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Clustering of Oral Disease Symptoms and Signs in a Colombian Population

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Abstract

Objective: The aim of this study was to estimate disease pattern clusters and co-occurrences of oral signs and symptoms in a Colombian population.

Methods: A cross-sectional study was carried out through a telephone survey amongst 1155 people registered in the telephone directory from Pasto, Colombia. The calls were made from July to November 2019. A 14-item self-report questionnaire about signs and symptoms related to oral diseases that included socio demographic characteristics was employed. Descriptive and multivariable analyses such as hierarchical clustering, multidimensional scaling, and generalized linear models were used to determine co-occurrences in different sex and age strata.

Results: Age- and condition-specific clusters of signs and symptoms were identified, while sex differences were limited. Calculus and denture sore mouth were related in 18- to 34-year-olds; tooth loss and calculus in 35- to 54-year-olds, and teeth holes or pits (dental caries) and dental abscess in those aged 55 years and older. We found stronger associations between periodontal disease (bleeding gums) and dental caries (odds ratio [OR], 2.484; 95% confidence interval [CI], 1.812-3.405; P < .001) as well as grinding/clenching and facial tension (OR, 7.162; 95% CI, 5.227-9.814; P < .001).

Conclusions: Age-specific clustering of signs and symptoms and diagnostic patterns were present in this Colombian cohort.

Keywords: Bruxism; Cluster analysis; Dental caries; Multidimensional scaling analysis; Periodontal disease; Signs and symptoms

Introduction

A *sign* is an indicator of sickness that the expert perceives; however, a *symptom* is a manifestation of ailment obvious to the sufferers themselves. The sign is goal proof of disease, whilst a symptom may additionally be subjective. Signs and signs and symptoms assist the fitness expert to apprehend and discover a contemporary fitness hassle and hyperlink it to a condition; moreover, some predict the kingdom of fitness whilst others exhibit the records of a patient. The potential to become aware of delicate signs and symptoms and bodily signs and differentiate them performs an equally vital function in controlling a disease, as men and women use signs and symptoms and signs to information illness-regulation behaviors [1,2].

Every person has an individual perspective of illness and its signs and symptoms. Such a standpoint may additionally be influenced by means of complicated elements such as subculture or spirituality, socioeconomic conditions, or personality. However, the remote evaluation of unique signs and symptoms and signs may additionally no longer enable to comprehensively expose the relation between them and their effect on health. Instead, a systematic evaluation of the community co-occurring signs and symptoms and symptoms, that is, their clustering, may additionally be required. In dentistry, sufferers can self-assess positive symptoms and signs and symptoms when they open their mouth or become aware of different signs and symptoms such as terrible odor, overcrowding, or bleeding [3]. Most prominently, they might also journey ache of their teeth. Self-reported oral fitness (SROH) is broadly used to decide oral fitness in surveys, and a huge vary of research verified SROH measures to be legitimate and reflecting the authentic scientific status. A necessary gain of the usage of self-reported oral fitness is the ease of series (eg, by using smartphone interviews as a substitute of in-person assessments) and behavior (eg, accumulated through lay human beings as an alternative than professionals).

Methods

Study design, settings and sample

A cross-sectional study about used to be carried out through a telephone survey amongst humans registered in the telephone directory from Pasto, Colombia. From this directory, systematic random sampling used to be performed, ensuing in 4618 calls being made over 5 months (July to November 2019). Of these, 17% did no longer reply at all and 58% refused to take part due to the fact they did no longer have time or they did no longer prefer to supply private information. The survey response price from calls made in this duration was once 25% (1155 individuals) [4]. In case the telephone wide variety belonged to a large team of individuals, solely one man or woman (usually the first individual who answered the smartphone without when teens or personnel such as housemaids answered) was once allowed to participate. Verbal consent used to be bought earlier than beginning the survey.

Inclusion standards have been human beings aged 18 years or older, men or females, and having a legitimate telephone number. Calls

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with humans who had a detectable cognitive impairment as properly as calls with humans that had interferences (bad telephone reception) in the second of the survey had been excluded [5].

Measures and procedures

A questionnaire was defined with items about common signs and symptoms that were easily detectable; the instrument was then consented by dental clinicians from the dental clinic at Universidad Cooperativa de Colombia, Pasto, Colombia. This self-report 14-item questionnaire included oral conditions, such as "specks (aphthae)," "denture sore mouth," "bleeding gums," "calculus," "teeth mobility," "gingival recession," "teeth holes and pits (dental caries)," "stabbing dental pain," "dental abscess," "tooth loss," "dental trauma," "overcrowding teeth," "grinding/clenching," and "facial tension". For all items, the answer was coded as a dichotomous variable ("yes" and "no"). In order to obtain a higher number of participants, the telephone survey was designed to be as simple as possible. The completion time needed to complete the survey was between 4 and 6 minutes [6].

