

Feasibility and Effectiveness of Screening Programs in Control of Oral Cancer

Abhinav Parakh¹, Sopan Singh¹, Milind Wasnik¹, Jayachandra Megalamanegowdru², Anubhuti Jain³ and Chandan Matsyapal³

¹Department of Public Health Dentistry, Government Dental College and Hospital, Raipur, Chhattisgarh, India

²Department of Public Health Dentistry, SJM Dental College and Hospital, Chitradurga, Karnataka, India

³Department of Public Health Dentistry, Rungta College of Dental Sciences and Research, Bhilai, Durg, Chhattisgarh, India

Corresponding author: Abhinav Parakh, Department of Public Health Dentistry, Government Dental College and Hospital, Raipur, Chhattisgarh, India, Tel: 09826431808; E-mail: drabhinavphd@gmail.com

Received Date: April 14, 2017; **Accepted Date:** May 03, 2017; **Published Date:** May 10, 2017

Citation: Parakh A, Singh S, Wasnik M, et al. Feasibility and Effectiveness of Screening Programs in Control of Oral Cancer. J Den Craniofac Res. 2017, 2:1

Abstract

Oral cancer is an alarming public health problem in certain parts of the world. The detection of small, early-stage oral cancer has been shown to lead to significantly reduced mortality and morbidity. Low- and middle-income countries have limited healthcare resources available for cancer screening and it is therefore critical that costs and benefits are assessed and that the most cost-effective approach is identified to maximize the utilization of available resources.

Keywords: Screening; Oral cancer; Prevention; Early detection

Introduction

Screening is a major public health activity, which aims to detect disease before symptoms appear or before the patient attends a health professional with the disease. Screening has the potential to save lives and improve quality of life through early diagnosis of serious conditions. As properly defined, screening encompasses an ongoing process of examination and referral at periodic intervals, applied to a defined population and managed most often by a regional or national program [1].

The basis of any screening test rests on the assumption that the early detection would permit for the appropriate interventions that can alter the natural history of the disease leading to a halt in the progression of the disease and hence helping in preventing the adverse implications of the disease. So, one can say that screening is basically a sort of secondary prevention. But before a screening program is to be implemented there is certain consideration which needs to be addressed. To propose a screening strategy the benefits should always outweigh the harms or loss associated with the plan. The factors that need to be looked into include cost

(equipment, manpower), ethical issues and efficacy of interventions.

Aims and objectives

The basic purpose of screening is to sort out from a large group of apparently healthy persons those likely to have the disease or at increased risk of the disease under study. To bring those who are "apparently abnormal" under medical supervision and treatment. Screening is carried out in the hope that earlier diagnosis and subsequent treatment favorably alters the natural history of the disease in a significant proportion of those who are identified as "positive".

Wilson and Jungner criteria for screening

Knowledge of disease

- The condition should be important
- There must be a recognizable latent or early symptomatic stage
- Natural course of condition, including development from latent to declared disease, should be adequately understood

Knowledge of test

- Suitable test or examination
- Test acceptable to population
- Case finding should be continuous (not just a "once and for all" project)

Treatment for disease

- Accepted treatment for patients with recognized disease
- Facilities for diagnosis and treatment available
- Agreed policy concerning whom to treat as patients

Cost considerations

Costs of case finding (including diagnosis and treatment of patients diagnosed) economically balanced in relation to possible expenditures on medical care as whole [2].

Screening for Oral Cancer could be easily carried out by a simple oral examination or with use of specific tests to detect the changes in the oral cavity which would help in prediction with a high likelihood of development of the disease in the near future. Hence patient identified as at risk of having the disease may then be referred to specialist for definitive diagnosis.

Validity is determined by the ability of test to correctly identify or measure what the test is designed to detect or quantify. Hence validity of a screening test is measured as the frequency of the result that is also confirmed by an acceptable diagnostic procedure. The ability of a test to label as positive to those individuals who have the disease is known as 'Sensitivity' and to label as negative to those who don't have the disease is 'Specificity'. In mass-screening/population based screening programs, a test with high sensitivity cannot be chosen as it runs the risk of yielding a high rate of false positive. However a test with high specificity would help in reducing the number of false positive results and unnecessarily burdening the nation's healthcare system. Hence it can be interpreted that at population level, a screening test with high specificity and less frequent screening would be better option to reduce unnecessary diagnostic evaluations and potential overtreatment [3-5].

