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EXPLORING THE BARRIERS AND FACILITATORS OF PSYCHOLOGICAL SAFETY IN PRIMARY CARE TEAMS: A QUALITATIVE STUDY

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Abstract

Objectives: Culturally and linguistically diverse (CALD) communities experience widespread inequalities in dental care utilization. While, several studies have reported factors contributing to such inequalities, a synthesis of evidence is lacking for CALD carers. This review examined the barriers and facilitators to dental care utilization among CALD carers.

Methods: Medline, CINAHL, ProQuest, Scopus and Web of Science were searched for dental utilization and related factors, without geographic limitations. An integrated mixed-method design was adopted, where both qualitative and quantitative findings were combined into a single synthesis. Critical appraisal was conducted using JBI tools, and a Universal Health Coverage (UHC) framework guided the synthesis approach. Reliability and researcher triangulation occurred throughout the conduct of this review.

Results: A total of 20 papers were included: qualitative (n = 8), quantitative (n = 8) and mixed method (n = 4). Studies were from Australia, Canada, South Korea, Trinidad and Tobago, United Kingdom and the United States. Three studies insufficiently reported confounding variables and nine qualitative papers lacked philosophical perspectives. Affordability was the foremost barrier at the system level, followed by psychosocial negative provider experiences and language/communication issues at the provider level. Cultural, knowledge, attitudes and beliefs were individual-family level factors. Utilizing a UHC framework, the barriers and facilitators were aggregated at three levels;

financial-system, provider and individual-family levels and illustrated in the rainbow model of CALD oral health.

Conclusion: The review strengthens evidence for multilayered, system-related policies and culturally sensitive provision of services for reducing oral healthcare inequalities in CALD carers.

1 BACKGROUND

The World Migration Report 2020 affirmed 272 million international migrants, with the largest diaspora of Indian migrants living abroad, followed by Mexican and Chinese migrants.[1] Additionally, nearly two-third of migrants resided in twenty countries globally, with the largest numbers residing in the European region (87 million), followed by North America (59 million).[2] Migrants bring diverse strengths to the host country, through culture, language, skills and other factors. These migrant populations, for the purposes of this review, are referred to as culturally and linguistically diverse (CALD) groups. CALD is classified in survey data predominantly by country of birth and/or language variables. An epidemiological review identified the need for a minimum of two CALD variables; country of birth and language spoken to understand population healthcare outcomes.[3] Further global definitions in research include ethnicity, race, immigration status, ancestry among other variables.[4] Thus, CALD groups are stratified to identify the distribution of health and inequities in populations. Consequently, this in turn helps identify programs and policies to improve population health, as relevant to population needs.[5]

Widely accepted debates link the significance of general and dental healthcare with the emphasize on 'putting the mouth back into the body'. Dental utilization is essential in maintaining lifelong health; however, prior research affirms that access and utilization of dental services are unequally distributed in CALD populations.[6-9] For example, in the United States of America, Hispanics reported significantly lower dental healthcare utilization (29%) compared with the non-Hispanic white population sample (46%).[10] In Canada, 33% of migrants avoided dental visits in the past year or visited in emergency circumstances.[11] Inequalities in oral health status were also reported in a European review, whereby CALD populations utilized emergency dental services more than host populations.[12] Further, a systematic review and meta-analysis conducted by Reda et al. substantiated that preventive dental utilization varied across country contexts and between CALD groups.[13] Thus, several barriers are encountered by CALD groups, which are compounded by systemic barriers within the host country.[14, 15] A synthesis of studies identifying these barriers and facilitators in CALD adults is absent within the literature.

A dearth of research currently exists on CALD populations and dental healthcare knowledge, behaviours and utilization in qualitative and quantitative studies.[16, 17] Importantly, significant gaps exist in the synthesis of these studies with a focus on CALD carers. This population of interest, CALD carers, and in particular, mothers are critical for promoting family and children's healthcare behaviours including dental utilization.[18] Firmino et al. conducted a systematic review which reported low parental oral health literacy was associated to child dental caries.[19] Noting however, CALD groups were not specifically incorporated in this systematic review, which nonetheless affirmed a need for further high-quality research.

A preliminary search conducted in January 2020, identified two systematic reviews. In Batra et al.,[20] the mixed-method study emphasized oral healthcare beliefs, attitudes and practices in South Asian migrants. However, this review inadequately evaluated oral healthcare utilization for several reasons. Included papers were focussed upon other oral healthcare behaviours, namely flossing and toothbrushing. Further, the search included South Asian CALD groups that were not carers. This limits the ability to detail oral healthcare access and utilization barriers and facilitators for the population of interest, CALD carers. In the second review, Dahlan et al.[21] reported on acculturation as the main phenomenon, which positively influenced dental utilization. Despite the medium to high methodological quality of papers, this review included children, adolescents and elderly age groups. In addition, the review fails to address multiple enablers and barriers to dental care in CALD carers, beyond acculturation alone. Given the lack of synthesis of studies for CALD carers and 'global

neglect of oral healthcare',[6] imperative actions are needed to alleviate population wide inequalities. Hence, the aim of this study was to systematically review qualitative, quantitative and mixed-method literature on the barriers and facilitators to dental care utilization in CALD carers. For the purposes of this review, the term carers is utilized to include mothers and parents.

2 METHODS

A mixed-method systematic review design, including both qualitative and quantitative studies were followed.[22] Qualitative and quantitative studies offered complementary explanations,[22] for example, cross-sectional or cohort studies indicated the status of dental utilization in specific groups, while focus group and interviews contributed to in depth explanations of 'why'. Hence, this review utilized a convergent integrated method, which involved combining both quantitative and qualitative data into a pooled mixed-method synthesis.[22, 23] This integrated mixed-method detailed findings by addressing the research question or phenomenon and transforming quantitative findings into qualitative form. The resultant synthesis is presented in a narrative format. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guide was followed for this review[24] (Appendix 1). The protocol for the review has been published.[25]

2.1 Conceptual framework

The Universal Health Coverage (UHC) framework was adopted by the World Health Assembly[26] in 2015 to achieve Sustainable Development Goals 'good health and well-being' and 'reducing inequalities'.[5, 26] Specifically, the oral healthcare resolution was adopted into the WHO political agenda for UHC only recently, in 2021. UHC principles advocate for health promotion and oral disease prevention through engaging community based programs within the primary sector.[26] Three dimensions of UHC reflect that (1) healthcare services adequately meet the needs of the population, (2) provider services are adequate and relevant and (3) individuals do not experience financial hardship when paying for services.[5] Hence, we aligned this review within the WHO policy context of UHC.

The study incorporated UHC as part of the integrative mixed-method synthesis and is a timely conceptual paradigm to integrate oral healthcare within general health.[26, 27] Within the integrative, mixed-method, data synthesis was coded using the three dimensions of UHC, which became the UHC framework. According to Maxwell, frameworks, also known as 'concept maps', need to be constructed.[28] Hence, this UHC framework was fundamental for mapping the barriers/facilitators to dental care.

2.2 Search strategy

Five electronic databases were comprehensively searched using MeSH terms and keywords such as "cultural diversity", "dental utilisation," "ethnic*," "migrant*," "oral health," "mother*" in: Medline (via OVID interface), CINAHL (Ebsco interface), Proquest (Proquest Central interface), Scopus (Elsevier interface) and Web of Science (Clarivate interface). Databases were selected for the multidisciplinary nature which included allied healthcare journals, to ensure the research question was adequately addressed. Following this, references of included studies were hand searched for additional papers. Grey literature included Google Scholar searches (Table A1 in Appendix 2).

2.3 Study selection

Two reviewers (KM and MB) screened 2434 titles and abstracts. Relevant articles were agreed upon using the inclusion criteria. If both reviewers disagreed upon an article, then a third reviewer was asked. References were managed using EndnoteX9.3.3 (Clarivate Analytics, USA) software.

