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Oral Health Research of Pregnant Women in Saudi Arabia: A Narrative Review

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Supplementary Table 1. Summary of included studies.

Region	Author	Year	City	Study Design	Sample Size	Methods	Main Findings
Eastern	Assery MK, 2016 [11]	March to May 2014	Al-Jubail city	Cross-sectional design	252 pregnant women	Self-administered questionnaire	• Prevalence of inflamed and bleeding gums was 24.6% • Prevalence of carious teeth was 29.8% • 148 (58.7%) were not advised by their doctors to visit the dental clinic. • 128 (50.8%) did not receive dental care and believed that dental treatment during pregnancy adversely affected the fetus. • 84 (33.3%) brushed their teeth twice a day while 37 (14.7%) never brushed their teeth. Obtained dental knowledge • 95 (37.7%) from dentists and dental hygienists • 84 (33.3%) from television and printed media • 39 (15.5%) from online internet sources
	Gaffar BO. *et al.*, 2016 [39]	February to April 2014	Dammam	Cross-sectional design	197 pregnant women	Self-administered questionnaire	• 100 (51.5%) brushed their teeth at least twice daily and • 84 (43.8%) practiced flossing sometimes • 12.4% did not have any source of oral health information, • who received information received it mainly from dentists (36%) or media (30.6%)
	Al Omran Z. *et al.*, 2018 [12]	September to December 2016	Eastern	Cross-sectional design	200 pregnant women	Self-administered questionnaire	• 137 (68.5%) reported bleeding gums when brushing
	Albasry Z. *et al.*, 2019 [32]	-	Al Khobar, Qatif, Dammam	Cross-sectional design	270 pregnant women	Self-administered questionnaire	• 118 (43.7%) visited the dentist when they had a dental problem • 40.7% visited the dentist during the second trimester • 142 (52.6%) reported avoiding dental visits during pregnancy especially during the third trimester • toothache was most common reason for dental visit (26.7%) • concerns about the safety of the treatment were most common reason for avoiding dental visit (24.8%)

