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REVIEW

Oral Frailty and Its Impact on Elderly Quality of Life: A Scoping Review

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Purpose: This scoping review study aims to investigate the impact of oral frailty on the quality of life in older adults, identify the instruments used, and explore the associated risk factors as reported in the literature.

Results: This study was conducted over four months and utilized the PubMed, ScienceDirect, and Springer databases to identify relevant literature. Seventeen studies were included, comprising 12 cross-sectional and 5 cohort designs, with sample sizes ranging from 144 to 2031 participants aged 60 to 84 years (56.3% female). The most frequently reported components of oral frailty were poor oral hygiene (52.1%), having fewer than 20 teeth (40.1%), and oral pain (35,1%). The impact of oral frailty on quality of life encompasses declines in physical function, malnutrition, reduced dietary variety, and cognitive impairment. The most commonly used assessment instruments were the Oral Frailty Six Measures and the Physical Frailty Phenotype. Key risk factors identified included advanced age, comorbidities, and depressive symptoms.

Conclusion: Oral frailty is associated with a decline in the quality of life of older adults. A dental professional's role is crucial in improving the quality of life in this population.

Keywords: oral frailty, quality of life, older adults, assessment, instruments

Introduction

The number of elderly individuals (≥60 years old) in Indonesia in 2024 has reached 31.9 million people. According to data from the World Health Organization (WHO) in 2024, the percentage of the elderly population in Indonesia reached 11.5%, indicating that Indonesia is transitioning towards an aging population.[1] As the elderly population increases, life expectancy and the economic burden for care have also increased.[2] Research by Juanita et al (2022) states that 46.5% of elderly people in Indonesia have a poor quality of life.[3] Quality of life is a multidimensional concept including mental health, functional, emotional, and social aspects of life.[4]

Health in older adults refers to maintaining functional capacity to ensure well-being in old age and the ability to carry out daily activities as usual. According to the Global Health Estimates (GHE) 2019, non-communicable diseases such as cardiovascular diseases, diabetes mellitus, and mental disorders are the leading causes of disability among the elderly in Indonesia.[5] Data from the Indonesian Health Survey in 2023 showed a high prevalence of diabetes, anemia, malnutrition, dementia, and depression in the elderly.[6] These health issues may contribute to the development of frailty in the elderly.

Frailty symptoms represent a decline in physiological function associated with aging, rendering older adults more vulnerable to health problems. These symptoms are characterized by physical weakness, reduced walking speed, fatigue, decreased physical activity, and unintentional weight loss.[7] Oral weakness, characterized by reduced masticatory muscle strength, diminished tongue pressure, and early declines in swallowing function, is increasingly recognized as an early indicator of general weakness in older adults. Physiologically, muscles of the oral region are particularly susceptible to age-related motor neuron loss and early-stage sarcopenia, causing functional deterioration that often precedes systemic

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manifestations. Impaired mastication and tongue dysfunction subsequently lead to insufficient protein and micronutrient intake, promoting systemic sarcopenia and frailty.

The early stage of frailty may manifest as oral frailty (OF), which refers to the age-related deterioration in oral function and the structural integrity of the oral cavity.[8] Tanaka et al (2018) reported that older adults with oral frailty have a 2.4 times higher risk of developing physical frailty compared to those without oral frailty.[9] Oral frailty refers to age-related deterioration of the orofacial structures and functions, encompassing difficulty consuming hard foods, inability to masticate a full range of food textures, reduced capacity to swallow solid foods, impaired swallowing of liquids, poor overall swallowing function, diminished tongue mobility, disturbances in speech and articulation, and decreased salivary secretion or xerostomia.[10]

The global incidence of oral frailty (OF) among older adults currently ranges from 8.1% to 53.2%.[9] OF is characterized by conditions such as difficulty in chewing, swallowing difficulties, and various dental and oral health problems. According to the 2023 Indonesian Health Survey (SKI), 67.4% of individuals aged 65 years and older in Indonesia reported experiencing dental and oral health issues.[6] The average DMF-T (Decayed, Missing, and Filled Teeth) index for permanent teeth in this age group was 13.[6] Based on the 2018 Basic Health Research (Riskesdas), 95% of older adults had dental caries, 66% suffered from periodontitis, and 6.4% experienced oral mucosal lesions (excluding recurrent aphthous ulcers and suspected oral cancer).[11] A study by Gil-Montoya et al (2015) stated that poor oral health contributes to a decline in quality of life.[12]

The increasing proportion of older adults and the growing burden of oral health problems have attracted considerable research interest, particularly in evaluating oral health status and quality of life using diverse measurement tools. Early intervention may reduce the long-term healthcare costs for older adults.[8] Findings from oral frailty (OF) assessments have demonstrated significant associations with multiple quality-of-life domains and related risk factors. Given the integral relationship between oral and systemic health, the potential impact of OF on the overall well-being of older adults merits further investigation. The urgency of this study is underscored by its alignment with Sustainable Development Goal 3: Good Health and Well-Being, which calls for universal access to optimal health across all ages and highlights the importance of disease prevention, equitable healthcare delivery, reduce the potential economic and social burdens associated with declining health in older adults, and continuous improvement in quality of life.

This scoping review aims to map the instruments used to measure OF and quality of life, identify contributing risk factors, and synthesize the current evidence on the association between OF and quality of life in older adults. This study advances prior research by incorporating the physical, psychological, and social dimensions to provide a more holistic understanding of oral frailty in older adults. Furthermore, by synthesizing data from multiple countries, it offers broader insight into cross-national variations in oral frailty outcomes. The study also consolidates the diverse instruments used to evaluate oral frailty and quality of life among older individuals, thereby delivering a comprehensive overview of the assessment methodologies applied globally. The findings are intended to provide foundational knowledge and guide future research on oral frailty.

Materials and Methods

The research method used is a scoping review method with the PRISMA-ScR instrument (Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for Scoping Reviews), referring to the Arksey and O'Malley framework and guidance from the Joanna Briggs Institute. The study was conducted online between November 2024 and March 2025, utilizing the PubMed, ScienceDirect, and Springer databases. The review process consisted of several stages: identifying the research question, identifying relevant literature sources, applying inclusion and exclusion criteria, screening the selected studies, and extracting and presenting the data.

The research question was formulated using the PCC (Population–Concept–Context) framework to refine the study focus.[13] The main question being: "What is the impact of oral frailty on the quality of life of older adults?" and the description of PCC components is presented in Table 1. Relevant literature was identified through a systematic search of online databases, guided by predefined inclusion and exclusion criteria. The inclusion criteria were as follows: (1) articles published within the last five years (2020–2025); (2) studies employing validated instruments to assess both oral frailty and quality of life; (3) studies with a minimum sample size of 30 participants aged over 60 years; (4) articles written in

Table 1 PCC Explanation

Population	Individuals aged >60 years exhibiting oral frailty
Concept	The impact of oral frailty on the quality of life among older adults
Context	Measurement instruments for assessing oral frailty and the quality of life among older adults across different countries

English; (5) full-text publications available through open access; and (6) observational study designs, including cohort, cross-sectional, and case-control studies.