2.4 Selection criteria

CALD was classified by language, ethnicity or country of birth, which included first- and/or second-generation migrants.[3, 4] The population of interest was CALD carers. Parents and carers were included in this search since conception of the study protocol which initially focused upon mothers. Reason

for inclusion was that key relevant papers were identified during the search. No limitations were placed upon adult and child age; however, the focus of the review was on adult access or utilization to oral healthcare. The phenomenon of interest was dental utilization and/or oral healthcare utilization, which were referred to interchangeably throughout the paper. Outcome of this review was the barriers and facilitators to dental care utilization for preventive care. Dental utilization was classified as a dental visit in the last year. Additional outcomes included beliefs, knowledge, attitudes and access to oral healthcare utilization. Access was also measured as the utilization of services, as defined by Penchansky and Thomas.[29]

All qualitative papers that addressed oral health beliefs, knowledge or utilization were included. This included study designs such as ethnographic papers, case studies, thematic and narrative studies. Quantitative studies focused on dental utilization and included cross-sectional and descriptive studies. Mixed-method papers that accommodated qualitative and quantitative research in the method or results section were included. Limitations were not placed upon language. Studies were included up until the completion of searches and screening on 27 January 2022. Google translate was used for two non-English papers, although errors in translation resulted in exclusion of these papers. Further exclusion reasons were irrelevant focus (Figure 1), conference abstracts and government reports.

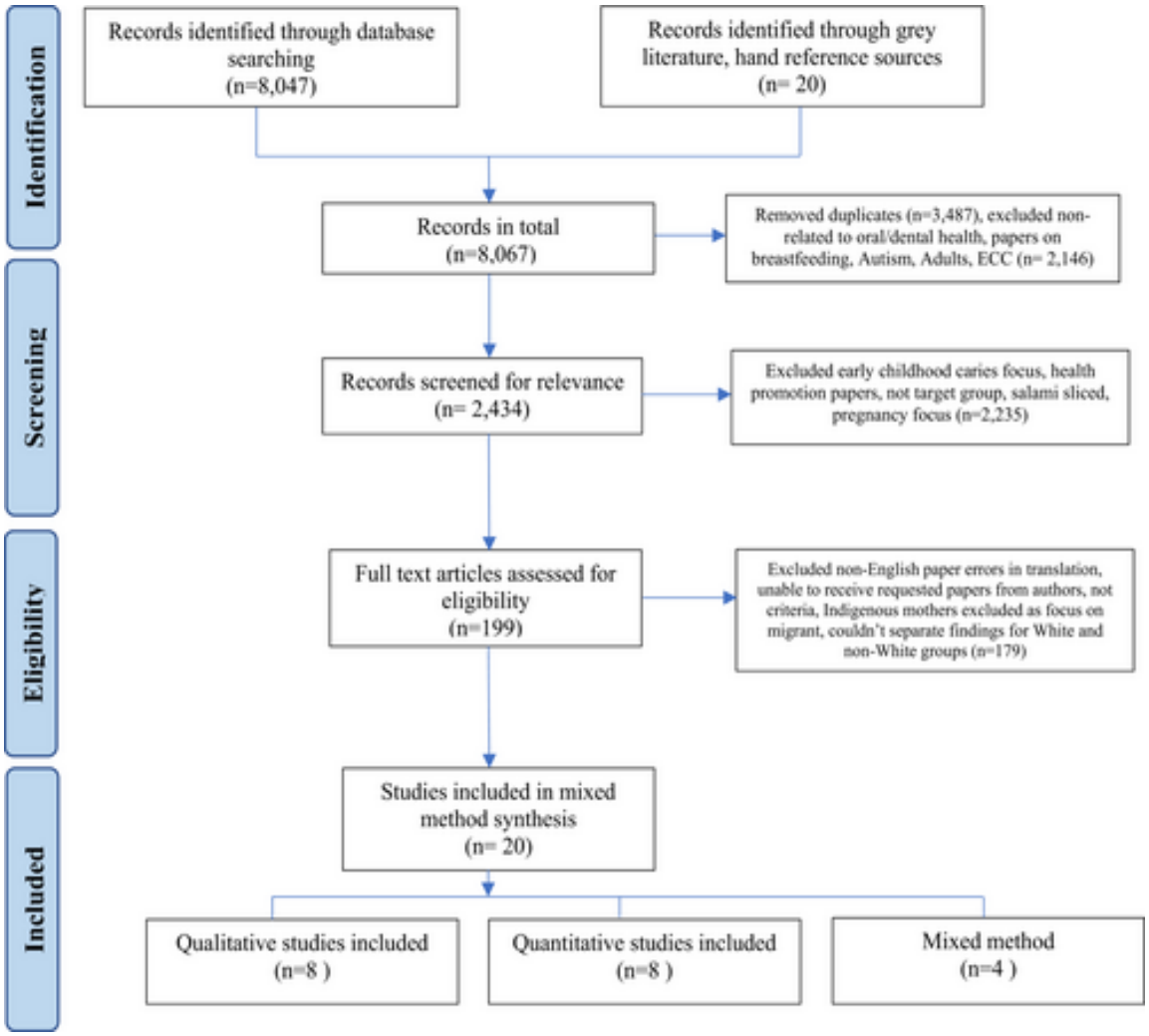

Figure 1

2.5 Assessment of methodological quality

Critical appraisal of all included papers was undertaken using the Jonna Briggs Institute (JBI) Qualitative Checklist and Checklist for Analytical Cross Sectional studies, which was also used for mixed-method papers.[23] Appraisal of papers were either yes, no or unclear, but regardless of appraisal quality all papers were included as per the JBI mixed-method protocol[23] (Appendix 3). Further, due

to the nature of the research questions which could be addressed by quantitative and qualitative studies, the JBI methodology supported an integrated approach in which quantitative studies were 'qualitized' (described below). The second reviewer assessed critical appraisal processes while a third reviewer resolved any disagreements. Due to the variability of quantitative and qualitative research method study designs, a scoring system was not used.[30] Detailed explanation of this process is published in the protocol.[25]

2.6 Data extraction and synthesis

An integrated mixed-method design involved the combination of all pooled (extracted) and synthesis data. The first phase involved the conversion of quantitative and mixed-method papers into narrative form, while the second phase entailed data coding and sorting into a UHC framework. The third phase involved thematic synthesis. Subsequently, a rainbow model was formulated.

In the first phase, data was extracted using the JBI Data Extraction Form for quantitative, mixed-method and qualitative studies. This convergent integrated mixed-method approach entailed a narrative synthesis for all studies. To achieve this, data synthesis involved the assembly and collating of all 'qualitized'[23] data from quantitative studies and mixed-method papers. Data transformation of quantitative studies, including quantitative aspects of mixed-method papers, was performed during data extraction where the data were 'qualitized'.[22, 25] Two researchers compared and critically examined the similarities and differences between studies and the synthesizing process.

During the second phase, the first author extracted data included author, year, study design, geographic context, results, limitations, conclusions, barriers and facilitators. Proceeding this, extracted data from each paper were added under two columns as headings (1) barrier and (2) facilitator to dental utilization. Extracted data were mapped into the UHC framework using three headings (1) Financial and System factors, (2) Provider factors and (3) Individual and Family factors. The second author piloted the extraction for five studies, and no major differences were noted. Researcher triangulation occurred through examination of extracted and mapped data. Concurrent comparative synthesis and an iterative approach[22, 23] was undertaken with re-reading, comparing codes and sorting codes organically within the three UHC dimensions. This process added dependability, where the data was traceable, clearly documented and synthesis choices were confirmable, adding to study rigour.[31] The UHC framework added clarity in identifying the various mentioned barriers and facilitators. For instance, data in relation to dental clinic staff were grouped at the provider level, whilst individual oral health behaviours were grouped into the population level, and healthcare insurance at the system level. Hence, the UHC framework provided rigour in the coding processes which ensured coding decisions were consistent and provided an audit trail for the research team.

