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Oral cancer prevention and control – The approach of the World Health Organization [☆]

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SUMMARY

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. The WHO Global Oral Health Programme is committed to work for country capacity building in oral cancer prevention, inter-country exchange of information and experiences from integrated approaches in prevention and health promotion, and the development of global surveillance systems for oral cancer and risk factors. The WHO Global Oral Health Programme has established a global surveillance system of oral cavity cancer in order to assess risk factors and to help the planning of effective national intervention programmes. Epidemiological data on oral cancer (ICD-10: C00-C08) incidence and mortality are stored in the Global Oral Health Data Bank. In 2007, the World Health Assembly (WHA) passed a resolution on oral health for the first time in 25 years, which also considers oral cancer prevention. The resolution WHA60 A16 URGES Member states– *To take steps to ensure that prevention of oral cancer is an integral part of national cancer-control programmes, and to involve oral-health professionals or primary health care personnel with relevant training in oral health in detection, early diagnosis and treatment*;- The WHO Global Oral Health Programme will use this statement as the lead for its work for oral cancer control www.who.int/oral_health.

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Cancer is one of the most common causes of morbidity and mortality today, with more than 10 million new cases and more than 6 million deaths each year worldwide.¹ More than 20 million persons around the world live with a diagnosis of cancer, and more than half all cancer cases occur in the developing countries. Cancer is responsible for about 20% of all deaths in high income countries and 10% in low-income countries. It is projected that by 2020 there will be every year 15 million new cancer cases and 10 million cancer deaths. Part of this growth in absolute numbers derives from the ageing of populations worldwide. The cancer epidemic in high income countries, and increasingly in low- and middle-income

countries, is also due to high or increasing levels of prevalence of cancer risk factors.²

It is estimated that around 43% of cancer deaths are due to tobacco use, unhealthy diets, alcohol consumption, inactive lifestyles and infection.³ Of these, tobacco use is the world's most avoidable cause of cancer. In addition to lung cancer, tobacco consumption causes cancer of the oral cavity, pharynx, larynx, oesophagus, stomach, pancreas, liver, kidney, ureter, urinary bladder, uterine cervix and bone marrow (myeloid leukaemia). Exposure to environmental tobacco smoke (passive smoking) increases lung cancer risk. Tobacco use and alcohol consumption act synergistically to cause cancer of the oral cavity, pharynx, larynx and oesophagus.

Cancer incidence and survival rates are clearly linked to socioeconomic factors.^{3,4} Low-income and disadvantaged groups are generally more exposed to avoidable risk factors such as

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environmental carcinogens, alcohol, infectious agents, and tobacco use. These groups have less access to the health services and health education that would empower them to make decisions to protect and improve their own health. In addition, changing lifestyles expose people to risk factors that were once primarily obtained only in developed countries (such as sedentariness, diets high in animal fat and tobacco use).

Infectious agents are responsible for almost 25% of cancer deaths in the developing world and 6% in industrialized countries.^{3,4} In low-resource settings with a high prevalence of cancers induced by biological agents, special measures are needed to combat these infections. For example, in areas endemic for liver cancer, hepatitis B virus immunization, integrated with other vaccination programmes, is the principal preventive measure. Vaccines are being developed and tested in human beings that could prove to be effective in preventing cervical cancer in the near future. Prevention of HIV infection will also reduce the incidence of HIV/AIDS-related cancers such as Kaposi sarcoma and lymphoma. Specific preventive and protective measures to control or avoid carcinogens or risks in the environment (including excessive exposure to sun) and the workplace will reduce significantly the incidence of such cancers as lung, bladder and skin.

The potential for prevention and control of cancer

There is now sufficient understanding of the causes to prevent at least one third of all cancers worldwide. Information is also available that would permit the early detection and effective treatment of a further one third of cases. Effective strategies exist for the relief of pain and the provision of palliative care to all cancer patients in need and of support to their families, even in low-resource settings. Although the existing body of knowledge about cancer prevention, treatment and palliative care is extensive, more still needs to be known in many areas, notably in etiology and prevention research.

