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Review Article

Oral cancer, prevention and care: A qualitative perspective

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Abstract

Oral cancer is one among the few human cancers with a vast potential for prevention. One of the operational strategies considered to translate preventive measures into practice in developing countries has been the use of community health workers and other health auxiliaries of the primary health care system to disseminate anti-tobacco health education messages and to provide mouth examinations in high-risk individuals during their routine home visits and community meetings. Studies conducted in India and Sri Lanka to address the role of the above approach indicate that it is feasible to train community health workers and other health auxiliaries in primary prevention and early detection of oral cancer and precancerous lesions. However, no evidence of the efficacy of such an approach in reducing the incidence and mortality from oral cancer is yet available. Sufficient evidence in terms of efficacy and cost effectiveness is needed to justifiably convince health administrators for the inclusion of non-communicable disease control in general and oral cancer screening in particular as part of the primary health care delivery by community health workers and other health auxiliaries, especially when considering the burden of already existing work responsibilities. The need for studies in this direction is very obvious. However, the opportunities for 'case-finding' and health education should be utilised when encountering high-risk subjects both in primary medical and health care.

Keyword: Oral cancer, health, prevention, examination, care.

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1. Introduction

Cancer is one of the most common causes of morbidity and mortality today. It is estimated that around 43% of cancer deaths are due to tobacco use, unhealthy diets, alcohol consumption, inactive lifestyles and infection. Low-income and disadvantaged groups are generally more exposed to avoidable risk factors such as environmental carcinogens, alcohol, infectious agents, and tobacco use. These groups also have less access to the health services and health education that would empower them to make decisions to protect and improve their own health. Oro-pharyngeal cancer is significant component of the global burden of cancer. Tobacco and alcohol are regarded as the major risk factors for oral cancer. The population-attributable risks of smoking and alcohol consumption have been estimated to 80% for males, 61% for females, and 74% overall. The evidence that smokeless tobacco causes oral cancer was confirmed recently by the International Agency for Research on Cancer. Studies have shown that heavy intake of alcoholic beverages is associated with nutrient deficiency, which appears to contribute independently to oral carcinogenesis. Oral cancer is preventable through risk factors intervention. Prevention of HIV infection will also reduce the incidence of HIV/AIDS-related cancers such as Kaposi sarcoma and lymphoma. This review summarizes the results of a number of investigations focused specifically on prevention of oral cancer.

Oral cancer

A study was focused on Chewing and smoking habits in relation to precancer and oral cancer. A sample size about 1,000 teenagers were selected by a prospective epidemiological house-to-house survey of a random sample in the district of Ernakulam in Kerala State was found to be 2.1 for males and 1.5 for females. The result shows that the rate was highest in the mixed tobacco habits group and lowest (0) in the no habits group. The study concluded suggest that leukoplakias associated with different tobacco habits may have a different natural history (1).

A study was conducted on intervention study of smoking habits for primary prevention of oral cancer among the Indian villagers. A sample size is

about 12,212 were selected from the rural population in the Ernakulam district, Kerala state, India were selected by a screening survey. The result shows that the stoppage of the smoking habit was substantially higher in the intervention group (9.4%) compared to the control group (3.2%). The studyconcluded logistic regression analysis showed that the behavioral intervention was helpful to all categories of individuals (2).

An interventional study was focused on for primary prevention of oral cancer among the Indian tobacco users. A sample size is, 36,471 tobacco chewers and smokers were selected by interview technique from the rural population in three areas of India. The result shows the follow-up rate was 97%. The control cohort was provided by the first 5-year results from a 10-year follow-up study conducted earlier. The study was concluded that education on tobacco habits should be a feasible and effective approach to prevention of oral cancer (3)

A study was focused on to plan and implement cancer control measures, information about the baseline habit patterns of the community is needed. A coastal village near Trivandrum, Kerala, Southern India, A sample size of 146 children and teenagers in the village were selected by a questionnaire method. The result shows that percentages of study subjects with pan-tobacco-chewing, smoking, and drinking habits were 29%, 2%, and 3%, respectively. The study was concluded that the habit pattern correlated negatively with education and positively with number of children per family (4).