Limiting the publication timeframe to the past five years was intended to ensure scientific currency and relevance, capture the most recent advancements in the definition and measurement of oral frailty, and minimize potential bias arising from older studies that may no longer reflect current evidence. The inclusion of a minimum sample size of 30 is grounded in statistical principles, particularly the Central Limit Theorem, which ensures greater stability and reliability of parameter estimates in quantitative analyses.[14] The age threshold of >60 years aligns with international epidemiological standards, as the World Health Organization identifies this age group as the onset of older adulthood, when age-related physiological decline and frailty become more pronounced.[15]

The exclusion criteria for this review included studies that did not provide information related to indicators of oral frailty or its impact on the quality of life in older adults. The screening process followed the PRISMA-ScR flow diagram to refine the selection of relevant literature based on the inclusion and exclusion criteria. The literature search utilized the following keywords: "(oral AND frailty AND/OR assessment) AND/OR (quality AND of AND life) AND (elderly OR geriatric AND community)". The final stage of the review involved presenting the extracted data in a summary table of findings.

Literature Screening Using the PRISMA-ScR Flow Diagram

The identification stage was conducted through keyword searches, yielding a total of 2349 articles (671 from PubMed, 1511 from ScienceDirect, and 167 from Springer). After abstract screening, 2215 articles were excluded. Further screening of the remaining 134 articles considered duplication, year of publication, language, and full-text accessibility, resulting in 93 eligible articles. The eligibility assessment then reviewed the content of each article based on the study objectives and relevance, leading to the inclusion of 17 articles for final analysis (Figure 1). The characteristics of the included studies are presented in Table 2.

Literature Characteristics

The included studies were conducted in various countries, including Japan,[16–19,21,24,26,28] Taiwan,[22,27,30] China,[9] Australia,[23] Finland,[29] Netherlands,[25] Singapore,[31] and Ecuador.[20] All articles analyzed were observational in design, consisting of 12 cross-sectional studies and 5 cohort studies. The cohort studies varied in duration, with the longest being the second and third articles from the Kashiwa Study (2012–2021), followed by article nine (2007–2015), and articles ten and fourteen (2016–2018). Based on the publication years within the last five years, the studies were published in 2020,[19,21,24,25] 2021,[18,23,26,29,30] 2022,[22,27] 2023,[16,17,20,31] 2024,[9] and 2025,[28] with the highest number of publications occurring in 2021.

Population Characteristics

The studies included in this review reported sample sizes ranging from 144 to 2031 participants, with an age distribution between 60 and 84 years. The overall sample composition consisted of 56.3% women and 43.7% men. A total of 13 articles involved older adults who were in generally good health and did not present cognitive impairments (including those residing in nursing homes), while the remaining 4 articles included older adults who were receiving care in healthcare facilities such as cognitive care centers, long-term care facilities, public health centers, and hospitals. A summary of the oral frailty components assessed and the key findings from each study is presented in Table 3.

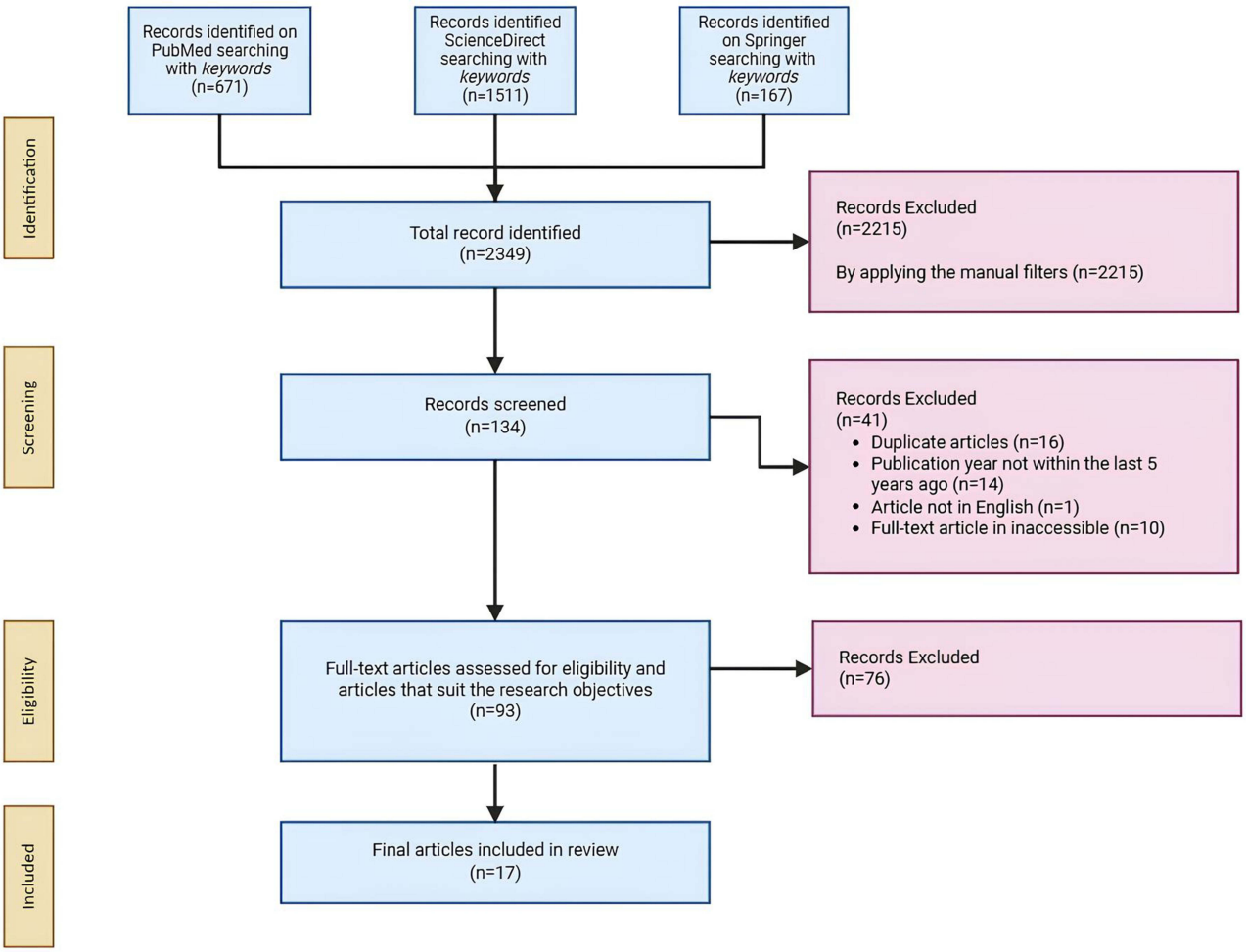

Figure 1 A graph showing a search diagram following the PRISMA-ScR flowchart.

Results

Components of Oral Frailty and Quality of Life

Among the 17 included articles, the most prevalent components of oral frailty were poor oral hygiene (52.1%), having fewer than 20 teeth (40.1%), oral pain (35.1%), difficulty chewing hard foods (28.9%), and xerostomia (28.4%). The distribution of

Table 2 Identification of Research Articles

Article Code	Article Title	Authors	Research Method	Location	Sample Size
1	An analysis of influencing factors of oral frailty in the elderly in the community[9]	Hu et al 2024	Cross-sectional study	China	380
2	Oral frailty as a risk factor for mild cognitive impairment in community-dwelling older adults: Kashiwa study[16]	Nagatani et al 2023	Cohort study	Kashiwa, Japan	1.140
3	Oral frailty five-item checklist to predict adverse health outcomes in community-dwelling older adults: A Kashiwa cohort study[17]	Tanaka et al 2023	Cohort study	Kashiwa, Japan	2.031
4	Oral frailty and gait performance in community-dwelling older adults: findings from the Takashimadaira study[18]	Iwasaki et al 2021	Cross-sectional study	Itabashi, Tokyo, Japan	1.082
5	Association of eating alone with oral frailty among community-dwelling older adults in Japan[19]	Ohara et al 2020	Cross-sectional study	Tokyo, Japan	722

(*Continued*)

Table 2 (Continued).