Nonetheless, this knowledge is not always put into practice. Efforts to prevent and control cancer are hampered by the low-priority frequently given to the disease by governments and health ministries, excessive reliance and expenditure on treatment, and a considerable imbalance between resources allocated for basic cancer research and those devoted to its prevention and control. For example, primary prevention, early detection and palliative care are often neglected in favour of treatment-oriented approaches, even in cases where these approaches are not cost-effective and cause unnecessary human suffering. Another example is the failure to take into consideration the social inequalities related to cancer prevention and control.

The overall goal of cancer prevention and control is to reduce the incidence and mortality of cancer and to improve the quality of life of cancer patients and their families. A well conceived national cancer control programme is the most effective instrument to bridge the gap between knowledge and practice and achieve this goal. Integrated into existing health systems and related services, these programmes ensure systematic and equitable implementation of control strategies across the continuum of prevention, early detection, treatment and palliative care, as set out in WHO guidelines for national cancer control programmes.⁵ A national cancer control programme can help policy-makers and programme managers make the most efficient use of available resources to benefit the whole population by taking a balanced approach to evidence-based interventions. Prevention frequently offers the most cost-effective long-term strategy for cancer control. Furthermore, cancer preventive measures are beneficial as they can also contribute to preventing other chronic diseases that share the same risk factors.

Implementation of effective, integrated and multisectoral preventive strategies targeting multiple risk factors for cancer will reduce in the long-term the incidence of cancer in sites such as oral cavity, stomach, liver, breast, uterine cervix, colon and rectum. Early detection, which comprises screening of asymptomatic populations and awareness of early signs and symptoms, increases the probability of cure. However, it requires the facilities to confirm diagnosis and provide treatment, and availability of resources to serve the population in need. The prevalence of the cancer should also justify the effort and expense. Awareness of early signs and symptoms is particularly relevant for cancers of the breast, cervix, mouth, larynx, endometrium, colon and rectum, stomach and skin. On the basis of existing evidence⁵, population screening can currently be advocated only for cancers of the breast, cervix and colon and rectum, in countries where resources are available for wide coverage of the population, appropriate treatment is in place and quality-control standards are implemented. Nonetheless, studies are under way to evaluate low-cost approaches to screening that can be implemented and sustained in low-resource settings. Population studies on the predictive power as regards screening for oral cancer are also needed.⁶

Treatment aims to cure disease, prolong life, and improve the quality of life. The most effective and efficient treatment is linked to early detection programmes and follows evidence-based standards of care. Treatment guidelines and praxis guides improve treatment outcome by setting standards for patient management. The formulation of guidelines and their adaptation to various resource settings help to assure quality including equitable and sustainable access to treatment resources. Implementation of these guidelines can prevent the misuse of resources by ensuring that treatment is provided only to those patients whose cancers are at a stage where they would benefit from treatment. Patients can benefit either by cure or by prolonged life, in cases of cancers that are highly responsive to treatment.

Most cancer patients require palliative care. Palliative care involves not only pain relief, but also spiritual and psychosocial support to patients and their families from diagnosis, throughout the course of the disease. It improves the quality of life of patients and their families, regardless of the possibilities of cure. These services can be provided simply and inexpensively and may involve pain control. Nonetheless, access to pain relief and palliative care services is often limited, even in high-resources settings, because of lack of political will, insufficient information and education of the general public, health care providers and patients.

Surveillance and research are crucial for both planning effective and efficient cancer control programmes and monitoring and evaluating their performance.⁵ A comprehensive surveillance system provides data on the magnitude of the cancer burden and trends in risk factors, and on the effect of prevention, early detection, treatment and palliative care. Cancer registries are part of the surveillance system. Population-based registries provide information on incidence cases and incidence trends; whereas hospital-based registries provide information regarding diagnosis, stage distribution, treatment methods and survival. Research contributes to determining causes of cancer and identifying and evaluating strategies for prevention, treatment and control. Hence research planning and priority setting are important elements of a cancer control programme.

The International Agency for Research on Cancer (IARC) conducts focused research on cancer etiology and prevention providing evidence on global cancer prevalence and incidence, the causes of cancer and mechanisms of carcinogenesis, and the most effective strategies for cancer prevention and early detection. WHO promotes policy development and programme implementation. The recently published WHO/IARC report² contains the latest epidemiological data and projections about cancer, current knowledge about the

causes of cancer, and policy recommendations for cancer control programmes. This report, together with other IARC and WHO monographs, technical reports and scientific publications, provides a sound basis on which to develop effective cancer control strategies.