A study was conducted to study the effect of cessation of tobacco use on the incidence of lichen planus, leukoplakia and other oral mucosal lesions. A 10-year cohort study in a rural population of Ernakulam district, Kerala, India. A sample size is 12,212 were selected by an interviewed. A result shows total of 77,681 person - years of observation accrued among men and 32,544 among women. Among men 6.5% of these and among women 14.4% were in the stopped category. A study was concluded the cessation of tobacco use lead to a substantial fall in the incidence of leukoplakia and other lesions implying a reduced risk for oral cancer after cessation of tobacco use (5)

A study was conducted the betel - nut chewing habit and the intake of chilies in the diet were analyzed. A sample size 178 chewers were selected by a stratified random survey. The result shows 124 hospital patients suffering from submucous fibrosis. There were no signs or symptoms of submucousfibrosisin 115 chewers from the survey. The remaining 63 exhibited features of impending and established submucous fibrosis. Of the 124 hospital patients, 10 also had oral cancer. The study was concluded that a relationship between betel - nut chewing and submucous fibrosis exists but the mechanism by which the disease develops is still obscure (6).

Oral cancer is one of the commonest cancers among males in India (7). Tobacco, especially smokeless, is a risk factor for oral cancer. A case control study was conducted in southern India to determine the independent and combined effect of tobacco smoking, chewing, and alcohol drinking on the risk of oral, pharyngeal and esophageal cancers in Indian men (8). Tobacco chewing emerged as the strongest risk factor for oral cancer. The findings of another case control study of oral cancer by Balram P. et al (2002) in southern India suggested that 35% of oral cancer is attributable to the combination of smoking and alcohol drinking and 49% to pan or tobacco chewing. Tobacco quid chewing showed sixth fold increased risk for oral cavity cancer (9).

Mortality from oral cancer has been rising in the young in several areas of the world until the early 1990s. An analyzed data from two case-control studies from Italy and Switzerland including 137 cases of oral and pharyngeal cancer below age 46 and 298 hospital controls. The multivariate odds ratios (OR) were 20.7 for heavy smokers and 4.9 for heavy drinkers. The combination of high tobacco and alcohol consumption led to an OR of over 48. Body mass index (OR=0.28, for the highest tertile), high consumption of coffee (OR=0.25), fresh vegetables (OR=0.39), fruit (OR=0.73) and β-carotene (OR=0.48) were inversely related to risk. Tobacco accounted for 77% of all cancer cases in this population, alcohol for 52%, and low vegetable consumption for 52%, and the combination of the three factors for 85% (10).

Prevention of oral cancer

Oral cancer is one of the most fatal health problems faced by the mankind today. In India, because of cultural, ethnic, geographic factors and the popularity of addictive habits, the frequency of oral cancer is high. It ranks number one in terms of incidence among men and third among women. Several factors like tobacco and tobacco related products, alcohol, genetic predisposition and hormonal factors are suspected as possible causative factors. Hence a study was designed to determine the prevalence of Oral Cancer in patients who attended the outpatient department, at Bharati Vidyapeeth Deemed University Dental College Sangli India during a period of 24 months in 2009-2010. Further various modes of tobacco and alcohol consuming habit were assessed along with the site of occurrence of oral cancer. About 35,122 subjects belonging to a semi-urban district of Sangli in Western Maharashtra (India) were screened. Tobacco and alcohol consumption was the common habit among the study population. Out of these about 112 cases showed Oral Cancer. The prevalence of Oral Cancer was 1.12%. Statistical analysis was done using the

SPSS software 11. The findings in this study reveal a high prevalence of Oral Cancer and a rampant misuse of variety of addictive substances in the community. Close follow up and systematic evaluation is required in this population (11). Education about ill effects of tobacco and alcohol consumption is necessary at a broader scale. There is an urgent need for awareness programs involving the community health workers, dentists and allied medical professionals.

At least three-quarters of oral cancers could be prevented by the elimination of tobacco smoking and a reduction in alcohol consumption. The removal of these two risk factors also reduces the risk of second tumours in people with oral cancer. Smoking cessation is associated with a rapid reduction in the risk of oral cancers, with a 50% reduction in risk within 3 to 5 years. Ten years after smoking cessation, the risk for ex-smokers approaches that for life-long non-smokers. Protection against solar irradiation would further reduce the incidence of lip cancers (12).

Treatment of early stage oral cancers achieves higher survival rates with less attendant morbidity but at present far too many patients present with late stage disease. Therefore screening for premalignant or early stage oral cancers is worthy of consideration. However, in 1993 the UK Working Group on Screening for Oral Cancer and Precancer concluded that there was insufficient evidence to support population screening. Problems include the relative rarity of the disease, a lack of knowledge of the natural history of the disease, disagreement over disease management and the lack of evidence on the efficacy of different screening methods. An alternative strategy would be to encourage opportunistic screening of high-risk groups attending primary care services. The educational needs of primary carers including dentists must be addressed and there is still the difficulty of reaching high risk groups (13).