Region	Author	Year	City	Study Design	Sample Size	Methods	Main Findings
Eastern	AlRatroot S. *et al.*, 2021 [35]	June to August 2019	Dhahran, Al Khobar, Dammam	Cross-sectional design	825 pregnant women	Self-administered questionnaire	• 185 (22.4%) reported that pain or trouble with teeth, gums, or mouth was the main reason for dental visits during pregnancy
	Tarek Y. *et al.*, 2021 [40]	-	Eastern region	Cross-sectional design	438 pregnant women	Self-administered questionnaire	• 269 (61.4%) brushed their teeth more than twice daily • 43 (9.8%) used dental floss • primary source of oral and dental health information obtained was from dentists' influencers on social media
	Bokhari S. *et al.*, 2024 [33]	April to July 2022	Al-Ahsa	Cross-sectional design	356 married women • 20% pregnant • 80% non-pregnant	Self-administered questionnaire	• 170 (47.8%) brushed their teeth twice daily • 28 (7.9%) reported using dental floss daily • 183 (51.4%) did not visit the dental clinic during pregnancy • 131 (36.8%) reported not needing any services was main reason for not visiting dental clinic •
	Aljafar A. *et al.*, 2025 [13]	-	Dammam, Al Khobar, and Dhahran	Cross-sectional design	606 pregnant women	Self-administered questionnaire	• 56.6% reported bleeding gums **OHRQoL (OHIP-14)** • a total mean score of 12.97±11.02 • highest mean score found for the physical pain domain (2.47±2.32) while the lowest mean score found for functional limitation domain (0.69±1.14) • highest mean score was observed among those who felt embarrassed due to the appearance of their teeth (20.88±10.92); while the lowest was observed among those who suffered from bad breath (14.2±11.3)
Central	Al-Turck K. 2005 [14]	-	Riyadh	Cross-sectional design	500 pregnant women	Questionnaire-based interviews	• 65% complained of bleeding gums with brushing • 232 (46.4%) reported brushing twice a day • Pregnant women in first trimester had significantly lower frequency of brushing (not every day) than those in the second and third trimester • 278 (55.6%) used medium textured toothbrush • 410 (82%) use regular fluoride toothpaste • 400 (80%) never flossed their teeth
	AL-Swuailem AS, 2015 [15]	January to March 2013	Riyadh	Cross-sectional design	446 pregnant women	Self-administered questionnaire	• 40%, 24% and 23% reported bleeding gums, painful gums, and swollen gums, respectively • 20.9% visited dental clinic during pregnancy • 73.6% brushed their teeth at least once per day
	Sedky NA., 2016 [21]	January to March 2015	Al Qassim province, Buraidah	Cross-sectional design	317 women • 234 pregnant • 83 lactating mothers	• Self-administered questionnaire • Clinical examination ➢ papillary, marginal and attached gingiva index ➢ Simplified Oral hygiene Index ➢ DMFT Index	• 317 participants suffered from moderate gingivitis based on papillary, marginal and attached gingiva index (1.39) • have fair oral hygiene based on the mean value of OHI-S (1.35) • dental caries prevalence was 100% • mean DMFT of 10.37 representing moderate caries index • 43.85% reported brushing their teeth twice daily while only 0.95% reported flossing correctly twice daily
	Ahmed AE. *Et al.*, 2017 [16]	August 14 to 31, 2016	Riyadh	Cross-sectional design	438 pregnant women	Self-administered questionnaire	• 242 (55.8%) suffered from gingival bleeding • 124 (28.9%) suffered from redness • 151 (35%) suffered from dental caries • 262 (59.8%) reported brushing their teeth twice or more daily
	Ramisetty-Mikler S. *et al.*, 2018 [17]	2015-2016	Riyadh	Cross-sectional design	258 pregnant women	Self-administered questionnaire	• 10% reported having gum diseases • dental caries prevalence was 40%
	Moawed S. *et al.*, 2019 [18]	-	Riyadh and Dawadmi	Cross-sectional design	200 pregnant women	Self-administered questionnaire	• prevalence of 42.4% (n=84) for dental problems (caries and periodontitis) • 167 (83.5%) agreed to the statement "clean teeth daily through brushing and toothpaste is important things to pregnant" • 136 (68.3%) agreed to the statement "flossing is important for maintaining oral hygiene and dental health"