Oro-pharyngeal cancer

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.⁷ It has been difficult to distinguish the separate effects of these agents, however, since drinkers of alcoholic beverages tend to be users of tobacco, and *vice versa*. Large scale epidemiological investigations have documented a synergistic effect of tobacco and excessive use of alcohol on the occurrence of oro-pharyngeal cancer. The population-attributable risks of smoking and alcohol consumption have been estimated to 80% for males, 61% for females, and 74% overall.⁸ The evidence that smokeless tobacco causes oral cancer was confirmed recently by the International Agency for Research on Cancer.⁹ Moreover, studies have shown that heavy intake of alcoholic beverages is associated with nutrient deficiency, which appears to contribute independently to oral carcinogenesis.⁸

Dietary factors have been thought to account for about 30% of cancers in Western countries¹⁰, making diet second only to tobacco as a preventable cause of cancer. The contribution of diet to cancer risk in developing countries has been considered to be lower, perhaps around 20%.¹⁰ Unravelling the effects of diet on cancer risk is, therefore, of great public health importance, but research to date has uncovered few definite effects and left frustratingly large areas of uncertainty. Global reviews of dietary factors in cancer were published recently.¹¹ Overall, a high intake of fruits and vegetables probably reduces the risk of oral cancer, and consumption of very hot drinks and foods typically consumed in some cultures probably increases the risk of cancers of the oral cavity and pharynx.

Current incidence and mortality rates of oro-pharyngeal cancer

The occurrence of oral cancer is particularly high among men, the eighth most common cancer worldwide.^{2,12,13} However,

oro-pharyngeal cancer is more common in developing than developed countries, **Figure 1**. Incidence rates for oral cancer vary in men from 1 to 10 cases per 100,000 population in many countries. In south-central Asia, cancer of the oral cavity ranks among the three most common types of cancer. In India, the age standardized incidence rate of oral cancer is reported at 12.6 per 100,000 population. It is noteworthy that sharp increases in the incidence rates of oral/pharyngeal cancers have been noted for several countries and regions such as Denmark, France, Germany, Scotland, central and eastern Europe and to a lesser extent Australia, Japan, New Zealand and the USA.^{2,12}

The WHO Global Oral Health Programme has established a global surveillance system of oral cavity cancer in order to assess risk factors and to help the planning of effective national intervention programmes. Epidemiological data on oral cancer (ICD-10:C00-C08) incidence and mortality are stored in the Global Oral Health Data Bank,¹³ www.who.int/oral_health). The data are expressed in Age Standardized Rates (per 100,000 world standard population) and the current data are summarized by incidence and mortality levels in **Figures 2–5**. The Age Standardized Incidence Rate of oral cavity cancer firstly demonstrates high figures for men and the populations of the industrialized world, partly reflecting the long tradition of smoking and excessive alcohol consumption. Southeast Asia and certain African countries score high on incidence rate for both sexes, the rates in these countries relate directly to risk behaviours such as chewing tobacco (e.g. betel nut or miang chewing, or the use of qat), in addition to smoking and use of alcohol. The Age Standardized Mortality Rate due to oral cavity cancer is generally higher for males than females. Moreover, the mortality rate is relatively low for many Western industrialized countries where health services are available to populations, however, relatively high for low- and middle-income countries and countries with economies in transition and limited access to health facilities.

The WHO platforms for prevention and control of cancer

Cancer is one of the major threats to public health in the developed world and increasingly in the developing world. Cancer is a silent epidemic that has not yet attracted major



Figure 1. Comparison of the most common cancers in males in more and less developed countries, in 2000 (Source: WHO International Agency for Research on Cancer, 2003) (2, 12).

