM, Lee JY, Baker AD, Vann WF Jr. Is dental utilization associated with Oral health literacy? *J Dent Res*. 2016;95(2):160-166. doi:[10.1177/0022034515617457](https://doi.org/10.1177/0022034515617457)
 45. Åstrøm AN, Lie SA, Gülcan F. Applying the theory of planned behavior to self-report dental attendance in Norwegian adults through structural equation modelling approach. *BMC Oral Health*. 2018;18(1):95. doi:[10.1186/s12903-018-0558-7](https://doi.org/10.1186/s12903-018-0558-7)
 46. Valdez R, Spinler K, Kofahl C, et al. Oral health literacy in migrant and ethnic minority populations: a systematic review. *J Immigr Minor Health*. 2022;24(4):1061-1080. doi:[10.1007/s10903-021-01266-9](https://doi.org/10.1007/s10903-021-01266-9)
 47. DeVellis RF. *Scale Development: Theory and Applications*. 4th ed. SAGE Publications Inc; 2018.
 48. Nguyen TH, Park H, Han HR, et al. State of the science of health literacy measures: validity implications for minority populations. *Patient Educ Couns*. 2015;98:1492-1512. doi:[10.1016/j.pec.2015.07.013](https://doi.org/10.1016/j.pec.2015.07.013)
 49. Le H, Hirota S, Liou J, Sitlin T, Le C, Quach T. Oral health disparities and inequities in Asian Americans and Pacific islanders. *Am J Public Health*. 2017;107(S1):S34-s35. doi:[10.2105/ajph.2017.303838](https://doi.org/10.2105/ajph.2017.303838)

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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