Region	Author	Year	City	Study Design	Sample Size	Methods	Main Findings
Central	Alrumayh A. *et al.*, 2021 [22]	-	Al Qassim province, Buraidah	Cross-sectional design	380 pregnant women	• Self-administered questionnaire • Clinical examination ➢ Plaque index ➢ Periodontal disease index	• prevalence of gingivitis 78.9% (n=300) • prevalence of periodontitis 21.1% (n=80) • 92 (24.2%) had a dental visit during pregnancy • prevalence of periodontal diseases was higher (56.8% gingivitis and 18.9% periodontitis) among pregnant women who didn't visit the dental clinic during pregnancy compared to those who visited the dental clinic (22.1% gingivitis and 2.1% periodontitis) • 188 (49.5%) reported brushing twice daily
	Al-Turk K. *et al.*, 2021 [19]	January to June 2018	Riyadh	Cross-sectional design	818 women • 102 pregnant • 716 non-pregnant	Self-administered questionnaire distributed through social media platforms ➢ Oral Health Impact Profile (OHIP-14)	• 377 (46.1%) reported bleeding gums with brushing • 701 (85.7%) found to have good OHRQoL • 364 (44.5%) did not visit the dentist during pregnancy **main reasons for avoiding dental visits;** • 40.6% no need for dental visit • 17% worrying from harming the baby during pregnancy • 440 (53.8%) brushed two to three times a day • 135 (16.5%) used floss on daily basis • 650 (79.4%) did not receive any oral health care instruction during pregnancy **source for oral health information** • 36% from social media • 29% from dentists
	Sayeed G. & Varghese S. 2024 [20]	March 2018 to January 2020	Riyadh	Cross-sectional design	144 pregnant women with metabolic syndrome	• Questionnaire-based interviews • Clinical examination ➢ Gingival Index ➢ Plaque Index ➢ Case definition of periodontitis by American Association of Periodontics	• 48 (33.3%) had gingivitis • 26 (18.1%), 40 (27.8%), and 30 (20.8%) had mild, moderate, and severe periodontitis, respectively • 63 (43.8%) reported brushing twice daily and flossing once per day
	Hebbal M. *et al.*, 2025 [37]	October 2022 to January 2023	Riyadh	Cross-sectional design	1120 pregnant women	Self-administered questionnaire	• 39.6% did not utilize dental services during pregnancy • 58.9% occasionally utilized dental services • Commonly used services: 14.6% dental emergency and 11.8% dental hygiene/prophylaxis services • 56.2% did not receive information on oral conditions during pregnancy at all • 15.1% received information on oral conditions from healthcare professional (13% from dentist and 1.3% from gynecologists)
Southern	Alneamy EH., 2018 [23]	November to April 2018	Sabya (part of Jazan)	Cross-sectional design	400 pregnant women	Self-administered questionnaire	• 97 (24.3%) reported having unhealthy gums • 126 (31.5%) noticed changes in their gum health • 62 (15.5%) reported suffering from bleeding • 42 (10.5%) reported suffering from pain • 32 (8%) reported suffering from swelling • 11 (2.8%) reported suffering from ulcer • 319 (79.8%) had dental visit during pregnancy with pain (n=125, 31%) and dental caries (n=85, 21.3%) being the main reasons for the visit. • 80 (20.2%) did not visit the dental clinic • 358 (89.5%) used toothbrush • 181 (45.3%) brushed teeth twice daily • 167 (41.8%) did not receive any dental and gum care advice • 76 (19%) received advice from dentist • <5% received advice from general practitioner
	Togoo RA. *et al.*, 2019 [24]	-	Aseer	Cross-sectional design	251 pregnant women	Self-administered questionnaire	• 69 (28%) reported bleeding gum • 72 (29%) reported redness with swollen gum • 103 (41.03%) did not visit the dentist for checkup during pregnancy

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Westeren	Habib FA., 2009 [25]	January to June 2008	Al Madinah Al-Munwarrah	Cross-sectional design	250 women • 100 pregnant with gestational diabetes • 100 non-pregnant • 50 healthy non- pregnant or lactating female	Clinical examination ➢ Community Periodontal Index for Treatment Need	• severity of periodontal disease was significantly higher among pregnant women with gestational diabetes (37%) compared to those with no gestational diabetes (29%) and those who were not pregnant (14%)
	Sonbul H. *et al.*, 2017 [31]	-	Jeddah	Cross-sectional design	121 women • 40 early pregnancy • 40 late pregnancy • 41 non-pregnant women	• Self-administered questionnaire • Clinical examination ➢ saliva assessment ➢ plaque acidogenicity ➢ sweet taste perception test ➢ DMFT Index	• DMFT of 10.7±5.2 among pregnant women • DMFT of 12.3±5.3 among non-pregnant women
	Dar-Odeh N. *et al.*, 2018 [34]	-	Madinah	Cross-sectional design	360 pregnant women	Self-administered questionnaire	Main reasons for avoiding dental visits during pregnancy: • 157 (43.6%) reported unsafeness of dental local anesthesia • 135 (37.5%) reported difficulty of transportation • 68 (18.9%) reported unsafeness of dental treatment
	Al-harbi S *et al.*, 2020 [26]	January to February 2019	Makkah	Cross-sectional design	223 women • 78 pregnant • 145 non-pregnant	• Self-administered questionnaire • Clinical examination ➢ Periodontal Disease Index ➢ DMFT Index	**Among 78 pregnant women:** • 66.8% was the mean prevalence of severe gingivitis across three trimesters with deep pocket development (>6mm) occurring in 2nd and 3rd trimesters • DMFT of 8.3±4.4 with mean Decayed component of 3.9±2.9 • 85.9% prevalence of dental visit • 64.1% reported brushing twice daily • 29.5% reported using dental floss
	Azab R. *et al.*, 2024 [27]	June 2020 to June 2021	Jeddah	Cross-sectional design	361 women • 76 pregnant • 285 non-pregnant	Self-administered questionnaire	**Among 76 pregnant women:** • 28 (36.84%) reported gingival bleeding, • 16 (21.05%) reported gingival enlargement • 14 (18.42%) painful gingiva • prevalence of 50% (n=38) for carious teeth that need fillings • 24 (31.57%) reported that “dental care is hazardous to the infant” was the main reason for not visiting the dentists. • pregnant women reported lower frequency of brushing three times daily (n=28, 36.84%) compared to non-pregnant women (n=130, 45.6%)
	Al Agili D. *et al.*, 2025 [28]	between 2018 and 2019	Jeddah	Cross-sectional design	1350 pregnant women (with expected delivery in 2019 and pregnancy ended with a live birth)	Self-administered questionnaire	During pregnancy: • 360 (26.7%) reported suffering from gum problems (redness, swelling and bleeding) • 740 (54.8%) prevalence of decayed teeth • 419 (31.0%) reported utilizing dental care with check-ups being the highly used service (n=296, 70.6%) • 459 (34.0%) needed dental care but were unable to access it • who were advised by a physician or nurse to visit a dentist during a prenatal visit had twice the prevalence of visiting a dentist (53.6%) compared to those who were not advised (26.3%)
Northern	Alazmi A. *et al.*, 2020 [38]	-	Hail	Cross-sectional design	154 married women • 73 pregnant • 81 non-pregnant	Self-administered questionnaire	• 50 (33%) reported visiting the dentist during pregnancy **main reasons for not visiting the dentists:** • 63 lack of need (41%) • 49 fear of harm to self or baby (32%) • 22 lack of time (14%)