Literature review also shows many screening programs conducted for Oral Cancer. A Cochrane Systematic Review was conducted to assess the efficacy and effectiveness of Oral Cancer screening program. The review concluded that the outcome of screening program was reduced mortality from oral cancer and secondary outcome such as early stage detection and reduced cost of treatment. A study conducted in India provides evidence that oral cancer screening by visual inspection costs less than US\$6 per person in a screening program; this has an incremental cost-effectiveness ratio of US \$835 per life year saved. The most effective way of offering screening services in a country with limited resources is to provide screening to individuals at high risk of developing the disease [6-10].

India is at a crossroads and needs to initiate urgent steps to introduce appropriate and acceptable cost effective screening methods to reduce late stage cancer related morbidity and mortality. However, before implementation of a screening program it should be borne in mind that though screening has potential benefits, it also has certain disadvantages such as psychological trauma for false positive cases, unnecessary treatment of precursor lesions which may never have progressed, false reassurance for false negatives, and not least, the financial costs of setting up the program [10].

The success of any screening program would depend mostly on the participation of the target population. Even in case of free of charge screening and follow up care, the target population may not be able to afford loss of wages due to non-attendance at work or travel long distances to reach a health centre. This indirect cost borne by the individuals is a looming challenge to policy makers specially while framing program for low socio-economic strata population. But, these are the very

individuals who are likely to be a higher risk for developing oral cancer; therefore, it is important to develop approaches to encourage and sustain participation among these high risk populations.

Conclusion

The need of the hour is to reduce the immense burden of this preventable cause of death by implementing a multi-sectorial approach that integrates health education, tobacco and alcohol cessation along with early diagnosis and prompt treatment. How to accomplish this is known; astonishingly, it has not been applied in most countries, and not at all in the high-burden countries. There is need to increase the awareness among the common masses and health care workers, increase expenditure towards health care services to build the basic infrastructure to sustain healthcare services and provide treatment for those who are diagnosed at accessible and affordable rate.

References

1. Agar NJM, Patel RS (2014) Early detection, causes and screening of oral cancer. *JSM Dent* 2: 1039.
2. Wilson JMG, Jungner G (1968) Principles and practice of screening for disease. Accessed on: April 13, 2017.
3. Criteria for appraising the viability, effectiveness and appropriateness of a screening programme (2015) Public Health England. Accessed on: April 12, 2017.
4. Moyer VA (2014) Screening for oral Cancer: U.S. preventive services task force recommendation statement. *Ann Intern Med* 160: 55-60.
5. Sankaranarayanan R, Mathew B, Jacob BJ, Thomas G, Somanathan T, et al. (2000) Early findings from a community-based, cluster-randomized, controlled oral cancer screening trial in Kerala, India. The Trivandrum Oral Cancer Screening Study Group. *Cancer* 88: 664-673.
6. Ramadas K, Sankaranarayanan R, Jacob BJ, Thomas G, Somanathan T, et al. (2003) Interim results from a cluster randomized controlled oral cancer screening trial in Kerala, India. *Oral Oncol* 9: 580-588.
7. Sankaranarayanan R, Ramadas K, Thomas G, Muwonge R, Thara S, et al. (2005) Trivandrum oral cancer screening study group. Effect of screening on oral cancer mortality in Kerala, India: A cluster-randomised controlled trial. *Lancet* 365: 1927-1933.
8. Sankaranarayanan R, Ramadas K, Thara S, Muwonge R, Thomas G, et al. (2013) Long term effect of visual screening on oral cancer incidence and mortality in a randomized trial in Kerala, India. *Oral Oncol* 19: 314-321.
9. Subramanian S, Sankaranarayanan R, Bapat B, Somanathan T, Thomas G, et al. (2009) Cost-effectiveness of oral cancer screening: Results from a cluster randomized controlled trial in India. *Bull World Health Organ* 87: 200-206.
10. Bobdey S, Balasubramaniam G, Kumar A, Jain A (2015) Cancer screening: Should cancer screening be essential component of primary health care in developing countries?. *Int J Prev Med* 6: 56.