Article Code	Article Title	Authors	Research Method	Location	Sample Size
6	Prevalence of frailty and its association with oral hypofunction in older adults: a gender perspective[20]	Cruz-Moreira et al 2023	Cross-sectional study	Guayaquil, Ecuador	589
7	Association between Oral Frailty and Nutritional Status among Community-Dwelling Older Adults: the Takashimadaira Study[21]	Iwasaki et al 2020	Cross-sectional study	Itabashi, Tokyo, Japan	1.054
8	Association between Oral Frailty and Physical Frailty among Rural Middle-Old Community-Dwelling People with Cognitive Decline in Taiwan: A Cross-Sectional Study[22]	Kuo et al 2022	Cross-sectional study	Chiayi County, Taiwan	308
9	Appetite, oral health and weight loss in community-dwelling older men: an observational study from the Concord Health and Ageing in Men Project (CHAMP)[23]	Takehara et al 2021	Cohort study	New South Wales, Australia	542
10	A Two-Year Longitudinal Study of the Association between Oral Frailty and Deteriorating Nutritional Status among Community-Dwelling Older Adults[24]	Iwasaki et al 2020	Cohort study	Itabashi, Tokyo, Japan	466
11	Self-reported oral health problems and the ability to organize dental care of community-dwelling elderly aged ≥75 years[25]	Bakker et al 2020	Cross-sectional study	Netherlands	1.622
12	Association between Oral Frailty and Dietary Variety among Community-Dwelling Older Persons: A Cross-Sectional Study[26]	Hoshino et al 2021	Cross-sectional study	Kusatsu, Gunma, Japan	481
13	Physical Frailty and Oral Frailty Associated with Late-Life Depression in Community-Dwelling Older Adults[27]	Lin et al 2022	Cross-sectional study	Taiwan	1.100
14	Association between oral health-related quality of life and physical frailty among community-dwelling older adults: A 2-year longitudinal study[28]	Kakuta et al 2025	Cohort study	Tosa Town, Shikoku, Japan	144
15	Relationship between Fried's frailty phenotype and oral frailty in long-term care residents[29]	Hiltunen et al 2021	Cross-sectional study	Helsinki, Finland	349
16	Oral Health as a Predictor of Physical Frailty among Rural Community-Dwelling Elderly in an Agricultural County of Taiwan: A Cross-Sectional Study[30]	Kuo et al 2021	Cross-sectional study	Chiayi County, Taiwan	903
17	Association of Oral Health with Frailty, Malnutrition Risk and Functional Decline in Hospitalized Older Adults: A Cross-Sectional Study[31]	Chew et al 2023	Cross-sectional study	Singapore	465

other oral frailty components is illustrated in Figure 2. The reviewed literature indicates that oral frailty adversely affects multiple domains of quality of life, including decreased physical function,[9,17,20,22,27–31] malnutrition,[21–24,29,31] limited dietary variety,[19,26,30] cognitive decline,[16,19,27] reduced physical strength[9,22] and social interaction,[9,19] impaired communication abilities,[9] increased risk of aspiration pneumonia,[22] and a greater need for complex care, as illustrated in Figure 3.[25]

Instruments of Oral Frailty and Quality of Life Assessment

The instruments used to assess oral frailty included the Oral Frailty Six Measures,[16,18,19,21,24,26] Oral Frailty Index-8 (OFI-8),[9,22] Oral Health Assessments Tools,[9,30] Oral Frailty Five-Item Checklist,[17] and Oral Hypofunction Assessment.[20] Quality of life and related domains were measured using the Physical Frailty Phenotype and Criteria,[16,17,20,28,29] Study of Osteoporotic Fracture Index,[22,27,30] Mini-Nutritional Assessment Short Form (MNA-SF),[9,21,24] Mini-Mental State Examination (MMSE),[16,29] and Dietary Variety Score (DVS).[19,26] The OFI-8 instrument demonstrated a Cronbach's α coefficient of 0.692,[32] while the OF-5 instrument showed an intraclass correlation coefficient (ICC) of 0.82.[33] Detailed information regarding each instrument used in the reviewed studies is presented in Table 4.

Risk Factors

Based on the literature, several risk factors have been identified for oral frailty in older adults (Figure 4). These include advanced age,[9,16–21,26–28] comorbidities,[9,17,18,22,26,27,30,31] depressive symptoms or cognitive impairment;[17,19,21,22,24,27,30,31] sex/gender,[9,17,20,23,26,28] lower educational attainment,[16,18,26,30] low levels of physical activity,[17,18,21,24,31] smoking habits,[18,26,28] polypharmacy,[21,27,31] living alone or experiencing loneliness,[17,19,28] high levels of dependency,[16,25] the use of dentures,[23,25] infrequent dental visits,[17] and inability to perform oral self-care.[27]

Table 3 Results of Data Presentation

Article Code	Age Range	Sample Status	Sample Size		Oral Frailty and Quality of Life				Main Findings	Risk Factors	Conclusion
			Man	Woman	Oral Frailty Instruments	Components	Result	Quality of Life Instruments			
1	≥60	Elderly individuals in stable health who had lived in the area for more than 6 months	209	171	Oral Frailty Index-8 (OFI-8); Oral Health Assessment Tool (OHAT)	Number of remaining tooth Reduced chewing ability Xerostomia	14 teeth 109 (28,6%) 132 (34,7%)	The Frailty Scale from International Association for Nutrition, Health, and Aging; Mini Nutritional Assessment Short Form (MNA-SF); Pittsburgh Sleep Quality Index (PSQ)	The relationship between physical and oral frailty originates from the decline in physical function, activity, and strength, which leads to limited social interaction, reduced communication, and weakening of the oral muscles. These factors contribute to decreased chewing ability, swallowing function, and tongue mobility—symptoms commonly associated with oral frailty[9]	Older age, female sex, and the presence of comorbidities or chronic diseases (such as Alzheimer's disease, cardiovascular disease, stroke, and diabetes)	Impactful
2	≥65	Older adults in good condition, without mild cognitive impairment, with a mix of urban and rural communities in the Kashiwa area	719	691	Oral Frailty Six Measures and Criteria	Number of remaining tooth (<20) Reduced chewing ability Dysphagia Low tongue pressure Low articulatory and motoric skill Difficulty chewing hard foods	415 (29.4%) 330 (23.4%) 265 (18.8%) 420 (29.8%) 212 (15.0%) 209 (14.8%)	Mini-Mental State Examination (MMSE); Physical Frailty (PF) Scale Fried	Respondents with new-onset mild cognitive impairment (MCI) exhibited greater oral frailty, characterized by having fewer than 20 remaining teeth, reduced tongue pressure strength, and difficulty chewing hard foods. Tongue pressure strength and chewing difficulty were strongly associated with new-onset MCI. The hazard ratio for developing new-onset MCI was significantly higher in the group with oral frailty compared to those without oral frailty[16]	Older age, lower educational level, and lower level of independence	Impactful
3	68-79	Older adults in good condition, without mild cognitive impairment, with a mix of urban and rural communities in the Kashiwa area	993	1.038	Oral Frailty Five-Item (OF-5) Checklist	Number of remaining tooth (<20) Reduced chewing ability Dysphagia Xerostomia Low articulatory and motoric skill	646 (31,8%) 321 (15,8%) 392 (19,3%) 563 (27,7%) 809 (38,8%)	Physical frailty by Cardiovascular Health Study Index Criteria/ PF Scale Fried	Of the 2031 eligible participants, 799 individuals (39.3%) with an OF-5 score ≥2 showed a significant increase in the prevalence and new-onset of physical frailty. Participants with oral frailty alone still faced an elevated risk, whereas those with both oral and physical frailty exhibited the highest hazard ratio, highlighting the impact of oral frailty on overall health[17]	Older age, female sex, lower educational level, living alone, low income, infrequent physical activity, reduced cognitive function, presence of comorbidities (such as hypertension, diabetes, osteoporosis, malignant neoplasms, and heart disease), and infrequent dental visits	Impactful