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Multi-regions	Moawed S. *et al.*, 2014 [29]	December 2011 to January 2012	Riyadh, Jeddah and Dammam	Cross-sectional design	363 women • 102 pregnant • 261 recently post-partum	Self-administered questionnaire	• 56 (15.4%) perceived having gum disease • 152 (41.8%) reported bleeding from brushing • 62.8% were not informed by any health professional to visit the dentist during pregnancy **among those who were recommended to visit the dentist during pregnancy:** • 12.4% were recommended by the dentist • 3.3% were told by their obstetrician • 66.5% reported brushing their teeth more than once daily • 30.8% used either floss or toothpicks to clean between their teeth
	Al Humaid G. *et al.*, 2024 [36]	November to December 2022	Eastern province and Riyadh	Cross-sectional design	481 women • 33 pregnant • 448 non-pregnant	Self-administered questionnaire	• 108 (22.5%) visited the dental clinic during pregnancy • 358 (74.4%) did not receive oral health education during pregnancy, • Among those who reported receiving education obtained it primarily from dentists followed by media
	Aboalshamat K. *et al.*, 2025 [41]	-	residing in Saudi Arabia	Cross-sectional design	300 women • 159 pregnant • 141 pregnant within the last year	Self-administered questionnaire through social media	Source of oral health information: • 289 (96.3%) from dentists • 230 (76.7%) from social media • 99 (33.0%) from medical doctor

Supplementary File 1

Search Strings

((Pregnancy[Mesh] OR “Pregnant Women” OR pregnant OR pregnancy[Mesh]) AND (“Oral Health”[Mesh] OR “Oral Hygiene”[Mesh] OR “Dental Care”[Mesh] OR “Dental service*”[Mesh] OR “dental caries”[Mesh] OR “periodontal disease*”[Mesh] OR “gingivitis”[Mesh] OR “periodontitis”[Mesh] OR “Oral Health” OR “Oral Hygiene” OR “Dental Care” OR “Dental Utilisation” OR “Dental visit*” OR “Dental service*” OR “Dental attendance” OR “dental caries” OR “dental decay” OR “periodontal disease*” OR “gingivitis” OR “periodontitis”)) AND (“Saudi Arabia”[Mesh] OR Saudi OR KSA)

(pregnant[Mesh] OR “pregnant women” OR pregnancy) AND (“oral health” OR “oral hygiene” OR “dental care” OR “periodontal disease” OR “gingivitis” OR “periodontitis”) AND (“Saudi Arabia” OR Saudi OR KSA)

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