

Oral fragility and its factors in older people

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ABSTRACT

Older persons frequently have poor dental health, which can hinder vital daily activities and increase frailty. Using six distinct electronic databases, we conducted a systematic evaluation of publications on the connection between oral health variables and frailty in older persons. We looked for studies that had been published since the creation of the databases. Overall, met the eligibility conditions, including various markers of poor oral health related to frailty, which we categorised

into four separate categories: degradation of oral motor skills, deterioration of oral health status, problems of chewing, swallowing, and saliva, and oral discomfort. The most common factors linking frailty to oral health status degradation were the few surviving teeth. reduced chewing, swallowing, and saliva production; oral diadochokinesis; occlusal force; and reduced oral motor skills, particularly masticatory function.

Key Words: *Smoking; Oral cancer; Tobacco; Oral leukoplakia*

INTRODUCTION

The local demographic is changing, and it is expected that the ageing population will increase rapidly. These unsettling population growth forecasts for the ensuing ten years make one wonder if resources will be sufficient to meet the needs of over 9 billion people in terms of health. From a generational standpoint, older individuals will significantly contribute to the need for health care because they are typically more fragile than younger people and have declining general welfare and quality of life. A bio physiological condition called frailty, which impacts many daily tasks, is typified by dwindling physiological reserves and decreased resilience to stress-inducing stimuli. According to the construct derived from the Cardiovascular Health Study, this important intermediate status of ageing can be classified as either a unidimensional entity based on physical or biological factors, or as a non-specific multidimensional status based on a deficit accumulation model with interconnected domains [1].

Frailty truly has a multidimensional and multisystem nature, making a person significantly more vulnerable to a number of bad health-related things, including dementia, falls, accidents, disability, hospitalization, and mortality. A sub analysis of population-based research utilizing physical phenotypic measures was supported by a pooled prevalence of frailty, according to a major systematic review and meta-analysis of data in different nations. We discovered a prevalence of physical frailty in an older Italian population using the same unidimensional physical frailty phenotype [2, 3]. Clinicians and researchers alike must take into account various domains, including physical, cognitive, social or biopsychosocial, and nutritional frailty

phenotypes, due to the complex and complicated character of frailty. Furthermore, there is no universal agreement on the developing concerns of domain prioritization in frailty contexts. Decreased life expectancy and the frail senior population make poor oral health a novel idea; this is why there is growing scientific interest in the subject. The oral frailty phenotype, from a multiitem perspective, is a novel construct proposed as a conceptualization of age-related gradual loss of oral function, driven by a set of impairments that worsen oral daily functions, including tooth loss, poor oral hygiene, insufficient dental prostheses, or difficulty chewing related to age-related changes in swallowing. A decline in oral function along with a decline in cognitive and physical abilities, such as oral microbiota and Alzheimer's disease neurodegeneration, has been referred to as oral frailty [4]. From a single-item standpoint, the mouth cavity serves a number of crucial purposes, including. dental health is crucial to overall wellbeing, as well as to quality of life and self-perception. Older persons frequently have oral function impairments, and through a variety of paths, this unfavorable aspect of ageing can indirectly interact with a number of frailty categories. Age-related functional oral degradation, which is distinguished by poor dental hygiene, insufficient dental prosthesis, and dietary inadequacies and increases the risk of nutritional frailty, is an obvious illustration of this link. The relationship between dental health and frailty has been the subject of numerous studies, with the conclusion that oral health issues in older age may constitute significant risk factors for a frailty syndrome. Oral motor skills, discomfort, degeneration of hard and soft oral tissues, and a decreased capacity to eat or swallow may also interact with the oral frailty disease. Systematic reviews have also

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revealed a connection between frailty and poor oral health, specifically having few remaining teeth and decreased oral function [5]. However, given that many reports on this topic have only recently been published or have only been longitudinal studies, these systematic reviews of oral health and frailty in older age only included a small number of studies (only two reports of an established frailty model and ten reports of physical frailty components). The majority of studies on this subject used disparate qualitative measurements, leading to a significant variety of the protocols, making it challenging to compare results. It is challenging to determine dental health's precise contribution to frailty because of its intricacy and multifaceted character[6]. In this systematic review, we sought to synthesise the variables considered when examining elements of older people's oral health and their propensity to predict frailty risk.