Researcher triangulation occurred during the development of themes in the third phase.[22, 31] This process identified patterns and meanings within data which were performed recursively. Researcher triangulation was undertaken by reviewing the themes with the team and consensus reached. Synthesis of findings was aggregated to produce the results of the study under themes. Consequently, the barriers and facilitators to dental care using the UHC framework and themes were mapped into a schematic rainbow model, which was refined by all authors. The rainbow model, inspired by Dahlgren-Whitehead,[32] incorporated UHC and was conceptualized and designed from the findings of this study. Appropriateness of the rainbow model indicated data-fit, which identified complex, multiple factors beyond an individual's environment, as impacted by social contexts.[32] Therefore, our rainbow model conceptualized the barriers and facilitators to dental utilization for CALD carers.

3 RESULTS

The search resulted in 8067 articles of which 3487 duplicates were removed (Figure 1). Twenty articles were included for review.

3.1 Study characteristics

A total of eight qualitative and eight quantitative papers and four mixed-method papers were included. Ten papers were focused on CALD mothers, five on caregivers and five on parents/families (child–parent dyads for example). One study was a thesis, while all other included papers were journal publications. In total, 11 studies utilized a cross-sectional survey design, nine papers conducted focus groups, one paper conducted informal group discussions while two studies included semi-structured interviews. Participants had children aged between 0–25. One included study used the term 'immigrant women'; however, the study defined 'immigrant women' as a 'multicultural family with a spouse and children' in South Korea.[33] Sample sizes varied between included studies from *n* = 45 to *n* = 214 275. Thirteen studies were based in the USA, which mainly focused on Black American, Hispanic and Latino CALD populations. Three studies were undertaken in the UK, and one study conducted in each of the following countries: Australia, Canada, South Korea and Trinidad and Tobago. Different classifications of CALD were utilized as either ethnicity, race or language (Table 1). CALD groups included African, Assyrian Chaldean, Bangladeshi, Cambodian, Chinese, Ethiopian, Eritrea, Filipino, Hispanic, Indian, Iraqi, Latina, Lebanese, Mexican, Pakistani, Puerto Rican, Somali, Spanish, Thai, Vietnamese and mixed race/ethnicity.

TABLE 1. Study characteristics

First author, date	Aim	Location/Country	Sample size	Study type	Study design	CALD classification	Limitations of study
Amin & Perez, 2012	To identify psychosocial barriers to providing and obtaining preventive dental care for preschool children among African recent immigrants.	Edmonton, Canada	*N* = 48	Qualitative	Mothers, with a child 3–5 years old (<5 years in country). Focus group interviews; thematic analysis using codes and categories from theoretical models.	*Not stated* Ethiopian, Eritrean, Somali	Lack of deep exploration but intra–inter-analysis of psychosocial barriers was sufficient; sample did not include heterogeneity of African families in socioeconomic, education, family structure, English proficiency, health literacy; mother's self-reports; lack of systemic level barriers understudied due to lack of interaction of mothers in system.
Croucher & Sohanpal, 2006	Identify barriers to the uptake of primary dental care and any variation in responses from the general adult population and to report ideas to improve access to primary dental care expressed by the participants.	East London, UK	*N* = 68	Qualitative	Carers; volunteers 18–40 years. Focus groups; framework analysis using grounded approach.	*Ethnicity* Bangladeshi, Indian, Black Caribbean, White	Lack of author listed limitations. Recruitment from similar disadvantaged areas but unclear about who is 'general population'. Unclear how social class of participants were confirmed—or whether this was Census data. Table unclear. Data derived categories unclear, how this was reached and how it links to themes.
Grembowski et al., 2009	To determine whether regular source of dental care, self-rated oral health, beliefs, and behaviours differ by racial/ethnic group and examine these relationships for mothers' dental utilization.	Washington state, USA	*N* = 818 Black, *N* = 1310 Hispanic, *N* = 1382 White	Quantitative	Low-income mothers from different racial/ethnic groups, with child 3–6 years. Cross-sectional questionnaire, self-rated oral health, regular dental source, oral health behaviours, socioeconomic status via education—employment and income.	*Race/Ethnicity* Black, Hispanic, White	Low-income mothers and children enrolled in Medicaid in Washington state, not generalized to other states. Results could change with different responses by different mothers. Cross-sectional survey, no causal relationships.
Heima et al., 2017	To test a hypothesized mediation model, to explain associations between mothers' dental anxiety and children's dental utilization	Ohio, USA	*N* = 214	Quantitative	Low-income African American mothers with child 2–5 years. Questionnaire: dental utilization, T tests, chi-square	*Not stated* African American	Non-randomized selection of participants, volunteer confounders, for example, higher education levels (which was higher in the sample compared to the general Cleveland area).

First author, date	Aim	Location/Country	Sample size	Study type	Study design	CALD classification	Limitations of study
	through the mothers' own dental utilization.				to investigate dental anxiety and utilization, then mediation analysis.		Self-reported data, potential recall bias.
Hilton et al., 2007	To identify cultural beliefs, practices and experiences that influence access to preventive oral health care for young children from different racial and ethnic groups.	San Francisco, USA	*N* = 177	Qualitative	Carers, US born and non-US born with child 1–5 years. Focus groups; interview guide focussed on questions relating to child dental visit, experiences visiting the dentist, including access.	*Race/Ethnicity* African American, Chinese, Latino, Filipino	Findings cannot be generalized to entire populations, as differences in belief, socioeconomic status etc. Caucasian parents not interviewed which could reveal similar issues. Results will vary in cities with fewer migrant groups or dental resources or regions.
Kelly et al., 2005	To identify psychosocial, structural and cultural barriers to seeking dental care among non-utilizing caregivers of Medicaid-enrolled children.	Kentucky, USA	*N* = 76; *N* = 46 African American, *N* = 30 Whites	Qualitative	Low-income Medicaid caregivers with child 4–12 years. Focus groups; results in terms of utilizing and non-utilizing groups and ethnicity.	*Race/Ethnicity* African American, Whites	Selection bias, Jefferson County is not representative of other areas. Limited racial/ethnic diversity, and exploratory nature of the study which limited psychosocial and cultural factors.
Lukes, 2010	To establish baseline data about oral health knowledge, attitudes and behaviours of migrant and seasonal farm workers.	Chicago, USA	*N* = 45	Mixed method	Migrant seasonal farm worker pre-schooler parents. Sequential qualitative—quantitative: focus groups & survey administered, convenience sample. Descriptive findings.	*Not stated* Mexican	Small sample size and limited geographic location. Participants were health centre patients who might have more awareness of dental health services. Farmworkers from eastern or western areas differ in cultural practices and beliefs. Self-reported data limitations.
Mofidi et al., 2002	To gain insight into experiences, attitudes, and perceptions of a racially and ethnically diverse group of caregivers regarding barriers to dental care for their Medicaid-insured children.	North Carolina, USA	*N* = 77	Qualitative	Caregivers of Medicaid enrolled children. Focus groups (*n* = 11); criterion purposive sampling, qualitative content analysis.	*Race/Ethnicity* African American, Latino, American Indian, White	Narrow sample size and possible overestimation of users who were dissatisfied with services. Subjective responses, but the consistency in focus group themes should help negate this.
Naidu & Nunn, 2020	To describe oral health knowledge, attitudes and behaviours of parents and caregivers of preschool children in order to inform an oral health promotion strategy.	Trinidad and Tobago	*N* = 309	Quantitative	*N* = 11.3% African, *N* = 74.4 % Indian, *N* = 13.3 % Mixed, *N* = 0.3% White. Parents/ caregivers. Random sampling of preschools. Quantitative survey. Descriptive statistics.	*Ethnic group* African, Indian, Mixed, White, Other	Selection bias as not all children attended preschools. Three quarters were Indian descent, differing from national demographic profile of population in country. Ethnic composition of region in which study took place (sugar cane industry-British colonial). Study is descriptive of sample. Self-reported questionnaires.
Nam et al., 2016	To provide data for the improvement and management of oral health awareness and oral health quality of life for immigrant women in multicultural families.	South Korea	*N* = 130	Quantitative	*N* = 24.6% Chinese, *N* = 36.9 % Vietnamese, *N* = 6.9% Cambodian, *N* = 10% Filipino, *N* = 5.4 % Thai, *N* = 21.6% Other. Questionnaire, Cross tabulation, Chi-square, t-test	*Not clearly stated* Marriage immigrant Chinese, Vietnamese, Cambodian, Filipino, Thai, Other	Lack of author listed limitations. Only cohort sample of mothers—not weighted. Not an entire sample of mothers. What is defined as average standard of living? Lacks descriptive and analysis information.