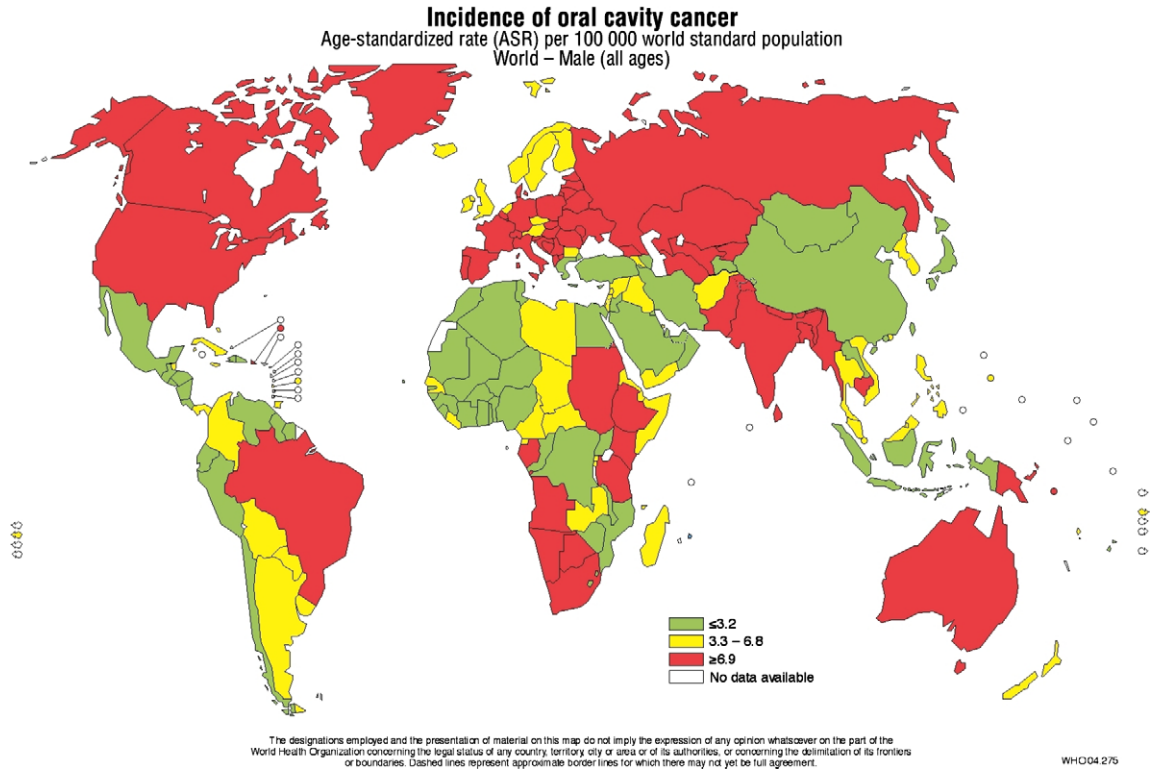


Figure 2. Incidence of oral cavity cancer among men expressed by level of Age-standardized rate in countries of the world (Source: Based on GLOBOCAN 2002 International Agency for Research on Cancer <http://www.depdb.iarc.fr/globocan2002.htm>).