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4	≥70	Older adults in good condition, who were participants in the Takashimadaira Study (a dementia-friendly community)	439	643	Oral Frailty Six Measures and Criteria	Number of remaining tooth (<20) Reduced chewing ability Dysphagia Low tongue pressure Low articulatory and motoric skill Difficulty chewing hard foods	413 (38.2%) 217 (20.1%) 264 (24.4%) 219 (20.2%) 235 (21.7%) 241 (22.3%)	Assessment of gait parameters by Kawai et al	Participants with oral frailty exhibited slower walking speed, shorter step length and swing phase, wider step width, and longer double support duration. Poorer gait performance was observed in older adults with oral frailty compared to those without oral frailty[18]	Lower educational level, high smoking prevalence, low physical activity, poor nutritional status, visual impairment, and chronic pain in the lower back and knees	Impactful
5	≥70	Older adults in good condition, who were participants in the Takashimadaira Study (a dementia-friendly community)	277	445	Oral Frailty Six Measures and Criteria	Number of remaining tooth (<20) Reduced chewing ability Dysphagia Low tongue pressure Low articulatory and motoric skill Difficulty chewing hard foods	269 (37.3%) 281 (38.9%) 180 (24.9%) 139 (19.3%) 73 (10.0%) 142 (19.7%)	Dietary variety score (DVS), eating alone questionnaire	Eating alone was significantly associated with oral frailty status and the variety of foods chosen among community-dwelling older adults in urban areas of the Tokyo metropolitan region. This association suggests that oral health may be an important factor not only in nutritional status but also in social functioning[19]	Older age, low dietary variety, high prevalence of eating alone, and elevated Geriatric Depression Scale (GDS) scores	Impactful
6	66-82	Older adults in good condition without mild or severe cognitive impairment, residing in public or private nursing homes in Guayaquil, Ecuador	206	383	Oral hypofunction assessment	Reduced occlusal force Dysphagia Xerostomia Difficulty chewing hard foods Poor oral hygiene	451 (76.6%) 137 (23.3%) 280 (47.5%) 442 (75.0%) 480 (81.5%)	PF Scale Fried	The prevalence of physical frailty and pre-frailty among institutionalized older adults was relatively high and was associated with a decline in oral function, particularly among women[20]	Sex/gender (woman)	Impactful

(*Continued*)

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Table 3 (Continued).

Article Code	Age Range	Sample Status	Sample Size		Oral Frailty and Quality of Life				Main Findings	Risk Factors	Conclusion
			Man	Woman	Oral Frailty Instruments	Components	Result	Quality of Life Instruments			
7	≥70	Older adults in good condition, who were participants in the Takashimadaira Study (a dementia-friendly community)	428	626	Oral Frailty Six Measures and Criteria	Number of remaining tooth Chewing ability Dysphagia Tongue pressure Oral-DDK "ta" Difficulty chewing hard foods	23 teeth 4028 mm2 263 (25.0%) 32.5 kPa 6.0 times/s 235 (22.6%)	Mini Nutritional Assessment®-Short Form (MNA®-SF); Serum Albumin Level Assessment	The prevalence of malnutrition among older adults was relatively high, with more severe conditions observed in those with oral frailty[21]	Older age, low income, low physical activity, reduced JST-IC competence, poor appetite, higher depressive symptoms, polypharmacy, and cognitive impairment	Impactful
8	75-84	Older adults with cognitive decline receiving care at a cognitive care center in Chiayi, a rural area of Taiwan	77	231	Oral Frailty Index-8 (OFI-8)	Reduced chewing ability Dysphagia Xerostomia Difficulty chewing hard foods Denture use Ulceration	135 (43.8%) 94 (30.5%) 79 (25.6%) 167 (54.2%) 238 (77.3%) -	The Study of Osteoporotic Fracture (SOF) index; Clinical Dementia Rating (CDR)	A total of 60.4% of older adults were at high risk of oral frailty, and 80.7% had a physical status of pre-frailty or frailty. Swallowing difficulties were associated with slower walking speed and limited mobility. Reduced masticatory function was linked to poor nutrient absorption. Swallowing disorders may also be related to aspiration ability and nutritional status in older adults[22]	Greater cognitive impairment and a higher number of chronic diseases	Impactful
9	≥70	Older men who were participants in the Concord Health and Ageing in Men Project (CHAMP)	542	-	Oral health assessment of CHAMP study	Number of remaining tooth (<20) Reduced chewing ability Dysphagia Xerostomia	301 (55,5%) 152 (28,0%) 65 (12,0%) 346 (63,8%)	Evaluation of weight loss	These findings indicate that participants with fewer than 20 remaining teeth and those with poorer appetite are at higher risk of weight loss or decline. Tooth loss may increase the risk of swallowing difficulties, leading to changes in food preferences, avoidance of certain food types, and reduced energy intake[23]	Body mass index (BMI)	Impactful

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10	≥70	Older adults in good condition, who were participants in the Takashimadaira Study (a dementia-friendly community)	191	275	Oral Frailty Six Measures and Criteria	Number of remaining tooth (<20) Reduced chewing ability Dysphagia Low tongue pressure Low articulatory and motoric skill Difficulty chewing hard foods	150 (32.2%) 78 (16.7%) 108 (23.2%) 81 (17.4%) 69 (14.8%) 70 (15.0%)	Mini Nutritional Assessment®-Short Form (MNA®-SF)	Older adults with oral frailty are at high risk of poor nutritional status[24]	Low daily activity, elevated depressive symptoms, and poor appetite	Impactful
11	≥75	Community-dwelling older adults in good condition who were part of the Embrace (SamenOud) program	725	897	Oral status and oral health problem questionnaire	Edentulous Reduced chewing ability Dysphagia Xerostomia Oral pain	722 (44.5%) 92 (5.7%) 36 (2.2%) 190 (11.7%) 100 (6.2%)	Groningen Frailty Indicator (GFI); The INTERMED for Elderly Self-Assessment (IM-E-SA)	Xerostomia and oral pain were the most commonly reported oral health problems among community-dwelling older adults, aside from edentulism. Older adults with complex care needs were reported to have more oral health problems[25]	High dependency on caregivers	Impactful
12	≥65	Older adults in good condition, with assessments conducted at a Public Health Center Kota Kusatsu, Gunma	198	283	Oral Frailty Six Measures and Criteria	Number of remaining tooth (<20) Reduced chewing ability Dysphagia Low tongue pressure Low articulatory and motoric skill Difficulty chewing hard foods	90 (18,7%) 26 (5,4%) 50 (10,4%) 62 (12,9%) 26 (5,4%) 38 (7,9%)	Dietary Variety Scale (DVS)	The severity of oral frailty was significantly associated with the food variety score among community-dwelling older adults. These findings suggest that the food variety score may be useful in identifying the impact of oral frailty on nutritional status[26]	Older age, sex, lower educational level, smoking habits, and medical history (malignant neoplasms, stroke)	Impactful

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Table 3 (Continued).

