Why is Mouth Self-Examination Still Not Recommended for Early Detection of Oral Cancer and Oral Potentially Malignant Disorders?

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Por que o Autoexame da Boca ainda não é Recomendado para Detecção Precoce de Câncer Bucal e das Alterações Orais Potencialmente Malignas?

¿Por qué aún no se Recomienda el Autoexamen Bucal para la Detección Temprana del Cáncer Bucal y de Trastornos Bucales Potencialmente Malignos?

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INTRODUCTION

Early diagnosis of oral cancer is crucial for favourable prognosis, higher survival rate and improvement of the patients' quality of life. Because oral cancer is often asymptomatic with various morphologies, identification at early stages is challenging. Oral cancer (OC) can arise from oral potentially malignant disorders (OPMD)[1,2], as leukoplakia, erythroplakia, proliferative verrucous leukoplakia, oral lichen planus, lichenoid lesions, oral submucous fibrosis, and when affecting lips vermillion, actinic cheilitis[3]. In fact, not all OPMD will turn into carcinoma. However, it is undeniable that quite frequently, some of these alterations will undergo malignancy[4].

Mouth self-examination has been discussed for years as a possible tool for early detection of OC, although it has never been implemented either by the Brazilian Health System (SUS), the Brazilian Public Health Service, or elsewhere. Previous studies have concluded that mouth self-examination, despite its high specificity, has low sensitivity to detect OPMD, and therefore should not be considered for early diagnosis of these conditions[5]. However, this hypothesis could be rediscussed if the standardization of methodologies and techniques were universally applied for this practice, and this possibility was the underlying reason of this opinion article.

The importance of self-examination lies in the possibility of detecting these OPMD, both for early diagnosis of lesions that have already transformed, and treatment, which would prevent the malignancy process. This scope reinforces the relevance of oral self-inspection considering that, although an oral squamous cell carcinoma (OSCC), the most frequent OC is not necessarily preceded by an OPMD, an oral mucosa with a clinically normal appearance may have significant potential molecular alterations favoring OSCC development, known as "field cancerization"[3].

DEVELOPMENT

Literature findings on the accuracy of self-examination for early diagnosis of OC are conflicting. Chaudhari et al.[6], for example, in a study with 2,257 individuals, showed that mouth self-examination is a reliable and effective tool for early detection of OC[6]. However, in another article with 167,915 individuals, Sankaranarayanan et al.[7] concluded that self-examination could reduce 34% of mortality with a real potential to prevent deaths from OC worldwide, although they have only considered individuals with high risk of malignancy[7]. Inconsistent evidences prevented the Brazilian Ministry of Health to recommend mouth self-examination for early screening of OC and OPMD[8].

Walsh et al.[9], in an update of a Cochrane systematic review previously published by the same group[9], evaluated the diagnosis accuracy of different methods of early detection of OC and OPMD, including oral self-examination[10]. Four studies with 35,059 individuals as part of a screening program developed in India[11], Malaysia[12], United Kingdom[13] and Brazil[14] were selected for their review.

Walsh et al.[10] assessed the methodological quality of the studies (using QUADAS-2 tool), which includes four domains: patient selection, index test, reference standard and participant flow and timing. The value of diagnosis

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accuracy was expressed as sensitivity and specificity. The results revealed that the four studies presented low risk of bias in the patient selection domain. Two of them which only investigated patients with higher risk of OC[9] were concerning in relation to the applicability of this same criteria. Furquim et al.[14] recruited and assessed only patients with Fanconi's anaemia and Scott et al.[13] selected 45-year old or older smokers.

The same authors[10] also judged the risk of bias of the index test (proper mouth self-examination) as uncertain in three studies. In two of them it was not reported whether the self-examination results were interpreted without knowledge of the reference test[11,13] and in a third study there was not enough information about the target condition and whether a pre-specified threshold was used. The authors assessed the applicability of the study by Furquim et al. as 'high concern'[14] because the participants were not instructed or trained for mouth self-examination. The other four studies were judged to be of 'low concern'[9].

It is worth questioning whether skilled lay people would be able to perform oral self-examination in search of OPMD or OSCC considering that even solidly experienced diagnosticians sometimes do not recognize obvious potentially malignant lesions leading to failure of early diagnosis, which is the primary purpose of this approach.

Only one study presented low risk of bias in the reference standard domain[13], mainly because it considered that the reference test must be carried out by a specialist dentist and done before the mouth self-examination properly. Three other studies were judged as 'uncertain'[11,12,14], as there was no information on whether the reference test was interpreted without knowledge of the index test. Regarding the applicability, three studies were of low concern[12-14]. One study used trained health professionals and was considered as uncertain concern[11], since the report states that health professionals' knowledge was confirmed by a cancer specialist. However, it does not report how this confirmation was carried out. Indeed, Walsh et al.[10] point out that the implicit threshold of illness of trained health professionals is different from the one made by an experienced specialist in stomatology[10].