First author, date	Aim	Location/Country	Sample size	Study type	Study design	CALD classification	Limitations of study
					were used $p < .05$.		
Quandt et al., 2007	To describe the use of dental services and current oral health problems of children and parents in farmworker families.	North Carolina & Southwestern Virginia, USA	*N* = 108	Mixed method	Latino migrant, mothers, seasonal farmworkers. Sequential qualitative – quantitative. Acculturation measured as preferred language Spanish or English.	*Not clearly stated* Latino (Country of birth of majority: Mexico)	Self-reported recall bias. No dental examinations performed. Not a random sample and not possible to assess representativeness. Insurance status and eligibility not ascertained.
Reich et al., 2019	To understand the experiences of diverse families when taking their young children to the dentist and to document their prevalence.	Southern California, USA	*N* = 33 focus groups *N* = 1184 survey	Mixed method	Children in preschool, low-income caregivers. Sequential qualitative – quantitative. Two focus groups in Spanish, two conducted in English. Thematic analysis. Surveys. Logistic regression.	*Language* English, Spanish, Vietnamese *Race/Ethnicity* Latino, Asian, Caucasian, Other/multiracial	Majority unable to read so the survey was administered as interview. Oversampled low-income population, limiting generalizability to income, ethnicity and language. Documents high prevalence of Latino speaking. Education is correlated to income, but relationship could not be detangled further as parental income was predictor to dental utilization. Reason for dental visit was not collected, nor was payment information which could influence experiences.
Riggs et al., 2014	To explore experiences of dental service use from the perspective of migrant mothers in Melbourne.	Melbourne, Australia	*N* = 115	Qualitative	*N* = 22 Assyrian Chaldean women, *N* = 12 Iraqi, *N* = 33 Mixed Lebanese and Iraqi women. Humanitarian & Family stream migrants. Focus groups and semi-structured interviews. Thematic analysis.	*Country of birth & preferred language* Assyrian Chaldean, Iraqi, Lebanese, Pakistani, Mixed Lebanese – Iraqi	Lack of author listed limitations. Study is exploratory with three different migrant groups studied. Community representatives carried out focus groups, but researcher bias not listed whereby interviewer may know participants. Interview schedule—unclear.
Telleen et al. 2012	To examine the social context, structural, and behavioural factors within an immigrant community that contribute to increased access and use of oral health services by Latino children.	Chicago, USA	*N* = 320	Mixed method	Mothers with children 4–8 years. Sequential qualitative – quantitative. Focus group and Survey of Census sample. Bivariate and multivariate analysis.	*Ethnicity* Latino/Hispanic, Mexican, Puerto Rican	Limited to Mexican and Puerto Rican families in midwestern city. Mostly referring to child dental. Lack of generalizability to Latino groups in different socioeconomic status and areas. Larger size of Mexican sample could overshadow ethnic differences. Students not randomly selected, but schools were. Sample reflected people who accessed dental care and does not reflect groups without access. Self-bias subjective reports.
Tiwari et al., 2018	To examine the association of maternal acculturation, measured as preferred language, and oral health-related psychosocial. measures in an urban Latino population.	Colorado, USA	*N* = 100	Quantitative	Mother-child-dyads. Cross sectional questionnaire. Descriptive statistics and univariate linear regression.	*Not stated* Latina	Convenience sample from urban health centre population and not representative of all populations. Acculturation measured using proxy for language preferences, but birthplace of mother not collected.
Updegraff et al., 2017	To investigate the prospective associations between Mexican-origin mothers' and fathers' traditional cultural values and young	Midwestern, USA	*N* = 246	Quantitative	Mexican parents and youth families. Sequential qualitative – quantitative.	*Country of origin Mexican*	Focused on Mexican-origin families, and future research on intragroup variability in other ethnic/racial groups is essential. Not

First author, date	Aim	Location/Country	Sample size	Study type	Study design	CALD classification	Limitations of study
	adults' health and dental care utilization and to test the moderating role of youth gender.				Longitudinal design; healthcare access/use, acculturation, SES, age, insurance, physical health status. Logistic regression.		representative of all Mexican families in the US. Self-reported bias.
Velez et al., 2017	To qualitatively examine facilitators and barriers to dental care access and quality services among Mexican migrant women and their families living in California.	North San Diego County, USA	*N* = 52	Qualitative	Mexican migrant women. *N* = 22 health workers and *N* = 30 mothers/families. Thematic analysis using behavioural model.	*Self- identification* Mexican migrant or Mexican migrant family	Participant reports of their experiences at the dentist offices and interactions may be skewed by recall or social desirability biases. The size of the focus groups was appropriate, yet six focus groups may not provide representative data.
Williams & Gelbier, 1988	To enquire about awareness of dental care facilities and explore ways in which some Asian mothers considered that access to oral health care could be improved.	North & South England, UK	*N* = 100	Qualitative	1st generation Asian mothers. Interviewed in groups in mother tongue. Informal discussion.	*Country of origin* Bangladesh, Pakistan	Lack of author listed limitations Lack of differentiation of findings between Pakistani and Bangladeshi groups. Missing participant quotes identifying who said what. Method/results needed further details.
Williams, Whittle, Gatrell, 2002	To determine if parental socio-demographic characteristics are associated with dental knowledge and attitude.	East Lancashire, England, UK	*N* = 500	Quantitative	Parents with children aged 7–11 months. Questionnaire. Logistic regression analysis for ethnicity, education, age and deprived areas.	*Ethnicity* White, Asian, Other (Black, Chinese)	Lack of author listed limitations. Deprived area classified by Jarman scores -which is criticized, since it uses dental practice postcode rather than home postcode in payments and hence may contradict findings. Participants were selected from hearing test clinic for babies 8 months, which excludes participants who did not use this health service. 80% of the sample were classified as White, which is similar to the population area statistics, at the time.
Zautra, 2018	To examine predictors of dental care utilization in Hispanic young children and mothers and evaluate stigma as contributing to dental disparities.	USA	*N* = 21427 5	Quantitative	Hispanic mothers of young children. Medical Expenditure Survey Household Component 2010–2015. Weighted data. Logistic regression. Classification tree analysis.	*Race/Ethnicity* Hispanic	Discriminate function analysis relied on linear modelling, which has potential to over/under fit results. Explored stigma at mother-child dyad level. Self-reported survey. Recall bias of participants. Child receiving some dental care means children who do not receive care are not represented.

Almost all included papers utilized suitable research methods. Three studies insufficiently reported confounding variables, and nine qualitative studies lacked philosophical perspectives. Eight qualitative and mixed-method studies failed to include the 'influence of the researcher on the research' (Appendix 3). One UK paper[34] compared ethnic groups with local population groups using focus group interviews, without identifying ethical approvals by an appropriate body. A paper published in 1988 provided insufficient information on most appraisal parameters.[35]

The UHC framework utilized Individual-Family, Provider and Financial-System considerations (Figure 2). Narrative synthesis of the barriers and facilitators to dental utilization resulted in six themes, which led to the formulation of the rainbow model (Table 2 and Figure 2).