Article Code	Age Range	Sample Status	Sample Size		Oral Frailty and Quality of Life				Main Findings	Risk Factors	Conclusion
			Man	Woman	Oral Frailty Instruments	Components	Result	Quality of Life Instruments			
13	≥65	Older adults in good condition, randomly selected from senior recreation centers in urban, rural, and mountainous areas	315	785	Oral conditions assessment (with Ohkuma Questionnaire reference)	Occlusal support Reduced chewing ability Dysphagia Xerostomia Low articulatory and motoric skill Poor oral hygiene	531 (48,3%) 295 (27,1%) 148 (13,5%) 128 (11,6%) 261 (23,7%) 0.94 ± 0.02	15-item Geriatric Depression Scale (GDS-15); SARC-F	Physical frailty and oral frailty were significantly associated with late-life depression among older adults[27]	Older age, polypharmacy, poor oral hygiene, sarcopenia, and insomnia	Impactful
14	≥65	Older adults in good condition who were part of the Tosa Longitudinal Aging Study (TLAS)	50	94	General Oral Health Assessment Index (GOHAI); oral function assessment	Number of remaining tooth (<20) Chewing ability Dysphagia Low articulatory and motoric skill	59 (41,3%) 53.6 ΔE*ab 29 (20.3%) 5,4 times/s	PF Scale Fried	The results of this study showed that higher baseline GOHAI scores (indicating better oral health-related quality of life, OHRQoL) were significantly associated with a lower incidence of physical frailty over a two-year period[28]	Older age, male sex, lower food variety, eating alone, and a history of smoking	Impactful
15	≥70	Older adults residing in long-term care facilities in Helsinki, Finland; part of the FINORAL (Finnish Oral Health Study in Long-Term Care) study	97	252	Oral Frailty Signs Assessment	Edentulous Reduced chewing ability Dysphagia Low articulatory and motoric skill Oral pain	94 (26,9%) 88 (25,2%) 65 (18,6%) 236 (67,6%) 107 (30,6%)	PF Scale Fried	Oral frailty has been shown to be associated with overall health, nutritional status, physical function, as well as difficulties in chewing and swallowing[29]	Low body mass index (BMI)	Impactful
16	≥65	Older adults in good condition, without mental disorders or cognitive decline	288	615	The self-perceived oral health (SPOH); oral health assessment tool (OHAT)	Number of remaining tooth Xerostomia Poor oral hygiene Oral pain (toothache) Ulceration (in tongue)	8,9 218 (24,1%) 593 (65.7%) 618 (68.4%) 352 (38,9%)	The Study of Osteoporotic Fracture (SOF) index; Short Portable Mental Status Questionnaire (SPMSQ)	This study reported that personal perceptions of oral health, along with limited food variety, self-reported dental status, number of remaining teeth, toothbrushing frequency, and OHAT scores, were associated with indicators of physical frailty based on the SOF scale and could predict the onset of physical frailty[30]	Lower educational level, comorbidities (such as diabetes, heart disease, and arthritis), and cognitive dysfunction	Impactful
17	≥65	Patients were admitted acutely to the General Surgery Department following referral from the Emergency Department (ED) at the hospital, with assessments conducted within 24 hours of hospital admission	216	249	Revised Oral Assessment Guide (ROAG)	Dysphagia Saliva (thick/absent) Poor oral hygiene Ulceration	25 (5,3%) 38 (8,1%) 42 (9,0%) 11 (2,3%)	Clinical Frailty Scale (CFS); Nutritional Screening Tool (NST); Katz Activity Daily Living (ADL) Scale	Participants at high risk of oral health problems based on ROAG status exhibited the highest levels of physical frailty, functional decline, and risk of malnutrition[31]	Major Illness	Impactful

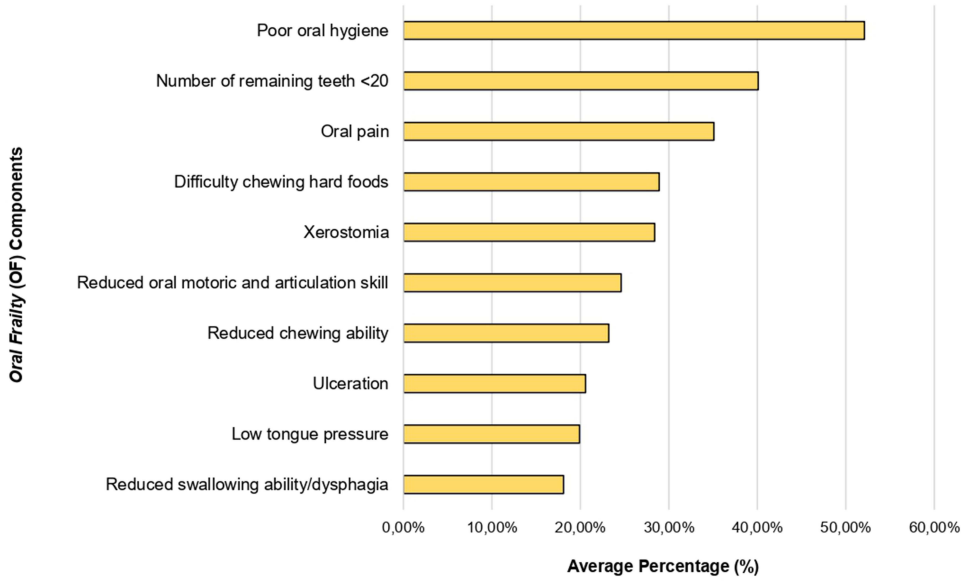

Figure 2 A graph showing the average of oral frailty components reported in the literature.