Actually, the analysis conducted by Walsh et al.[10] related to the flow of patients and the time between tests showed that most of the studies had low risk of bias[12-14], except the study by Elango et al.[11], which presented a significant number of continuity loss and exclusions of patients without proper compliance[11]. Overall, they judged that three studies presented uncertain risk of bias[12-14,] and one study was considered as high risk[11].

The applicability concerns were considered high for two studies[14,13], uncertain for one study[11] and low for the study of Ghani et al.[12]. Additional evaluations showed that sensitivity was lower than specificity[11,12] in two of the four studies, indicating that oral self-examination was not effective in diagnosing OC and consequently should be not recommended. In the other two studies, the sensitivity and specificity values were similar[14,13], suggesting that self-examination should be recommended for early diagnosis of OSCC and OPMD. However, both studies were classified as high concern[10]. Therefore, the authors concluded that heterogeneity caused by different populations, methodologies and analysis presented so far makes evidence related to mouth self-examination indirect, inconsistent, and imprecise. The main discrepancies and inconsistencies can be evaluated in Table 1.

Due to poor high-quality scientific evidences of the studies to support the use of self-examination for screening programs and surveillance for early diagnosis of OC, its value cannot be validated so far[3]. Therefore, the need to implement health education for the general population to stimulate the individuals to seek dental care more frequently is mandatory. In addition, the elaboration of booklets, lectures, and education programs to identify scientific references-based risk factors and OPMD seems to be relevant for population awareness about the identification of OC.

On the other hand, it is important to consider the limitations of the study, because, although very relevant, the scope of Walsh's study is somehow restricted due to the small number of reports included and analysed (n=4)[10]. This situation leads to false negatives results that cannot be concretely determined as real. The great heterogeneity of the methodologies applied in all studies reveals the weakness of the methodological globality that is necessary for a statistical and reliable verdict on mouth self-examination. However, future methodological consensus may demonstrate that mouth self-examination could be trustable and efficient in public screening. The authors continue to pursue new evidences to evaluate novel methodologies that can circumvent these difficulties to establish a simple and cheap approach to reduce the incidence rates of oral cancer in Brazil.

CONCLUSION

The lack of evidence with high degree of certainty prevents the indication of oral self-examination for screening programs and surveillance of OPMD for the lay population. Health professionals need to remain attentive for signs able to identify both OSCC and OPMD.

As soon as the methodological setbacks that compromise the efficacy of self-examination have been overcome, this methodology may be considered a possible, reliable and an efficient screening strategy, especially for most vulnerable populations intrinsically prone to oral cancer or continuously exposed to traditional risk factors, who sometimes have their diagnosis significantly

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Table 1. Characteristics of the studies evaluated by Walsh et al., 2021

Study	Sampling	Participants (N)	Index Test (Mouth self-examination)				Target and Reference					Characteristic and Proportion Flow		Observation
			Index test	Positiveness Description	Calibration and Training	Examiners Blindness	Target Condition	Reference Standard (RS)	Positiveness Description	Calibration Training	Examiners Blindness	Received Index test and/or RS	Received only RS	
Elango et al.[11]	≥10yo, from 33 subunits living in two Panchayats, India	48,080	Brochure designed for the population	White, red, non-healing ulcers, trismus and burn sensation	Instructions in a specific brochure	Not described	Oral Cancer and OPMD	CHWs recruited from study population	Presence or absence of OPMD	One-month training on oral cancer centre	Not stated	34,766 were fully evaluated (73.2%)	Made by CHW	High prevalence of OPMD and OSCC in the area where participants were recruited and a high rate of missing results since 27% did not conclude their participation in the study
Ghani et al.[12]	Male subjects ≥18 yo	200	After training	White lesions, red lesions, ulcers, or swellings in their mouth	Provided by local dental surgeons who have been calibrated against the specialist	Not stated	Oral mucosal lesions	Oral medicine specialist	Presence of oral lesions or abnormalities	Specialist trained and calibrated in the diagnosis of oral lesions, for oral cancer	Not stated	Results of 96 participants. Characteristics not provided	None	-
Scott et al.[13]	≥ 45 yo; smoker and recruited by their general dentist practitioner	53	Leaflet made for heavy smokers and drinkers	Red or white patches, ulcers and swellings	Following the specific leaflet	After examination, dentists remain in the room and did not assist self-examination	White patches, ulcers lumps and swelling	Dentist examination	Presence or absence of OPMD	Not reported	Reference and index test	None	None	Patients formed a risk group and only 21.8% were fully evaluated
Furquim et al.[14]	≥ 18 yo Fanconi Anemia, bone marrow transplantation high risk of head and neck cancer	44	No training or instruction	Not explicitly reported, just presence or absence of abnormalities	Verbal instruction with a banner and educational pamphlet	Unclear	OPMD	Clinical examination by a specialist	Presence or absence of OPMD	Experienced specialist	Not stated	24.2% were not fully evaluated	Made by specialist	

Captions: CHW = community healthcare workers; OPMD = oral potentially malignant disorders; yo = years old.

delayed due to lack of information and access to health services. A systematically assisted oral self-examination approach may be imminent. In these cases, any possibility of early diagnosis can save the patients with OSCC or exponentially improve their quality of life.