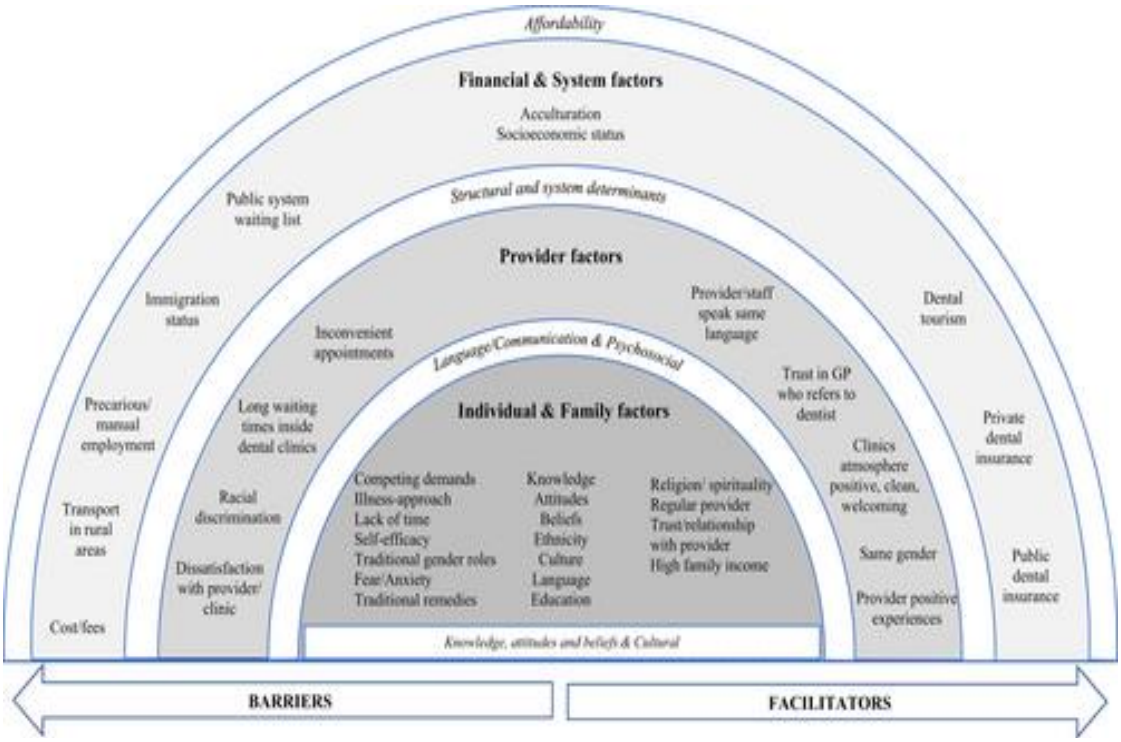

FIGURE 2 Open in figure viewerPowerPoint

Barriers and facilitators of CALD carers dental utilization using a UHC framework. Relationships between the three dimensions were connected, thus population factors were linked to system level factors and provider levels and vice versa. This interplay of dental healthcare utilization in CALD groups was between the three different dimensions. Barriers and facilitators identified does not indicate the 'strength' of predictors, because of the variable nature of included study design methods. Items which were classified as a barrier in one paper but then facilitator in another paper was listed in the middle—as potentially being both a barrier and facilitator. The six themes were listed in italics, some of which overlap between the UHC dimensions

TABLE 2. Barriers and facilitators of included studies.

First author, date	Results / findings	Outcomes for barriers and facilitators
Amin & Perez, 2012	Mother's low English proficiency 'I cannot speak English to communicate with the dentist'. Unaware of existing publicly funded dental programs. Dentist were 'repairers' - needed when serious problem arises. Dentists provide unnecessary treatment. Mothers said dental problems have more social and personal consequences for women.	*Barriers* • Oral health attitudes: no need for preventive care with illness-reaction approach, only go when absolutely needed • Lack of awareness of public dental programs • Low English proficiency; cannot communicate • Self-efficacy: low confidence navigating system • Traditional home remedies for resolving oral health issues
Croucher & Sohanpal, 2006	'If there was an increase in staff it would be more helpful - Bengali staff' Bangladeshi woman.'…they need to give a bit of TLC' Black Caribbean. '…its fine that they see you on emergency appointment, otherwise you wait about two months' Indian Woman. Bangladeshi woman '(women) would not go to a man' but gender not an issue for Indian group.'...we always think they're right, if they say you might need this, OK, then you think I might as well have it done' Indian woman. Provider package: '…atmosphere, the prices, the quality, quality of the product recommendation, presentation'.	*Barriers* • Competing demands: pressure of daily life • Dental staff language challenges • Lack friendly clinic, cultural sensitivity • Insufficient clinic seating, heating • Cost *Facilitators* • Provider/staff same language • Provider clinic: clean, welcoming, friendly, price, relationship with patient

First author, date	Results / findings	Outcomes for barriers and facilitators
Grembowski et al., 2009	Hispanic mothers completing Spanish instrument were more likely to report fair/poor dental health than Hispanic mothers completing English instrument 35%, $p < .001$. Hispanic mothers 52% reported higher for fair or poor dental condition, than Black and white mothers 41%–42%. Having regular dental source is associated with better self-rated oral health across ethnic groups. But not associated with oral health beliefs, behaviours. (Exception Whites and Hispanics). Hispanic mothers believed regular dental visit associated with belief that regular cleaning prevents loose teeth.	*Barriers* • Oral health beliefs and behaviours for ethnic groups • Cultural factors implied: despite Medicaid insurance, less than half of low-income mothers had regular dental source *Facilitators* • Regular dental source/provider • Accultured to English language: English speaking Hispanics had better oral health than Spanish speaking Hispanics • Cultural oral health belief: regular dental visit
Heima et al., 2017	Mothers with high dental anxiety utilized dentists significantly less than mothers with less anxiety. Increased mother's dental utilization strongly associated with child's dental utilization (Pearson chi-square = 7.34 $df = 1$; $p = .007$). Greater focus of paper on child oral health.	*Barriers* • Mothers' anxiety hindered dental utilization *Facilitators* • Regular dental visit, once per year lowered anxiety
Hilton et al., 2007	Unnecessary treatment. 'So, when I have to see a dentist now, I choose carefully because I know there are some dentists that are involved in scam activities so they can get money from insurance' Young Filipino female immigrant carer. 'So, dentists are really scary for me, so I can imagine how my grandkids feel' Older US born African American. 'fear' was always brought up by participants. 'Her (child's) doctor, her physician…I trust him, and I feel comfortable with him. And then if there was something wrong and he recommended a dentist then I would go to a dentist after. But I ask for his opinion first because one is like, small to just choose a dentist. There's a lot of dentists that don't take one-year olds. A lot. Most don't take them' Young US born Latino female carer. Preventive dental unnecessary, especially held belief for Chinese elders: 'If people can take good care of their teeth by themselves, there is no need to see a dentist, but they should see a dentist once there are problems'. Chinese older immigrant male carer: 'I usually ask for advice from my relatives'.	*Barriers* • Dental fear from past experiences • Racism/discrimination from providers/clinics • Illness approach: 'no need' • Unnecessary treatment by providers • Cultural challenges: extended family opinion *Facilitator* • Trust in GP who refers to dentist
Kelly et al., 2005	Dissatisfaction with dental care for self: pain, poor quality, cost, uncertainty of cost, discrimination. 'My parents didn't care if we brushed our teeth or not' 'I don't think my parents didn't care. It wasn't possible' African American. High levels of dental fear - African American fear of needles, fingers in mouth, sedation, pain. African American reported little difficulty locating Medicaid providers in Jefferson County. Positive experiences with providers reported. Utilizing African American carers - reported Discrimination/racism. 'Cultural whiteness of a suburban dental office e.g., music. 'When you have 4 or 5 kids, it's hard to get on the bus, go get them out of school, get them back home' African American. Length of time required for appointments, difficulty with coordinating employment and negotiating care for other children.	*Barriers* • Oral health beliefs: (illness approach) 'no need' • Negative past experiences: poor-quality care • Dental fear: needles, fingers in mouth, pain • Racism/discrimination • Competing demands: employment, kids, cannot get appointments in holidays *Facilitator* • Trust/relationship with provider helps with continuity of care • African Americans: knowledge and proactive in traveling outside the neighbourhood & paying out of pocket to access quality care
Lukes, 2010	89% parents comfortable speaking Spanish. No pain or problem: most common reason for not visiting dentist, second was cost. 64% ($n = 31$) parents said cost too high for dentists in US. $N = 20$ preferred dentist in Mexico, $N = 20$ preferred USA based dentist. 18% said dentists try to keep patients coming back for money. 69% believed dentists good healthcare providers. Note	*Barriers* • Oral health knowledge, attitudes, belief: dentists keep patients coming back for money • Illness approach: seek dental care when in pain • Cost: expensive for dental work in the USA