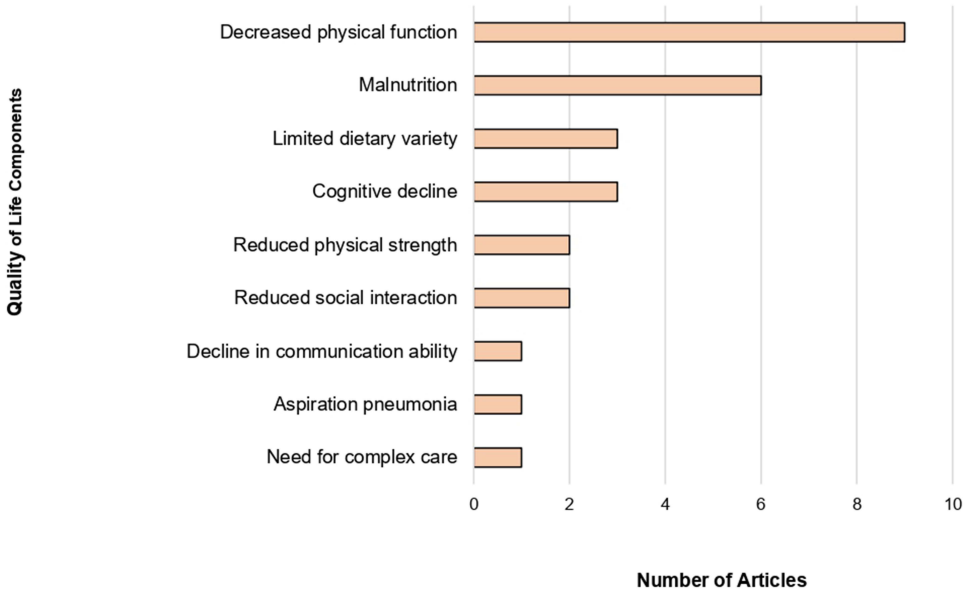

Figure 3 A graph showing affected components of quality of life based on the literature.

Discussion

Oral frailty refers to the age-related deterioration of orofacial structures, characterized by the decline of various oral functions such as difficulty chewing hard foods, swallowing problems, reduced tongue pressure, impaired articulation, and decreased salivary flow leading to dry mouth.[10] Most of the reviewed studies were conducted in countries with a high proportion of older adults and relatively long life expectancy. The manifestation of oral frailty and its impact on quality of life may vary across countries due to differences in cultural practices and national health policies.

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Table 4 Oral Frailty and Quality of Life Instruments

Variable	Instruments	Articles	Reliability
Oral Frailty	*Oral frailty six measures*	2, 4, 5, 7, 10, 12	–
	Oral frailty index-8 (OFI-8)	1, 8	(Cronbach's α coefficient = 0.692)[25]
	Oral Health Assessment Tools	1, 16	(Cronbach's α coefficient = 0.82)[20]
	Oral frailty five-item (OF-5) checklist	3	(Content validity (mean IOC: +0.92); reliability (ICC: 0.82))[31]
	Oral hypofunction assessment	6	–
Quality of Life	*Physical frailty phenotype and criteria*	2, 3, 6, 14, 15	(Area Under the Curve (AUC) sebesar 0.841 for woman and 0.779 for man)[32]
	Study of Osteoporotic Fracture (SOF) index	8, 13, 16	(Cohen's Kappa value of 0.608)[33]
	Mini-Nutritional Assessment Short Form (MNA®–SF)	1, 7, 10	(Cronbach's α coefficient = 0.80)[34]
	Mini-Mental State Examination (MMSE)	2, 15	(Cronbach's α coefficient = 0.742)[35]
	Dietary Variety Score (DVS)	5, 12	–

Cultural and National Health Policy in the Literature

Japan appeared most frequently as the study setting in the reviewed literature. With 29.3% of its population aged ≥65 years and a life expectancy of 85 years, the included samples were predominantly older adults. Cultural factors noted in Japan include the "yaeba" (crooked-tooth) beauty norm, use of non-fluoridated toothpaste, and smoking habits. Manifestations of oral frailty commonly reported were having <20 teeth, low tongue pressure, dysphagia, reduced mastication, impaired articulation, and difficulty eating hard foods. In addressing oral health issues among the elderly population, the Japanese government pioneered the term "oral frailty" in 2013 by creating the "8020 campaign" policy (maintaining at least 20 teeth at the age of 80), improving dental health services, promoting dental health, and conducting oral frailty check-ups.

Taiwan was the second most common study location identified in the literature. Older adults constitute 19.2% of the population, with a life expectancy of 80.9 years, and most study participants were aged over 65 years. Cultural practices such as betel nut chewing affect oral health, and the predominant oral frailty manifestations reported were denture use, reduced masticatory ability, and oral pain. Taiwan's national health insurance system (NHIA) provides strong support for dental care services.

In China, older adults represent 15% of the population, with a life expectancy of 78.4 years, and study samples generally included individuals aged over 60 years. Common oral frailty conditions included reduced chewing ability and

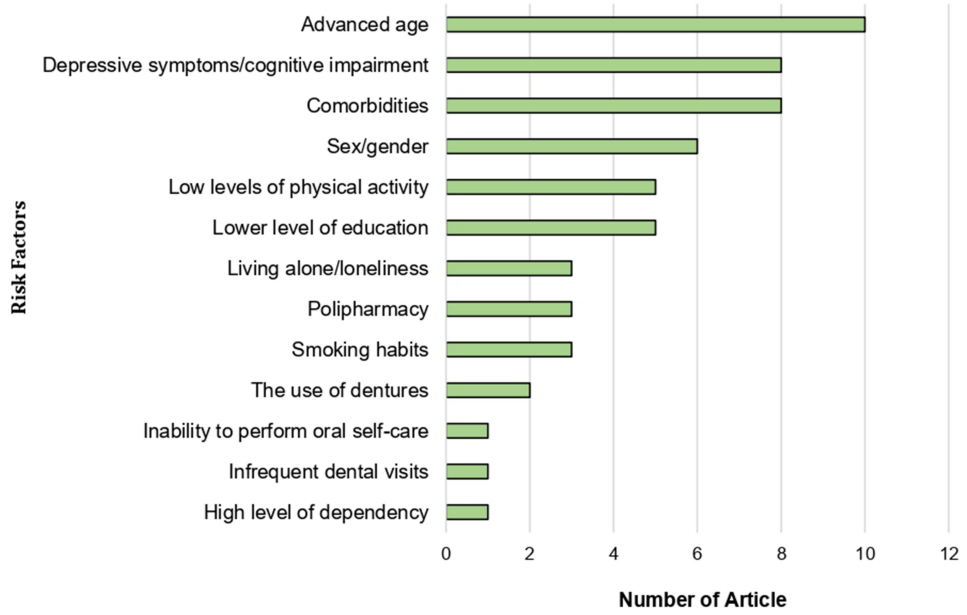

Figure 4 A graph showing risk factors identified in the literature.

xerostomia. High rates of smoking, alcohol consumption, and betel nut chewing were noted as cultural influences. To address these issues, the government implemented the China Oral Health Action Plan to improve the population's oral health.

Australia has an older-adult population of 16% and a life expectancy of 84.2 years, with study samples generally aged over 70 years. Common manifestations of oral frailty included xerostomia, denture use, and a low number of remaining teeth. Smoking prevalence is relatively high, and national policies such as *Healthy Mouths, Healthy Lives* aim to improve oral health and reduce disparities.

The Netherlands has 22.1% of its population aged older adults and a life expectancy of 82.4 years, with study participants typically over 75 years of age. Frequently reported oral frailty conditions included edentulism, xerostomia, and oral pain. Smoking is also prevalent among the Dutch population. To address aging-related health needs, the government implemented the Embrace (SamenOud) program—an integrated healthcare model designed to support older adults in aging at home for as long as possible.

Finland has 23.9% older adults and a life expectancy of 82.2 years, with study participants generally over 70 years old. Common oral frailty manifestations include reduced articulation and oral motor function, oral pain, and edentulism. Smoking and alcohol consumption are relatively prevalent. Finland's National Programme on Ageing 2030 emphasizes the well-being and oral health of older adults.

