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Bačun, B¹; Galić, D²; Pul, L³; Kuiš, D⁴; Tomas, M⁵.**ADMINISTRATIVE INFORMATION**

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 March 2024 and was last updated on 11 March 2024.

INTRODUCTION

Review question / Objective This review's objective is to examine the findings from various studies on oral signs and 14 symptoms related to vitamin deficiency.

Rationale Vitamins are crucial for both the prevention and the treatment of various oral diseases. Additionally, for effective treatment and recovery, a thorough oral examination and a multidisciplinary approach are required to identify oral signs and/or symptoms and link them to diseases and vitamin-deficient conditions.

Condition being studied Vitamins are a group of chemical molecules necessary for regular metabolic processes. Reduced vitamin intake or poor absorption can lead to hypovitaminosis or vitamin deficiency.

METHODS

Search strategy A literature search of the National Medical Library was conducted in October 2023 using the electronic databases PubMed and Scopus. The search included Medical Subject Headings and keywords. Keywords used for the search were: vitamin A deficiency, vitamin B deficiency, vitamin C deficiency, vitamin D deficiency in oral disease, vitamin E deficiency, vitamin K deficiency, and vitamin deficiency in oral disease.

Participant or population Human studies.

Intervention Hypovitaminosis in oral disease.

Comparator Oral signs and symptoms related to vitamin deficiency.

Study designs to be included The evaluation covered cohort studies, follow-up studies, longitudinal studies, retrospective studies, controlled clinical trials, randomized controlled trials, cross-section studies, and original research.

Eligibility criteria The evaluation covered cohort studies, follow-up studies, longitudinal studies, retrospective studies, controlled clinical trials, randomized controlled trials, cross-section studies, and original research. The following criteria had to be met for an article to be eligible for this review: articles published in English; research published between 2017 and 2023; original studies; and studies conducted on human subjects. Criteria for rejection of articles were: articles not written in English; papers published before 2017; case reports; and studies conducted on animals.

Information sources A literature search of the National Medical Library was conducted in October 2023 using the electronic databases PubMed and Scopus. The search included Medical Subject Headings and keywords. Keywords used for the search were: vitamin A deficiency, vitamin B deficiency, vitamin C deficiency, vitamin D deficiency in oral disease, vitamin E deficiency, vitamin K deficiency, and vitamin deficiency in oral disease.

Main outcome(s) Use of different vitamins to prevent or treat oral diseases.

Quality assessment / Risk of bias analysis Before screening, duplicated articles (350 entries) were removed. Titles and abstracts were used to filter a total of 210 articles. Articles that weren't relevant to this systematic review were excluded after titles and abstracts were evaluated (193). 17 articles were selected as a result of full-text analysis. 15 studies were included in this study after two articles (one due to the year of publishing, and the other, being a case report) were eliminated. Figure 1 represents the process of elimination.

Strategy of data synthesis This review has elements of statistical data analysis, methodology comparison, and evidence analysis. This study uses preferred reporting items for systematic reviews, meta analysis (PRISMA) guidelines and PICO criteria.

Subgroup analysis 17 articles were selected as a result of full-text analysis. 15 studies were included in this study after two articles (one due to the year

of publishing, and the other, being a case report) were eliminated.

Sensitivity analysis Different studies' outcomes were compared on the oral manifestations concerning vitamin deficiency, and the use of vitamins to prevent or treat oral diseases.

Country(ies) involved Croatia.

Keywords hypovitaminosis; oral cavity; oral disease.

Contributions of each author

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