First author, date	Results / findings	Outcomes for barriers and facilitators
	that Language was not measured in the study, but only 7% were comfortable speaking in English.	*Facilitators* • Dental tourism to Mexico for oral healthcare due to cost in USA
Mofidi et al., 2002	Latinos: major barrier was language and racial discrimination; 'If they don't work with me or if they don't want Latinos, they should put a sign on the door- No Hispanic people'. African American: racial discrimination by Staff, overheard receptionists making negative comments about Black people. Latino focus group also expressed racial discrimination. Lack of diversity in Staff, competing demands in family/ related stress in organizing dental appointments. Racism experienced, discrimination 'at mercy of dentists' - powerless to do anything/report problems with dentist.	*Barriers* • Racial/discrimination by provider/clinic • Language barrier with provider/clinic for Latino group • Structural barriers: cannot get appointment, judgment, rude staff/provider
Naidu & Nunn, 2020	18% parents reported needing help with reading health information occasionally to all the time. Self-dental health was rated good 71% and 28% for fair to poor. 56% reported child had too many demands on them. Bivariate association found for parent's own oral health: manual employment household had difficulty finding dental care for themselves ($p < .05$ chi-squared). Parents had fair oral health knowledge and attitudes. Greater focus of paper on child oral health.	*Barriers* • Competing demands of child rearing • Low socioeconomic status: manual labour, low education level *Facilitators* • Oral health knowledge/beliefs: parents had fair level of oral health knowledge
Nam et al., 2016	Correlation coefficient was significant ($p = .0402$) for subjective dental avoidance and meeting other people due to oral health problems. 61.5% reported oral health as very important and only 1.5% reported very unimportant. 49.2% CALD women reported no need for dental visit but 50.8% said yes to this. 47.5% women reported not receiving dental care when they needed it. 42.3% reported 'impossible to visit dental clinic' while 24.6% said cost burden as no insurance, while 8.5% due to fear and 4.6% due to lack of time and 4.6% due to language communication issues. Living longer in South Korea resulted in higher subjective response rate for 'dental importance' ($p < .05$).	*Barriers* • Communication/language issues • Competing demands: lack of time • Dental fear from past experiences • Structural barriers: provider clinic challenges/standard of living • Cost as burden as no insurance *Facilitators* • Knowledge: migrant women were aware of oral health importance
Quandt et al., 2007	37% mothers had dental cleaning and 15.7% dental examination as reason for dental visit. Mothers most likely not to seek dental care (48%) even if they felt they needed it. 90.6% mothers said cost/fees of dental care, reason for not seeking/delaying dental visit, 15.1% mothers said transport problem. 63.9% mothers said condition of teeth was fair or poor. Mothers twice likely to experience pain than child 13.9% vs 6.3%. No significance of mother with dental visit and education ($X^2 = 0.120$; $p = .729$); language preference $X^2 = 5.548$; $p = .476$ or acculturation ($X^2 = 3.881$, $p = .275$).	*Barriers* • Structural challenges: transport, work schedule, hard to reach families in rural and remote locations • Cannot get appointments weekends/around work • Cost of dental services was reason for not seeing dentist *Facilitators* • Dental tourism: very few mothers go to Mexico for dental care
Reich et al., 2019	Spanish speaking was far less likely to report experiences that made them happy (OR 0.48, $p = .003$). Negative past experiences, made them not want to return to the dentist (for kids). Spanish/Vietnamese groups have more negative dental experiences than Caucasians. Predominantly child related. All women lived near dentists or had access to get to and from dental services.	*Barriers* • Negative previous experience (Spanish/Vietnamese groups) • Child separated and restrained from caregiver *Facilitators* • Medicaid insurance (covers cost)
Riggs et al., 2014	'But still not a good job they do. Because they have no experience, the new doctors, the new learner, they are all students at the hospital' Iraqi mother. Gender is mixed response - if Halal OK, it's allowed. Problems with interpreters. 'Sometimes they do not interpret well, and it happened to me, and I had some issues with	*Barriers* • Belief, attitudes 'no need' • Language/communication: problems with interpreters • Racism/discrimination: feeling mistreated

First author, date	Results / findings	Outcomes for barriers and facilitators
	interpreters that led me to more issues, more problems' Lebanese mother. Discrimination. Public wait lists too long. Travel to Pakistan for treatment instead of dissatisfied experience in Melbourne. 'Arrogance. Sometimes you feel, oh God, I shouldn't be here…you definitely feel how you are being treated' Pakistani interpreter. 'I go to doctor he says three hundred dollars I fill it for you. I can't pay three hundred for my teeth' Assyrian Chaldean. Prevention is new concept for adults (and children). Miswak preferred. 'They're suffering here, all of them, and a couple of husbands are on the waiting list, and we have to wait a long time' Interpreter, Assyrian Chaldean.	• Illness approach: prevention new concept 'never needed' • Cost • Dissatisfaction with provider • Traditional oral health methods—miswak *Facilitators* • Female dentists for Bangladeshi/Pakistani mothers • Dental tourism to Pakistan for dental work • Child dental school check-up
Telleen et al., 2012	Mostly focussed on care for children, early dental visits. Mother's belief in preventive care was more likely to visit if importance to (child) preventive care known (OR = 3.83, 95% CI 1.71–8.63). Continuity of care: mother's returning to same provider important. Mother's education and acculturation were not significant in final model. Social network not significant (p = .109). 47% believed importance of preventive dental care. Family income predicted greater planned dental visits. Latino ethnic identity didn't predict health service use. Mothers' beliefs in effectiveness of seeing dentist important for child healthy teeth led to utilization. Health system coordination paediatric referrals to dentist infrequent.	*Barriers* • Cost • Lack provider availability on weekends/evenings *Facilitators* • Beliefs about preventive dental care important • Spanish speaking provider • Returning to same provider from effective communication • Medicaid insurance for child • High family income
Tiwari et al., 2018	Spanish speaking scored higher on 'Health Belief Model of Perceived Barriers'. English speaking: higher oral health knowledge (mean) (87.51), behaviours (47.13), knowledge of dental utilization (3.67), and self-efficacy (4.34). Adjusting for mother's education, language was still significant, suggesting education was confounder.	*Barriers* • Knowledge: perceived barriers *Facilitators* • Acculturation through preference of English language
Updegraff et al., 2017	One unit increase in mothers traditional gender role attitudes was associated with 78% reduction in likelihood reduction of routine visit in daughters (OR0.22, CI. 0.08–0.64 p = .005). Fathers familism values: unrelated to young adult routine care. Health insurance related to fivefold increase in routine visit for females.	*Barriers* • Cultural traditional gender roles for women *Facilitators* • Dental insurance for Mexican females
Velez et al., 2017	'What I was going to tell you is that like us the undocumented, we do not count with insurance' Mexican resident. Hostility from dental support staff, lack of privacy, fear, lack of patient-provider trust 'when a patient goes…and share personal information about people' Mexican Community health worker. 'Trust, that they have trust in this community, to do as much as doctors as well as nurses...' Mexican resident. 'Visit the dentist with fear, is scary' Mexican. 'A lot gets lost in translation...', 'Sometimes it's better for dentists to speak Spanish because things get lost in translation…sometimes the translator says things we didn't' Mexican. Lack of patient-provider trust, discrimination, clinic staff rude. 'We do not understand much English, right?' Community resident. Transportation: 'For example, I make my appointments according to the bus schedule…' Lideres. Spirituality as strength to face barriers. Inability to travel to Mexico for dental care due to immigration status.	*Barriers* • Language/literacy communication gets lost in translation by interpreters • Lack of eligibility/limited insurance: Medi-Cal • Dissatisfaction & negligence in US dental experiences • Discrimination by staff/provider • Cost of services too expensive • Waiting times in clinic • Transport challenges: not convenient near bus/train routes • Fear: dentist 'scary' • Inability to travel to Mexico for dental services due to immigration barriers *Facilitators* • Spirituality is a strength to face negativity from health care providers • Some experienced positive dental experiences in US, encouraged to keep appointments