Singapore has 13.1% older adults and a life expectancy of 84 years, with study samples typically above 65 years. Frequently reported oral frailty conditions include poor oral hygiene and thick or absent saliva. Smoking prevalence is also notable National initiatives include the Oral Health Movement (OHM) 8020, which promotes maintaining at least 20 natural teeth by age 80 through early screening and intervention beginning at age 40. Additionally, the Teledentistry Oral Care for Seniors (T-DOCS) program provides preventive dental care for older adults with mobility limitations or those residing in nursing homes.

Ecuador has 9.5% older adults and a life expectancy of 77.7 years, with study samples ranging from 66 to 82 years of age. Commonly reported oral frailty manifestations included poor oral hygiene, inadequate occlusal function, and difficulty chewing hard foods. Cultural practices such as tooth sharpening, tooth blackening, and high sugar intake from childhood were noted. National policies include insurance coverage and the Program of All-Inclusive Care for Elders (PACE), which provides dental care for individuals aged over 65 years.

Literature Findings

Based on the characteristics of the literature, cross-sectional studies are more commonly used than cohort studies. In measuring cause-and-effect relationships, cohort studies are better than cross-sectional studies.[34]

Cross-sectional studies typically examine the influence of oral frailty on another variable at a single point in time. The quality-of-life variables used in such studies include nutritional status, quality of life, walking ability, ability to eat independently, oral frailty status by gender, physical frailty, ability to maintain oral hygiene, dietary variety, late-life depression status, and functional decline. The limitations of this type of study, as mentioned in the literature, include only examining the relationship between variables at a single point in time, single-center studies, and difficulty in drawing causal conclusions.

Literature on cohort studies includes follow-up stages in their research. In the included literature, articles on cohort studies examine several variables, such as the incidence of new-onset mild cognitive impairment in participants with physical frailty and oral frailty, weight loss of ≥5% during follow-up, nutritional status during the follow-up period, and the incidence of frailty. Nagatani et al reported a higher incidence of mild cognitive impairment in older adults with oral frailty. Similarly, Tanaka et al found that participants with both oral and physical frailty demonstrated the highest hazard ratios for adverse outcomes. Takehara et al noted that older adults with fewer than 20 teeth had a significantly increased risk of weight loss, while Iwasaki et al identified oral frailty as a predictor of malnutrition or poor nutritional status. The limitations of this type of research in the literature include the presence of participants who died or were absent during follow-up sessions, which can lead to results that do not align with reality (survival bias), and unmeasured confounding factors that may influence the outcomes.

The Impact of Oral Frailty on Quality of Life

According to the reviewed literature, oral frailty has a significant negative impact on the quality of life among older adults. Older adults with poor oral hygiene experience more oral health problems (dental caries, periodontal disease, and chewing disorders) due to bacterial accumulation. The presence of fewer than twenty remaining natural teeth, edentulism, or reduced occlusal function has been linked to various adverse outcomes, including impaired communication, reduced cognitive function, decreased muscle strength and walking ability, malnutrition, increased vulnerability to physical frailty, and a higher risk of chronic diseases.[9,16,18,19,30] According to research by Iwasaki et al, oral health issues can cause occlusal disorders and changes in mandibular position, which can alter head and neck posture and disrupt body posture control and balance. Malocclusion may also reduce afferent sensory input from masticatory muscles and dentoalveolar ligaments, thereby compromising postural stability. Inadequate dental occlusion also negatively affects muscle tone performance, which in turn influences gait ability.[18] Oral pain, characterized by discomfort or pain in the oral cavity, negatively affects general health and contributes to a decline in quality of life. According to Bakker et al, the most common complaints regarding oral pain are toothaches and ill-fitting dentures.

Xerostomia, or dry mouth due to reduced salivary secretion, has been associated with diminished quality of life in older adults. This condition increases the risk of dental caries, interferes with denture adaptation, reduces taste sensitivity, impairs bolus formation, and contributes to physical frailty.[9,19,23,27] Reduced chewing ability due to a limited number of teeth causes the elderly to avoid certain types of food, leading to malnutrition, as well as weakening of the chewing muscles (masseter, temporalis, medial pterygoid, lateral pterygoid).[9,17,18,21–23,28,29] Abnormal habits such as unilateral chewing dominance cause muscle imbalance that disrupts systemic balance.[18] Low swallowing ability or dysphagia causes malnutrition, decreased walking ability, aspiration pneumonia, late-life depression or dementia, and an increased risk of physical frailty.[18,22,27,29] Low tongue pressure makes it difficult to form and move food boluses toward the pharynx, so older adults may experience malnutrition due to a reduced variety of nutritious foods they can consume.[16,27] Low articulation and motor skills are associated with various severe health impacts, including the inability to communicate and cognitive decline.[22] Difficulty chewing hard foods also limits the intake frequency of nutritious items that require adequate mastication—such as meat, vegetables, and fruits—ultimately contributing to deficiencies in protein, vitamins, and dietary fiber.[18,22] Ulcerations in the oral cavity (lips, tongue, buccal mucosa) experienced by the elderly are associated with the severity of frailty.[31]

Overview of Oral Frailty and Quality of Life Measurement Instruments

Various literature studies have used different OF instruments. The most widely used instruments are the Oral Frailty Six Measures and the Oral Frailty Index-8 (OFI-8). The Oral Frailty Six Measures or Oral Frailty Index-6 (OFI-6), developed by Tanaka et al (2018), consists of six components (number of teeth, chewing ability, maximum tongue pressure, articulation and oral motor function, difficulty chewing, and subjective difficulty swallowing). Scoring 1–2: oral pre-frailty, score ≥3: oral frailty. The advantages of this instrument include fewer OF components assessed, more objective assessment indicators, and reduced susceptibility to the assessor's subjective perception. The disadvantages include the need for specialized equipment and professional skills from the assessor to measure OF objectively. Based on the literature, there are no studies on the reliability of the OFI-6 instrument. This instrument is suitable for use in healthcare facilities (clinical setting).[35]

The Oral Frailty Index-8 (OFI-8) was developed by Tanaka et al (2021) and consists of eight subjective questions regarding the ability to chew solid or hard foods, swallowing ability, use of dentures, experiencing dry mouth, social activities (leaving the house), ability to chew certain types of food, toothbrushing habits, and visits to the dentist. Scoring: 0–2 points indicate low OF risk, 3 points indicate moderate OF risk, and ≥4 points indicate high OF risk. The advantages of this instrument include covering various aspects of OF, ease of use, providing a comprehensive assessment of OF, and not requiring special tools for measurement or examination. The limitation of this instrument is that it is subjective, based solely on "yes" or "no" answers. This instrument is suitable for rapid screening and assessment of OF risk in the communities.[35] The OFI-8 instrument has a Cronbach's α coefficient of 0.692. According to the interpretation of Cronbach's alpha values by Konting et al (2009), a value of 0.692 falls into the "acceptable" category.[36,37] This suggests

that the items within the instrument are sufficiently correlated to be considered reliable for research use. The OF-5 instrument has an intraclass correlation coefficient (ICC) of 0.82. According to the interpretation of ICC values by Koo et al (2016), an ICC value of 0.82 falls into the "good reliability" category.[38] This value indicates that the instrument provides stable and consistent scores across repeated measurements or different raters.