CONTRIBUTIONS

Beatriz Nascimento Monteiro da Silva and José Alexandre da Rocha Curvelo contributed to the study design and wording of the manuscript. Ruteléia dos Santos Assumpção Barroso contributed to the acquisition and analysis of the data and critical review. João Vitor Silveira Azevedo contributed to the critical review. Andreia Cristina de Melo contributed to the acquisition and analysis of the data and critical review. Daniel Cohen Goldemberg contributed to the study design, interpretation of the results, wording and critical review. All the authors approved the final version for publication.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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REFERENCES

1. Sarode SC, Sarode GS, Tupkari JV. Oral potentially malignant disorders: precising the definition. Oral Oncol. 2012;48(9):759-60. doi: https://doi.org/10.1016/j.oraloncology.2012.02.025
2. Seoane J, Takkouche B, Varela-Centelles P, et al. Impact of delay in diagnosis on survival to head and neck carcinomas: a systematic review with meta-analysis. Clin Otolaryngol. 2012;37(2):99-106. doi: https://doi.org/10.1111/j.1749-4486.2012.02464.x
3. Warnakulasuriya S, Kujan O, Aguirre-Urizar JM, et al. Oral potentially malignant disorders: a consensus report from an international seminar on nomenclature and classification, convened by the WHO Collaborating Centre for Oral Cancer. Oral Dis. 2021;27(8):1862-80. doi: https://doi.org/10.1111/odi.13704
4. Aguirre-Urizar JM, Lafuente-Ibáñez de Mendoza I, Warnakulasuriya S. Malignant transformation of oral leukoplakia: systematic review and meta-analysis of the last 5 years. Oral Dis. 2021;27(8):1881-95. doi: https://doi.org/10.1111/odi.13810
5. Ghani WMN, Doss JG, Jamaluddin M, et al. Oral cancer awareness and its determinants among a selected Malaysian population. Asian Pac J Cancer Prev. 2013;14(3):1957-63. doi: https://doi.org/10.7314/apjcp.2013.14.3.1957
6. Chaudhari A, Hegde-Shetiya S, Shirahatti R, et al. Comparison of different screening methods in estimating the prevalence of precancer and cancer amongst male inmates of a jail in Maharashtra, India. Asian Pac J Cancer Prev. 201328;14(2):859-64. doi: https://doi.org/10.7314/apjcp.2013.14.2.859
7. Sankaranarayanan R, Ramadas K, Thomas G, et al. Effect of screening on oral cancer mortality in Kerala, India: a cluster-randomised controlled trial. Lancet. 2005;365(9475):1927-33. doi: https://doi.org/10.1016/s0140-6736(05)66658-5
8. Instituto Nacional de Câncer. Novas diretrizes para a detecção precoce do câncer de boca. Rede Câncer [Internet]. 2012[acesso 2024 jul 17];19:28-30. Disponível em: https://ninho.inca.gov.br/jspui/handle/123456789/15069
9. Walsh T, Liu JLY, Brocklehurst P, et al. Clinical assessment to screen for the detection of oral cavity cancer and potentially malignant disorders in apparently healthy adults. Cochrane Database Syst Rev. 2013;2013(11):CD010173. doi: https://doi.org/10.1002/14651858.cd010173.pub2
10. Walsh T, Warnakulasuriya S, Lingen MW, et al. Clinical assessment for the detection of oral cavity cancer and potentially malignant disorders in apparently healthy adults. Cochrane Database Syst Rev. 2021;12(12):CD010173. doi: https://doi.org/10.1002/14651858.cd010173.pub3
11. Elango KJ, Anandkrishnan N, Suresh A, et al. Mouth self-examination to improve oral cancer awareness and early detection in a high-risk population. Oral Oncol. 2011;47(7):620-4. doi: https://doi.org/10.1016/j.oraloncology.2011.05.001
12. Ghani WMN, Razak IA, Doss JG, et al. Mouth self-examination as a screening tool for oral potentially malignant disorders among a high-risk Indigenous population. J Public Health Dent. 2019;79(3):222-30. doi: https://doi.org/10.1111/jphd.12313
13. Scott SE, Rizvi K, Grunfeld EA, et al. Pilot study to estimate the accuracy of mouth self-examination in an at-risk group. Head Neck. 2010;32(10):1393-401. doi: https://doi.org/10.1002/hed.21341
14. Furquim CP, Pivovar A, Cavalcanti LG, et al. Mouth self-examination as a screening tool for oral cancer in a high-risk group of patients with Fanconi anemia. Oral Surg Oral Med Oral Pathol Oral Radiol. 2014;118(4):440-6. doi: https://doi.org/10.1016/j.oooo.2014.06.012

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