Search tactics and evaluation standards

The PRISMA item checklist served as our guide as we adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards. The protocol was created and made PROSPERO-registered. We looked through the databases of PubMed, MEDLINE, Embase, Scopus, Ovid, and Google Scholar to locate original research publications on the link between exposure to poor dental health and frailty. Since the creation of databases, articles written in every language have been searched for. The outcomes, including any validated frailty instruments, were also included in the identified exposure variables, as were any signs of poor oral health, regardless of the measuring method (e.g., clinical examination or self-reported).

Assessment of quality

Using the National Institutes of Health quality evaluation toolkits for quantitative studies, paired investigators independently evaluated the methodological quality of the included studies. According to the criteria listed in the toolkit (i.e. study question, population, participation rate, inclusion criteria, sample size justification, time of measurement of exposure or outcomes, timeframe, extent of exposure, defined exposure, masking, repeated exposure, defined outcomes, loss to follow-up, and confounding factors), the studies were given ratings of high (good), moderate, or poor. Disagreements on the included studies' methodological quality were settled through discussion until an agreement was reached, or by a fourth investigator. The overall quality of the evidence in the included studies was evaluated using a modified version of the GRADE (Grading of Recommendations Assessment, Development, and Evaluation) assessment system. The degree to which poor oral health indicators and frailty outcomes are correlated, the methodological quality and design of the studies, the consistency, directedness, precision, size, and (if applicable) dose-response gradient of the estimates of effects across the evidence base were all taken into account. Similar to a GRADE rating system, the evidence was given a grade of very low, low, moderate, or high.

Overall standard of the evidence

Studies were rated as having moderate (seven studies) to high methodological quality based on an analysis of all the reports included in this systematic review. The appendix contains a summary of the quality evaluation of the studies and lists study components

with higher or lower risk ratings.

Studies were associated with a high risk of bias and all were associated with a high risk of detection bias because blinded evaluation was not employed. Sample size justification (selection bias) was the most common way that bias was found. The participation rate and various levels of exposure in studies were linked to a higher risk of bias. The number of teeth (very strong association, moderate quality of evidence), decreased masticatory function (very strong association, moderate quality of evidence), difficulty chewing (very strong association, moderate quality of evidence), deterioration of oral health (strong association, moderate quality of evidence), oral diadochokinesis (strong association, moderate quality of evidence), and reduced occlusal space (occlusal space) were the oral health factors most associated with frailty in older age. The link between tooth or mouth discomfort and frailty also demonstrated a very low strength of correlation and extremely low quality of evidence for oral symbiosis.

DISCUSSION

Regardless of the type of frailty assessment instrument, we discovered four separate groups of variables, covering 12 determinants of poor oral health that were assessed from the standpoint of contributing to frailty exposure. (ie, scales, indexes, scores, questionnaires, instruments, evaluations, screening, and indicators). The chosen studies had a significant level of discrepancy since, for this purpose, the exposure variable required to be taken into account while ignoring the inconsistent nature of frailty assessment instruments. For the categories of oral health status degradation and oral motor skills deterioration, the overall quality of the evidence was rated as moderate. There are various explanations for the connection between dental health and frailty. The first conceivable avenue is the interaction between inadequate nutrition, food intake, and meal choices based on dental health. (eg, remaining teeth). According to the available data, poor nutrition may be a serious risk for the emergence of frailty. The relationship between dental health and frailty may also be mediated by nutritional status, which may make eating challenging. It has been previously documented that oral fragility and malnutrition among older persons living in communities are related cross-sectionally. Other potential intermediate psychosocial factors in the connection between poor oral health and frailty should be investigated. For instance, the social repercussions of declining dental health and their impact on quality of life, given that loneliness may also lead to the onset of frailty. A cariogenic diet, diminished salivary flow, widespread dental decay, advanced periodontal disease, and oral dysesthesias have all been linked to late-life depression. Furthermore, late-life depression can affect both frailty and oral health status. The importance of socioeconomic determinants in both frailty and dental health may be another mechanism by which oral health and frailty are related.

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