First author, date	Results / findings	Outcomes for barriers and facilitators
Williams & Gelbier, 1988	Dental treatment in past mixed: some dentists helpful but others afraid of miscommunication with dentist and wrong tooth taken. Anxiety reported. 'The dentist is not understanding or considerate'. All mothers stated communication as problematic, staff speaking Asian languages was helpful. 'Current dental staff need to understand more about the cultures, lifestyles and problems of the Asian communities'. 'Insufficient seating', 'cold and cramped'. Receptionists 'she is the one who puts you off or helps you relax'. 'Too busy' and 'too much to do at home', especially housework. Teeth might be removed without permission. Illness approach: less than half the group of Asian mothers would visit a dentist for a check-up. 'Health visitors need to be talking to mothers about dental care and dental problems'.	*Barriers* • Competing demands with housework and child rearing • Dental fear/anxiety of 'injections, extractions and might have wrong tooth pulled out' • Language/miscommunication: 'dentist is not understanding' • Lack of oral health information from allied healthcare workers • Illness approach: seek dental care for pain or relief of symptoms • Negative clinic atmosphere: waiting room is 'cold and cramped' 'insufficient seating' 'dirty equipment' *Facilitators* • Asian mothers preferred female dentist • Good level of oral health awareness, free care available in the National Health System • Staff speaking in Asian languages is helpful
Williams, Whittle, Gatrell, 2002	44.6% families lived in deprived areas, with 66.71% having high dental knowledge compared to 76.53% in non-deprived areas. 17.2% Asian and 2.4% Other in sample. Ethnicity was significant for oral health knowledge (p = .003). Asian parents significantly less chance for oral health knowledge (OR 0.433, CI 0.267–0.702) compared to White parents. Only 18% of Asian parents had positive attitude to dental health compared to White.	*Barrier* • Culture/ethnicity: predictor to oral health knowledge • Lack of education: predictor to oral health knowledge • Living in deprived area: predictor to oral health knowledge
Zautra, 2018	Non-Hispanic Black and Hispanic-Other was more likely to have dental visit compared to White, except for Hispanic-Mexican. Mothers (including Whites) with less than high school education, were less likely to have dental visit. Mothers with public insurance or no insurance less likely to visit dentist. Mothers with unmet dental need were less likely to have dental visit. Mothers with dental visit, more likely to have child visit dentist Classification tree: Hispanic ethnicity a predictor of unmet dental need.	*Barrier* • Education level of less than high school education • Low socioeconomic status • Public or no insurance • Mothers grouped in 'other' race/ethnicity • Hispanic ethnicity predictor of unmet dental need *Facilitators* • Mother utilization led to child dental utilization. • High family income • Private dental insurance

3.1.1 Knowledge, attitudes and beliefs

Oral healthcare knowledge, attitude and beliefs were reported both as barriers[35-41] and facilitators[33, 35, 41-43] to dental utilization. This included an illness-reaction approach[35, 36] with the lack of dental need or belief that preventive care was deemed unnecessary.[35, 38, 39] Concepts of prevention were distinct from migrant home country beliefs and practices. Similarly, perceived barriers were reported in two studies.[36, 37] This included African mothers in Canada, who were eligible for publicly funded dental healthcare programmes but were unaware. Four studies described positive dental healthcare knowledge, attitudes and beliefs of CALD groups.[33, 35, 42, 43] Bangladeshi and Pakistani mothers in the United Kingdom conveyed positive dental healthcare knowledge and requested further information from providers about treatment options and prevention.[35] In the United States of America, African American mothers reported little difficulty in locating Medicaid providers.[41]

3.1.2 Cultural factors

Cultural barriers[38, 39, 44-46] to dental utilization included differences in cultural practices, race, behaviours and traditions. Gendered roles of Mexican mothers influenced female daughters (lack of) dental visit in one paper.[45] Traditional influences included the use of miswak (a teeth cleaning branch) which was preferred by Iraqi and Lebanese mothers in Melbourne, Australia.[38] Family hierarchical structures, whereby elders upheld decision-making power, was reported with Chinese mothers' in one study.[39] Cultural enablers to dental utilization involved religion and spirituality in which faith provided hope.[47] A regular dental provider[44] encouraged patient-provider trust, and mothers' dental utilization led to child dental care behaviours.[48] Latino ethnicity was not a predictor to dental utilization in one study,[43] while contrarily, Zautra[48] reported that Hispanic ethnicity was a predictor of unmet dental need. Williams et al.[46] also affirmed that culture/ethnicity was a predictor to oral health knowledge.

3.1.3 Psychosocial factors

Discouraging previous experiences,[33, 35, 38, 39, 41, 47, 49, 50] fear/anxiety[51] and self-efficacy were reported as barriers to dental utilization. Low-income African American mothers reported anxiety which was associated with dental care.[51] In Canada, African new migrants reported self-confidence concerns with dental professionals.[36] Additionally, competing demands was a widely reported barrier,[33-35, 42, 49] with insufficient household support, 'lack of time' and the juggle of parenting in a different country. Negative provider experiences of child/parent dental treatment such as painful treatments in the past, discrimination by providers or dissatisfaction with services were cited as the most common barrier.[33, 35, 38, 39, 41, 47, 49, 50] On the flipside, four papers also reported positive past experiences with dental providers.[35, 41, 47, 50]

3.1.4 Language/communication factors

Language and communication discrepancies to dental utilization was the fourth commonly cited barrier.[33, 35, 36, 38, 47, 49] Inability to liaise between providers in English language and/or cultural misunderstanding was compounded with poor treatment.[50] One mixed-method study reported the contrary, with no statistically significant findings for language barriers in Latino farmworker mothers.[52] Dental clinic staff, who communicated in similar CALD languages, were reported positively in three studies as facilitators to dental utilization.[34, 35, 43]

3.1.5 Structural and system determinants

Structural barriers included employment inflexibility for dental visits,[41] socioeconomic factors,[46] employment in manual labour jobs[42] and transport issues.[52] Racial discrimination was coded as a barrier to dental utilization at the provider level,[38, 39, 41, 47, 49] although this was also interlinked to a broader governing systemic issue. Acculturation, as measured by preference for English language, was reported as a facilitator to dental utilization in two studies[37, 44] but invalidated in another two studies.[43, 52] Socioeconomic status in terms of income, education or deprived area were linked to dental utilization or knowledge in three papers.[43, 46, 48] Latina mothers revealed other structural factors which acted as barriers to dental care, rather than education or acculturation.[52] Immigration status of undocumented migrants further impeded access to services.[47]