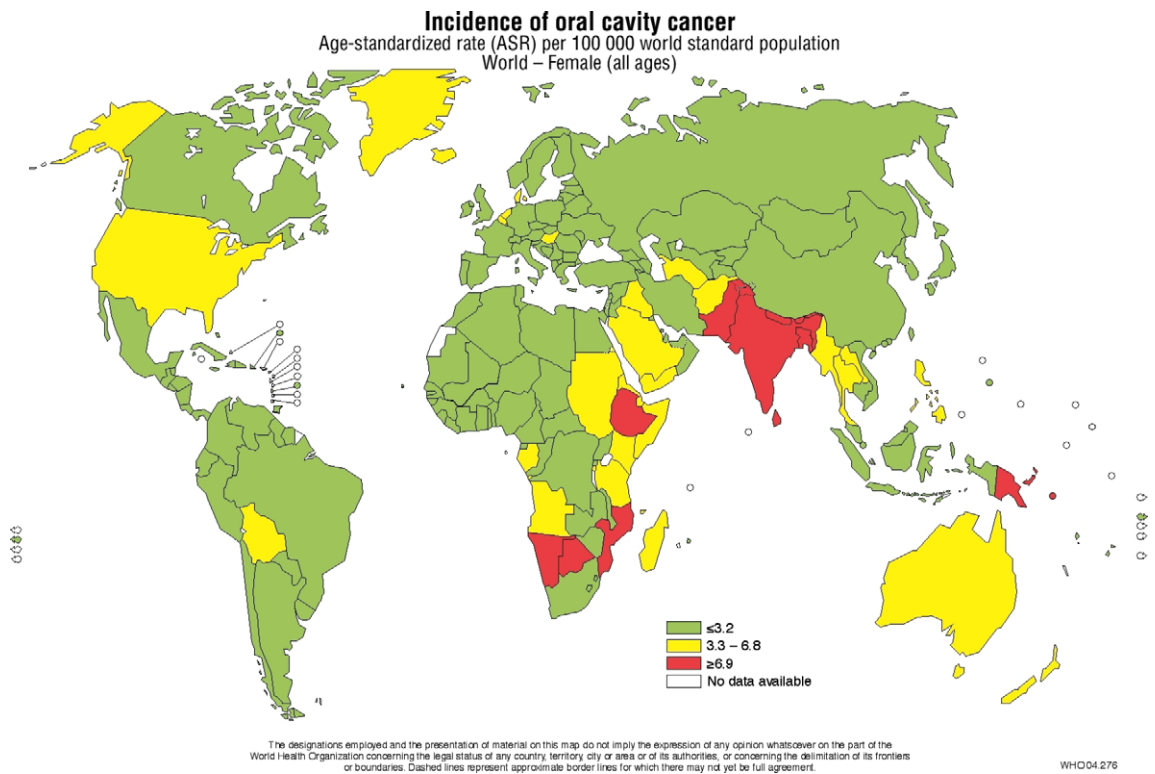


Figure 3. Incidence of oral cavity cancer among women expressed by level of Age-standardized rate in countries of the world (Source: Based on GLOBOCAN 2002 International Agency for Research on Cancer <http://www.depdb.iarc.fr/globocan2002.htm>).

attention among health policy-makers and public health administrators. Owing to the recent WHO Framework Convention on

Tobacco Control¹⁴ and the recent WHO resolution on diet, physical activity and health¹⁵ there is an increasing political debate