The questionnaire was once pretested on 30 volunteers attending the dental health center at Universidad Cooperativa de Colombia, Pasto, Colombia, to consider whether or not the questions have been clear and may want to be answered quickly [7]. To consider if the questionnaire was once comprehensive, three "yes/no" questions and 1 "open" query have been requested ("I recognize the question," "I apprehend however an exchange wants to made in this question," "I do now not recognize this question," "What exchange wishes to be made in this question?"). After this pretesting process, phrases such as "aphthae", "dental caries," and "muscles contraction" had been included in the questionnaire.

Statistical analysis

Frequencies and percentages have been estimated to decide the distribution of sociodemographic and signal and signs and symptoms variables. An impartial chi-square check was once carried out to look at variations amongst oral prerequisites in unique demographic subgroups. Hierarchical age- and sex-stratified cluster analyses had been employed to decide the relationship of signal and symptoms [8], with a digital distance between zero and 25 used for assessing the proximity of symptoms and symptoms. Multidimensional scaling used to be additionally age- and sex-stratified to discover an illustration of the least-squares amongst these variables in a 2-dimensional house (D1- and D2-axis) and to visualise relationships with lowest distortion and Kruskal's stress, implying similarity (suggested fee of <0.10). Additionally, affiliation of covariates with three consequences (dental caries, periodontal sickness assessed as bleeding gums, and bruxism) had been estimated the use of generalized linear models. All symptoms and signs had been entered into the fashions mutually with intercourse and age variables and then sequentially eliminated in accordance to their affiliation and P price ($P < .2$) via a backward removal method. Missing statistics did no longer occur. $P< .05$ used to be regarded statistically significant. SPSS v. 27 (IBM) used to be used for statistical analysis [9].

Results

The sample comprised 1155 individuals from Pasto, Colombia. Amongst them, 464 participants were male (40.2%) and 691 were female (59.8%); 564 (48.9%) were 18 to 34 years old, 391 (33.8%) were 35 to 54 years old, and 200 (17.3%) were 55 years or older. Further, 597 (51.7%) and 558 (48.3%) belonged to a low and middle socioeconomic status, respectively; 1065 (92.2%) lived in Pasto (capital city of Nariño department), and 90 individuals (7.8%) resided in other places. 23 participants (2.0%) did not have any education, 248 (21.5%) had studied at primary school, 506 (43.8%) finished high school, and 378 (32.7%) had a university degree. Overall, 1062 (91.9%) had a health insurance (44.6% subsidized and 47.3% nonsubsidized) and 1021 (88.4%) of the individuals reported having a religion [10].

Discussion

Based on self-reported signs and symptoms and symptoms, we discovered that 77% of the sampled populace perceived to have dental caries, 68% bleeding gums and 40% calculus (i.e., signs and symptoms of periodontal disease), 46% stabbing ache and 16% dental abscess (i.e., signs and symptoms and signs of pulpal and periapical diseases), and 28% teeth grinding (i.e., bruxism). In different populations the place the prevalance of oral ailments have been evaluated a range of prerequisites in a similar fashion prevailed. For instance, the occurrence fees of dental caries had been between 47% and 84% in Norway, Kuwait, and Brazil. The presence of periodontal ailment diverse from 43% to 91% in Nepal residents. Additionally, 27% of the Taiwanese had pulp and periapical diseases, whilst 14% and 37% of the Brazilians and Turkish, respectively, in this vary of age, exhibited bruxism [11].

Co-occurrence of oral stipulations is possibly and has been located via the existing study, too, perhaps routed in frequent threat elements triggering now not one however numerous conditions. When sufferers attend a hobbies dental visit, they generally document signs and symptoms and signs and symptoms they have perceived for a while; assessing these signs and symptoms and signs and symptoms and their co-occurrence may additionally assist clinicians to extra comprehensively consider and recognize patients' oral fitness status. Our descriptive evaluation confirmed few versions in clustering by means of intercourse and indicated marked variations in clustering and association with the aid of age as nicely as circumstance (dental caries, periodontal disorder assessed as bleeding gums and bruxism). Age- and condition-specific assessments need to be regarded in scientific routine [12].

A wide variety of findings require discussion. We found that facial anxiety and grinding persistently clustered in all a long time and independently of different prerequisites as signs of bruxism. Showing regular associations throughout subgroups highlights the robustness of our findings and shows that clustering analyses can yield rewarding outcomes that are in settlement with medical reasoning. However, interestingly, in girls facial anxiety and grinding clustered with different symptoms and symptoms, whilst in male these have been impartial from others. These signs of bruxism are associated to stress and anxiety, which may additionally be extra often stated in women. They may also have an effect on now not solely this situation however different illnesses due to the fact of their biopsychosocial components [13].

Conclusion

Dentists should assess co-occurring signs and symptoms of diseases, comprehensively covering their complex associations. Age-specific clusters may warrant age-specific diagnostic patterns.

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Conflict of Interest

The authors declare that they have no conflicts of interest.

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