3.1.6 Affordability

Dental treatment affordability was the most cited barrier to dental utilization.[33, 34, 38, 40, 41, 43, 47, 52] Long public dental waiting lists also hindered dental utilization.[38] Challenges were also described with Medicaid publicly funded healthcare insurance eligibility.[49] Dental tourism was considered a positive enabler to dental utilization.[38, 40, 47, 52] Pakistani mothers preferred traveling to their home country for reduced dental treatment cost.[38] Mexican carers also preferred dental treatment in Mexico due to the expense; however, half of this sample preferred the dental quality of services provided in the United States. Private healthcare insurance was a facilitator to dental utilization in two papers.[45, 48]

4 DISCUSSION

The systematic review provided an innovative integrative mixed-method approach for understanding the research question by combining the sum of quantitative and qualitative studies using a UHC framework. Inclusion of twenty papers revealed a complex web of factors at the CALD population, provider and system levels to dental utilization. Affordability of dental services was the foremost barrier at the system level, followed by communication and psychosocial impacts of negative provider experiences. Knowledge, attitudes and beliefs and cultural factors revealed that preventive dental care was unnecessary at the individual-family level. An integrative mixed-method synthesis collated data from both quantitative and qualitative studies, allowing for in depth exploration of the phenomenon.[22] Given the UHC framework for synthesizing data and research team triangulation, study rigour was adhered. Additionally, the UHC framework and the development of our rainbow model provided a unique lens for understanding dental utilization across study designs and sample sizes, for CALD populations.

Findings from this integrative mixed method along with the UHC rainbow model (Figure 2) highlighted the interconnected complexity between population, provider and system levels, with one aspect influencing another. For instance, at the system level, government policies determined the affordability theme, in addition to socioeconomic resources such as education, geographic location and employment. This directly impacted the population at the receiving end of this government support. Individual and family cultural values differed between the country of birth, ancestry, values and beliefs whereby dental visit for pain was a socio-culturally accepted practice.[53] In this regard, cultural factors could shift over time, thereby interlinking with acculturation concepts at the system level.[21] Communication/language, psychosocial and structural/system themes were interconnected between population-provider and individual system levels, in terms of effective patient communication, positive dental care experiences and employment flexibility to enable dental attendance for CALD carers. This interplay and complexity between the UHC individual-family, provider and system-structural factors either hindered or promoted dental care in CALD carers.

4.1 Financial and system factors

Our findings echoed previous studies, under the themes of affordability[8, 54, 55] and structural and system determinants.[56] The social gradient in dental healthcare has been widely reported, whereby the places in which migrants live, work and grow impacts health.[56] CALD migrant carers were more likely to be employed in precarious jobs and experience inflexible work schedules,[57] which impeded dental healthcare appointments. Several countries, including Australia, Canada and the USA[58] provide insufficient universal oral health insurance coverage to the population. In the USA, Medicaid insurance was a facilitator in one study,[50] whilst in Canada, awareness and information of publicly funded programmes were missing for some mothers.[36] Private health insurance was a facilitator in two papers, which suggested oral healthcare coverage for some socioeconomically advantaged groups. The evidence affirms that access and utilization of oral healthcare services are experienced unequally,[7] with groups who need the most care, are the least likely to receive it. This inequality is compounded by structural and system-related inequalities which are experienced differently in adults, with differing vulnerabilities, distribution of resources, social capital or accessibility to services.[59]

4.2 Provider factors

A synthesis of evidence highlighted language/communication and psychosocial themes, for example, discrimination or negative past experiences hindered future dental care utilization.[60, 61] Strengthening provider cultural competence skills could help address this. Although, alleviating racism is a system wide issue, that requires political, government and community combined action. General practitioners promoted dental utilization from our findings, thereby endorsing the integration of multidisciplinary health professionals for oral and general health outcomes.[62] In addition, provider and system level factors are interconnected. For example, the maldistribution of rural dental providers or level of dental insurance coverage available to the population is a structural/system level issue, concerning

government and stakeholders in health services planning. Provider and individual level communication in a non-English language could further bridge dental care gaps for non-English speaking CALD groups in specific regions.[10]

4.3 Individual and family factors

Evidence of the barriers and facilitators at this dimension reiterated knowledge, attitudes and beliefs and cultural themes which overlapped with psychosocial and language/communication at the provider level dimension.[63] Reciprocal patient-provider relationships through regular visits, encouraged trust and promoted dental care outcomes.[64] At the individual-family level, our findings align to a qualitative study conducted with a Jewish community in London by Scambler et al.[65] Cultural influences and self-efficacy were reported whereby dental healthcare was not a priority, whereas religious beliefs advocated for proactive actions to look after ones' health.[65] Furthermore, our findings correspond to a study by Harris et al., who affirmed that competing demands in low socioeconomic groups influenced dental care behaviour, which is equally influenced by affordability and availability of services.[63] This study, however, does not explicitly study CALD populations. Individual-family level barriers, as shown in our rainbow model, cannot be addressed at the behavioural level alone, and requires coordinated, integrated efforts with healthcare providers and policy that promotes oral healthcare for all populations.

4.4 Strengths and limitations

This integrative mixed-method review provided a comprehensive summation of quantitative and qualitative findings. Additionally, our UHC innovative rainbow model was timely and relevant in the current policy context of the WHO oral health resolution and Sustainable Development Goals. Strengths of this study also entail rigorous inclusion/exclusion criterion, coding framework and the broader research team involvement. Validity checking through author consensus was conducted throughout this review. The search strategy was also refined with an experienced Librarian while five databases were comprehensively searched to adequately address the evidence available. JBI critical appraisals tools added to study rigour.[23, 31] The convergent mixed-method findings reveal few discrepancies during the narrative synthesis process between quantitative, qualitative and mixed-method studies. Qualitative papers alone reported racism or discrimination experiences by CALD groups. Acculturation, which refers to the adoption of new cultural values within the host country, was also reported only in quantitative and mixed-method papers. The CALD term was classified differently in papers, either by race, ethnicity, language spoken or country of birth or duration in the host country within the included studies, which is attributed to a lack of universal definition.[4] On a cautionary note, majority of included studies explored the sample and is thus not representative of the wider diverse, heterogeneous CALD populations.

The study is not without limitations. Implications of the variability within and across CALD groups highlighted limited representation of CALD groups within the literature. Additionally, refugee migrants from low-income, non-English speaking countries and the increasingly global diversity highlights the need to understand population-specific dental needs. In our study, the quality of papers was not ranked as per JBI methodology.[23] Included studies were relevant to the research questions, and hence, study designs or rigour of papers were not excluded. Mother–child-dyad papers offered limited insights on dental utilization for CALD mothers; however, these papers were included to understand mothers and their dental knowledge, beliefs and attitudes. Six cross-sectional survey designs analysed the study sample only, whilst one study analysed Hispanic mothers using weighted data relevant to the USA Hispanic population. Due to the variability across study designs and findings, differentiating between the influence of family from the individual and vice versa was not feasible, and thus, further studies incorporating the UHC framework may look at ways to refine this. Further research that focuses on underrepresented CALD groups would be beneficial, to understand policies, programmes and strategies that address barriers and facilitators to oral healthcare utilization.

5 CONCLUSION

The integrated, mixed-method review provided evidence of interrelated factors that hinder or facilitate dental utilization among CALD carers. Policies at the financial-system level and interactions at the provider level shape, to a certain degree, dental utilization for CALD carers. Financial-system level facilitators were associated with affordability, having implications for governments and policymakers. Alleviating barriers to dental healthcare utilization as illustrated by our findings strengthen evidence for universal oral healthcare provisions be made for this CALD population. Dental providers should create supportive, conducive environments, by developing trust, communication strategies and engaging in respectful relationships to help address dental healthcare needs of CALD communities. Population level considerations should incorporate primary prevention and health promotion strategies to improve CALD oral health. The timeliness and implications of this study underline the need for system level changes and healthcare provider skills for the promotion and integration of oral healthcare in UHC.

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