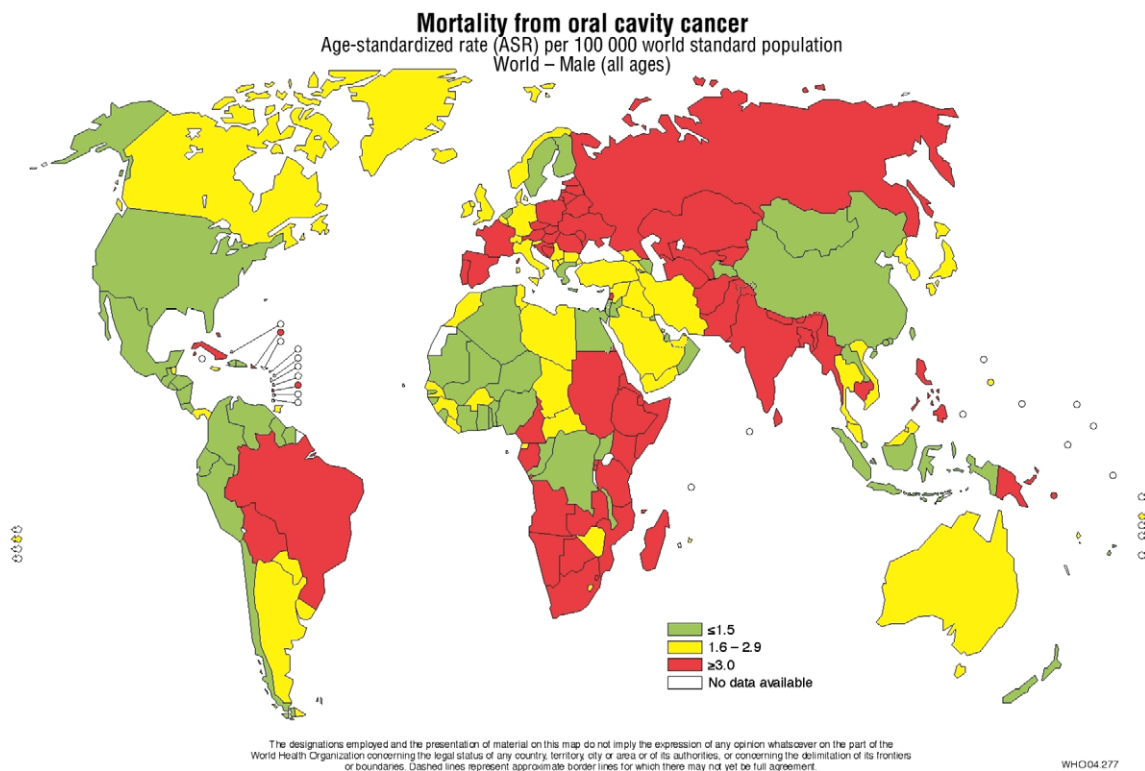


Figure 4. Mortality from oral cavity cancer among men expressed by level of Age-standardized rate in countries of the world (Source: Based on GLOBOCAN 2002 International Agency for Research on Cancer <http://www.depdb.iarc.fr/globocan2002.htm>).

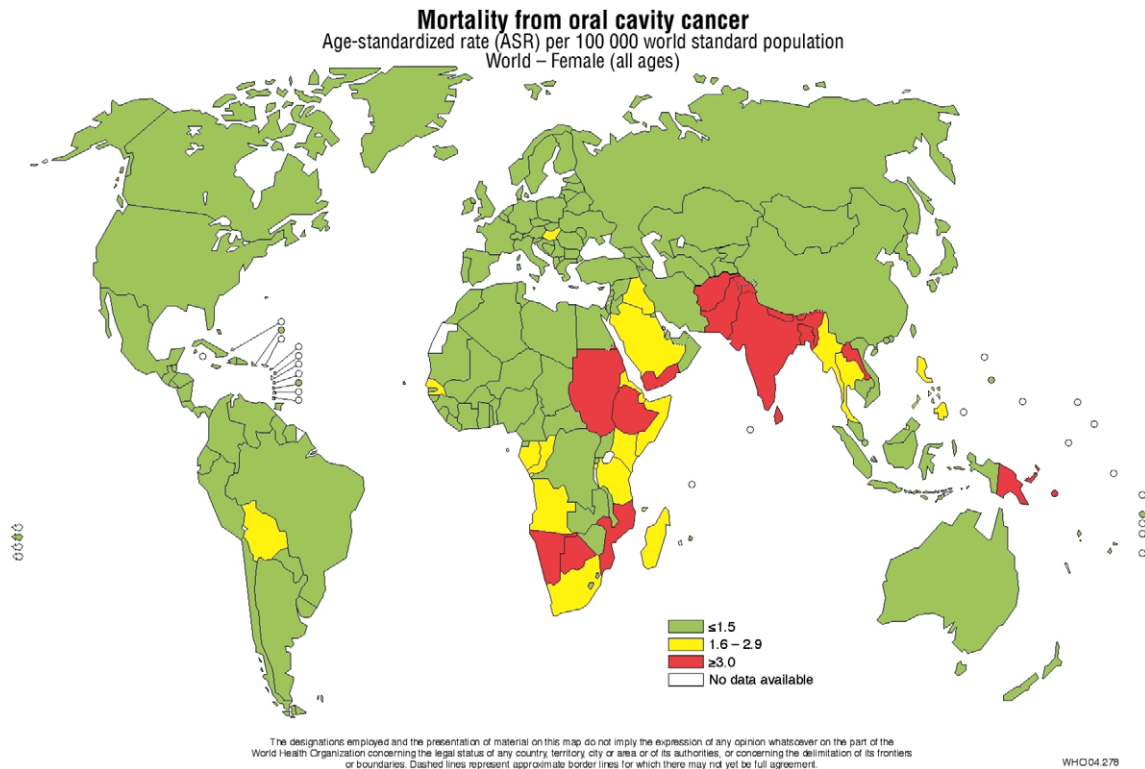


Figure 5. Mortality from oral cavity cancer among women expressed by level of Age-standardized rate in countries of the world (Source: Based on GLOBOCAN 2002 International Agency for Research on Cancer <http://www.depdb.iarc.fr/globocan2002.htm>).

about how to address prevention of cancer and other chronic, non-communicable diseases that share similar risk factors.