Quality of life is a multidimensional construct encompassing physical, psychological, and social domains, and therefore is assessed using a variety of measurement tools. Among the most frequently used instruments in the literature is the Physical Frailty Phenotype Criteria developed by Fried et al (2001), which includes five components: self-reported exhaustion, low physical activity, unintentional weight loss, slow walking speed, and weak handgrip strength. A score of ≥3 indicates frailty, while a score of 1–2 is classified as pre-frailty. This aligns with the Japan Dental Association (2019), which states that the OF concept is adapted from Fried's (2001) frailty model, emphasizing that frailty encompasses not only physical decline but also complex interactions between physical, psychological, and social aspects.[39] Mafla et al (2025) further supported this relationship, reporting that higher frailty scores were significantly associated with poorer oral health–related quality of life (OHRQoL) and other quality of life dimensions.[40]

Explanation of Risk Factors

Oral frailty (OF) in the elderly has various interrelated risk factors. With increasing age, there is a decrease in alkaline phosphatase activity in periodontal ligament cells and a reduction in the regenerative capacity of osteogenic activity, leading to gingival atrophy, demineralization, and softening of the cementum. These conditions increase the elderly's susceptibility to oral health issues such as periodontitis and dental caries.[21] Studies have reported that poor oral health is associated with systemic diseases, including diabetes and cardiovascular conditions.[21,26] Elderly individuals with depressive symptoms may find it challenging to maintain their health, particularly oral hygiene. Xerostomia caused by medication use is frequently observed in older adults taking antidepressants.[27] Several studies also suggest that the risk of developing oral frailty is higher in older women than in men, possibly due to estrogen-related changes in gingival tissues among postmenopausal women.[9] Educational level influences individuals' knowledge regarding proper oral hygiene practices, nutritional intake, and overall health maintenance.[30] Older adults who wear dentures to restore masticatory function may still be at risk for oral frailty. Factors that can affect denture function include adaptation and denture quality.[41] In denture use, alveolar bone tissue undergoes faster resorption, making the denture base less adaptive, especially if the elderly individual has chronic conditions such as diabetes.[9] The mucosa attached to dentures is often colonized by oral fungi (*Candida albicans*), leading to denture stomatitis.[9] Ill-fitting dentures may also cause pathological changes to the mucosa, including traumatic ulcers, fungal infections, angular cheilitis, and soft tissue hyperplasia.[42] A common reason why older adults infrequently visit dental care providers is the belief that oral health is not a priority, especially when compared to other perceived urgent health concerns.[25] Frail older adults with physical and cognitive impairments have limited ability to care for themselves and access dental care.[31]

Preventive Strategies and Solutions

Appropriate solutions must be implemented to reduce the prevalence of oral frailty, which significantly contributes to the decline in quality of life, so that older adults can maintain a healthy and relatively independent lifestyle. Older adults with a reduced number of remaining teeth should undergo oral rehabilitation through the fabrication of dentures to restore oral function and enhance self-confidence, thereby facilitating improved social interaction.[43] Proper denture maintenance is essential to ensure functionality. If dentures no longer fit properly, a re-evaluation is necessary.[42] Declining masticatory function and swallowing ability can also be improved through exercises.[44] This aligns with the findings of Wada et al, which demonstrated that mouth-opening exercises significantly improve swallowing function.[45] A study by Dalum et al (2024) also reported that the use of a device called the "oral screen" can enhance lip pressure and reduce the likelihood of sarcopenic dysphagia.[46,47] For older individuals with diminished tongue pressure, a training device known as "Pecopanda" may be used to strengthen the tongue by repeatedly pressing the tongue against the device's tongue press pad five times. This is supported by the study of Yano et al (2020), which found significant improvements in both maximal tongue pressure and geniohyoid muscle area following tongue muscle exercises.[48] Additionally, older adults with impaired motor and articulatory function can perform oral exercises by rapidly and clearly pronouncing syllables

formed by the lips (/ma/, /ba/, or /pa/), the tip of the tongue (/ta/ or /te/), and the posterior tongue (/ka/), with loud and distinct vocalization.[44]

A study by Irie et al indicated that oral frailty can be prevented through early detection of trivial signs, maintaining good oral hygiene, routine dental consultations every six months, and adopting a healthy lifestyle.[49] Detection of "trivial signs" includes walking well (walking without assistance), chewing well (chewing properly due to well-functioning chewing muscles), and eating well (eating properly and maintaining a balanced diet). Maintaining oral hygiene involves brushing teeth at least twice a day for a minimum of two minutes. A healthy lifestyle enhances the immune system and can be achieved by consuming nutritious food, limiting excessive sugar intake, getting adequate rest, engaging in physical activity, and staying well-hydrated. Collaboration between healthcare professionals and local governments can yield effective strategies to reduce the prevalence of OF among the elderly. These strategies include educating the elderly on proper toothbrushing techniques, monitoring nutritional status, and improving access to dental healthcare services.[30,31]

The findings of this study offer valuable public health implications, increasing public awareness, particularly among the elderly and their caregivers, about maintaining oral health, emphasizing that older adults have the right to receive regular dental and oral health care, and encouraging the development of policies to implement public health programs aimed at preserving oral function.

The limitations of this study include the fact that the scoping review research method does not evaluate the quality of included literature and only compiles information from various study designs and methodologies. This approach does not provide specific answers to research questions but rather offers a broad overview of the impact of oral frailty and quality of life based on the available literature. Most of the included studies employed a cross-sectional design. Although this method is relatively quick and easy to implement, it has limited ability to establish causal relationships. These findings demonstrate a notable geographical bias, as most of the included studies were conducted in East Asia. Consequently, the results may not be fully generalizable to broader or more diverse populations. The consolidated evidence presented in this review suggests that oral frailty may exert a substantial influence on the quality of life of older adults, with this pattern observed across studies utilizing various assessment instruments, including the OFI-6. Despite these indications, heterogeneity in study designs and limited psychometric evaluations of the available instruments, particularly the OFI-6, constrain the ability to fully characterize these associations. Moreover, the absence of robust longitudinal data further limits the understanding of potential causal pathways linking oral frailty to functional decline and diminished well-being. Taken together, these observations underscore the need for more rigorous methodological approaches, comprehensive validation of oral frailty assessment tools, and longitudinal investigations to clarify the long-term implications of oral frailty within geriatric populations.

Conclusion

The findings of the scoping review in this study indicate that oral frailty has a negative impact on the quality of life of the elderly. The most frequently reported components of oral frailty were poor oral hygiene, the presence of fewer than 20 natural teeth, and oral pain. The primary impacts of oral frailty on quality of life included reduced physical function, malnutrition, limited dietary variety, and cognitive impairment. The Oral Frailty Six Measures and the Physical Frailty Phenotype were the most commonly used assessment tools; the OFI-6 is suitable for a clinical setting, whereas the OFI-8 is appropriate for rapid community screening. Advanced age, comorbidities, and depressive symptoms are the most commonly reported risk factors for oral frailty. As older adults are entitled to adequate oral healthcare, dental professionals are essential in managing oral frailty to promote overall well-being. Early detection facilitates timely interventions, minimizes the risk of malnutrition and systemic frailty, and helps reduce the associated economic and social burdens in aging populations.

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Disclosure

The authors report no conflicts of interest in this work.

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