Review related to oral self examination and oral examination

A study with the title "Oral cancer screening as an integral part of general health screening in Tokoname City, Japan" was conducted by Nagao T to measure the attendance and compliance rates inoral mucosal screening (OMS) offered as part of a general healthscreen (GHS) undertaken as an organized programme in Japan in 1996. In this study all adults over the age of 40 years residentinTokoname City were invited to attend a free GHSannually, conducted by the municipal cooperation and the medicaland dental societies of Tokoname City. In the later years onlythose who attended in 1996 were reinvited. Females aged lessthan 39 years were also allowed to attend if they wished toparticipate in the GHS. The GHS was programmed annuallyduring the years 1996 to 1998. All those attending the GHS wereinvited to participate in an OMS conducted under the same roofby a visiting dentist (n=37). In the cohorts examined, screening dentists recordedoral mucosal lesions in 5.4% in 1996, in 4.0% in 1997, and in2.6% in 1998 (14).

A pilot study was conducted by Scott SE to identify those at risk of developing oral cancer are able to correctly detect potentially malignant oral lesions via oral self examination. Participants (53 smokers aged over 45 years) received an oral mucosal examination by the dentist and then performed MSE after education through a self-read leaflet. The dentist and participant both recorded the presence and absence of potentially malignant oral lesions. The prevalence of potentially malignant oral lesions was 22%. The sensitivity of MSE was 33% and the specificity was 54%. MSE had a positive predictive value of 17% and a negative predictive value of 73%.Thus the conclusion was made that the at-risk group were poor at correctly identifying the presence or absence of potentially malignant oral lesions (15).

A study on "Evaluation of mouth self-examination in the control of oral cancer**"** was planned by Mathew B to evaluate the feasibility of mouth self-examination (MSE). Some 450 college students distributed to 9000 households a brochure describing the risk factors of oral cancer, the appearance of premalignant and malignant lesions of the oral cavity and the methods of MSE with pictures. All subjects with tobacco habits and/or ages 30 years or over were asked to read the brochure carefully and to report to the clinic, conducted in their locality on fixed days, if they suspected an abnormality while practicing MSE. Out of the approximately 22 000 eligible subjects, 8028 (36%) practiced MSE. Among the 247 subjects reporting to the clinics, seven (3%) had oral cancer and 85 (34%) had oral precancerous lesions; the others had either benign lesions or normal anatomical variations (16).

An interventional study for primary prevention of oral cancer among 36000 Indian tobacco users was conducted by Gupta in the year 1986. In a house-to-house survey, 36 471 tobacco chewers and smokers were selected from the rural population in three areas of India. These individuals were interviewed for their tobacco habits and examined for the presence of oral leukoplakia and other precancerous lesions, first in a baseline survey, and then annually over a 5-year period. The control cohort was provided by the first 5-year results from a 10-year follow-up study conducted earlier in the same areas with the same methodology but on different individuals without any educational intervention. The 5-year age-adjusted incidence rate of leukoplakia in Ernakulam district was 11·4 in the intervention group versus 47·8 among men, and 5·8 versus 33·0 among women; and for palatal lesions in

Srikakulam district the corresponding figures were 59·8 versus 260·8 among men and 28·5 versus 489·5 among women. In Bhavnagar the incidence rate of leukoplakia did not differ between the cohorts (17)
A study **"**Oral lesions in patients participating in an oral examination screening week at an urban dental school" by Epstein JB to evaluate the clinical findings of oral screening examinations of dental patients during a one-week period in an urban dental school clinic Third- and fourth-year dental students conducted clinical screening examinations for all dental patients of record seen during the YulBrynner Foundation's Oral, Head and Neck Cancer Awareness Week in April 2006. The results of the study were that, of 262 patients, 100 (38.2 percent) reported that they had used tobacco for a mean of 8.1 years. Most patients reported having denture or tooth and gingival problems. The dental students reported abnormal findings in 55 patients (21 percent). Two patients had suspected premalignant lesions that were diagnosed as lichen planus and traumatic keratosis (18).

A randomized intervention to evaluate the reproducibility and validity of the screening test provided by the health worker against the reference oral visual findings of three physicians was conducted in Kerala. A total of 2069 subjects who had already been examined were re-examined by the health workers and physicians. The sensitivity and the specificity of the oral visual inspection were 94.3% and 99.3% respectively. There was almost perfect agreement (kappa = 0.85) between the findings of the health workers and the physicians in identifying the different types of oral precancerous lesions. The findings of our study indicate that it is possible to train resource persons to perform the oral cancer screening test as accurately as doctors, although experience appears to be a crucial component of health workers' accuracy (19).