Furthermore, a 2005 World Health Assembly resolution on cancer prevention and control¹⁶ highlights the need for a compre-

hensive approach to combat cancer, with prevention being an integral component.

The Fifty-eighth World Health Assembly Resolution on Cancer prevention and control (WHA 58.22), 25 May 2005, urges member states to collaborate with WHO in developing and reinforcing comprehensive cancer control programmes tailored to the socio-economic context, specifically through the systematic, stepwise and equitable implementation of evidence-based strategies for prevention, early detection, diagnosis, treatment, rehabilitation and palliative care, and to evaluate the impact of implementing such programmes. National health authorities are encouraged to consider outcome-oriented objectives for their cancer control programmes, prioritizing preventable tumours and exposure to risk factors (such as tobacco use, unhealthy diets and harmful use of alcohol), and cancers amenable to early detection and treatment, such as oral cancer and cervical breast, and prostate cancers. The 2005 World Health Assembly Resolution also encourages the scientific research necessary to increase knowledge about the burden of and causes of human cancer, giving priority to tumours, such as cervical and oral cancer, that have a high incidence in low-resource settings and are amenable to cost-effective interventions. In response to this resolution, WHO has strengthened the support to member states and developed guidelines¹⁷ for national cancer prevention programmes.

Effective partnerships at national, regional and global levels are essential for sustainable prevention and control of cancer. Since the discontinuation of the Global Alliance on Cancer Control¹⁸, WHO has strengthened its links with other institutions active in the field of cancer control by bringing together partners in a network whose goals are identification and increase in opportunities for collaboration in global cancer control, advocacy for such control, provision of a forum for communication and exchange of information and facilitation of implementation of cancer control programmes at country level. The network comprises international organizations, agencies of the United Nations system, government bodies, non-governmental organizations, and private-sector entities, covering such fields of expertise as medicine, nursing, research, public health and communications.

WHO Global Oral Health Action Programme

The WHO Oral Health Programme is committed to work for country capacity building in oral cancer prevention, inter-country exchange of information and experiences from integrated approaches in prevention and health promotion, and the development of global surveillance systems for oral cancer and risk factors.^{12,19,20}

The WHO Global Oral Health Programme recently co-sponsored international meetings with a focus to oral cancer prevention. The 10th International Congress on Oral Cancer took place 19th–24th April 2005 in Crete, Greece, and was attended by nearly 1000 researchers, health professionals and public health administrators. The congress was organized by the association for International Congress on Oral Cancer, the Hellenic Cancer Society, the Hellenic Association for the Treatment of Maxillofacial Cancer, and co-sponsored by the World Health Organization. Biologic, clinical and public health aspects of oral cancer and precancer was analyzed by participants and the congress programme focussed on international disease trends and risk factors; tools for early diagnosis of oral cancer; prevention and screening; treatment, care and services; quality of life of patients suffering from oral cancer, public health implications and the need for international collaborative research and intervention. The participants of 57 countries unanimously issued the Crete Declaration on Oral Cancer Prevention (http://www.who.int/oral_health/events/crete_declaration_05) and

encouraged national and international health authorities, research institutions, non-governmental organizations and civil society to strengthen their efforts for the effective control and prevention of oral cancer.

Oral health and the World Health Assembly 2007

Most recently, the World Health Assembly (WHA) passed a resolution on oral health for the first time in 25 years.²¹ The World Health Assembly is the supreme decision-making body for WHO and resolutions encourage Member States to adopt and implement policies. The WHA60 Resolution in 2007 emphasises the need for framing policies and strategies for oral health in the 21st century, also with the intention of oral cancer prevention and control. The statement on oral cancer reads as follows:

WHA60 A16 URGES Member states

(5) To take steps to ensure that prevention of oral cancer is an integral part of national cancer-control programmes, and to involve oral-health professionals or primary health care personnel with relevant training in oral health in detection, early diagnosis and treatment;

The WHO Global Oral Health Programme will use this statement as a lead in its work for integration of oral cancer prevention into cancer prevention and WHO strives for expanding the collaboration with a range of international partners involved with clinical care of patients to public health specialists that work for reduction of risk factors. Further information on WHO Oral Health Programme activities related to strengthening of cancer prevention: www.who.int/oral_health

Conflict of interest statement

None declared.

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