A case-control study was conducted to evaluate the efficacy of an on-going oral cancer screening programme in Cuba in prevention of advanced oral cancer in Cuba. The cases for the study consisted of 200 oral cancer patients with stage III and IV disease. Information on socio-economic indicators, smoking, drinking, diet and screening history in the form of visits to the dentist was collected by personal interview with the subjects. Odds ratio (OR), with 95% confidence intervals (CI), of being diagnosed with an advanced oral cancer, in relation to the screening experience at the date of diagnosis of case, 1, 2, 3, 6, and 12 months prior to the date of diagnosis of case were estimated by conditional logistic regression for matched data. The odds ratio of advanced oral cancer associated with screening in relation to screening experience 3 months prior to the diagnosis of the case was 0.67 (95% CI: 0.46–0.95). The odds ratio was 0.91 (95% CI: 0.60–1.37) for a single screening test and 0.41 (95% CI: 0.24–0.68) for two or more tests. The protection offered by screening persisted up to 3 years since the last test. The results of a descriptive evaluation of the programme also revealed limited evidence towards a shift from advanced to early stages after the introduction of the programme (20)

A study "A Community-based RCT for Oral Cancer Screening with Toluidine Blue" was conducted to assess whether using toluidine blue as an adjunctive tool for visual screening had a higher detection rate of OPMLs and could further reduce the incidence of oral cancer. In 2000, in Keelung, we randomly assigned a total of 7975 individuals, aged 15 years or older and with high-risk oral habits, to either the toluidine-blue-screened (TBS) group or the visual screening group. Results showed 5% more oral premalignant lesions and 79% more oral submucousfibrosis detected in the TBS group than in the control group (21).

Planned teaching programme

A study to assess Effectiveness of a teaching programme in pain and symptom management for junior house officers was done to assess the level of knowledge with respect to pain and symptom management among doctors in their first year after graduation and to measure the impact of a structured teaching programme on their level of knowledge. A multiple-choice questionnaire was used to assess their level of knowledge at the beginning and at the end of a 6-month period over which the teaching sessions took place. Attendance at and satisfaction with the programme were high. There was a significant improvement in the level of knowledge at the end of the programme, with the greatest improvement in those who attended most sessions (22).

Effectiveness of Structured Teaching Programme about Cancer Cervix on the Knowledge and Attitude of Married Women by Suneetha, Rao Anitha C to find the effectiveness of STP on cancer cervix among married women residing in urban and rural area. Quasi-experimental research design with one group pretest-posttest was used. The findings were that Majority of married women 84% in urban area, 76% in rural had moderate knowledge. The pretest attitude score for all the married women 100% in urban, 92% in rural was favorable. The study showed that there was significant improvement between pretest and posttest knowledge, attitude score (23).

Cigarette smoking is the most hazardous and prevalent form of tobacco use in the west, consideration also needs to be given in other form such as Bidi, smoking in India. Reverse smoking in rural population and use of snuff and chewing tobacco. The evidenced that the use of tobacco is the major risk factor for oral cancer and potentially malignant lesion of the mouth is clear.

Counseling to quit smoking is not applied in a systemic or frequent manner to people presenting with potentially malignant lesions of the oral cavity. This review makes recommendation for intervention by health professionals to encourage and aid cessation of tobacco use as a part of prevention of oral cancer (24). A study was conducted on the knowledge, attitude, and practices regarding tobacco consumption for one year in a chemical industrial unit in Ratnagiri district Maharashtra, India. About 104 employees were interviewed and screened for oral neoplasia. Result showed that overall, 48.08% of the employees were found to use tobacco, among which smokeless forms were predominant. Peer pressure and pleasure were the main reasons for initiation of tobacco consumption, and the belief that through injurious it would not harm them, avoiding physical discomfort on quitting and relieving stress were important factors for continuation of the habbit. Employees had poor knowledge regarding ill-effects of tobacco40% tobacco users had oral precancerous lesions, which were predominant in employees consuming smokeless forms of tobacco (25).

Conclusion

The evidence for basic oral care interventions supports the use of oral care protocols in patient populations receiving radiation and/or chemotherapy and does not support chlorhexidine for prevention of mucositis in head and neck cancer patients receiving radiotherapy. Additional well-designed research is needed for other interventions to improve the amount and quality of evidence guiding future clinical care.

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