Policy and practice

Opportunities in oral health policy for Timor-Leste

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ABSTRACT

Timor-Leste faces an urgent set of challenges in oral health. The impact of oral diseases in terms of reduced quality of life and cost of treatment is considerable. This paper reviews progress on policy recommendations since the National Oral Health Survey in 2002, the first such national survey. Few proposals have been implemented to date, owing to (i) lack of local support for the recommendations, particularly on promotion of oral health; (ii) lack of financial and budgetary provisions for oral health; (iii) lack of focus on services, human resources and dental personnel; (iv) poor focus, design and implementation of policy and planning in oral health; and (v) lack of transport to facilitate health-care workers’ access to remote areas. Based on this assessment, the present paper presents a reconfigured set of policies and recommendations for oral health that take into consideration the reasons for low uptake of previous guidance. Key priorities are promotion of oral health, legislative interventions, education of the oral-health workforce, dental outreach programmes, targeted dental treatment, dental infrastructure programmes, and research and evaluation. Interventions include promotion of oral health for schoolchildren, salt fluoridation, fluoride toothpaste and banning sweet stalls and use of tobacco and betel nut in, or near, schools. Timor-Leste should strengthen the availability and quality of outreach programmes for oral health. Dental therapists and dental nurses who can supply preventive and atraumatic restorative dental care should continue to be trained, and the planned dentistry school should be established. Ongoing research and evaluation is needed to ensure that the approach being used in Timor-Leste is leading to improved outcomes in oral health.

Key words: dental, developing economies, oral health, policy, prevention, Timor-Leste

BACKGROUND

Oral health is an important component of general health and quality of life.\textsuperscript{1} The fledgling nation of Timor-Leste faces an urgent set of challenges in oral health. Periodontal disease and oral cancer are associated with entrenched habits of smoking tobacco and chewing betel nut. There is also a heightened risk of dental caries associated with shifting dietary habits, limited fluoride exposure and inadequate provision of preventive dental treatment.\textsuperscript{2}

By the time of independence in 1999, the administration in Timor-Leste had collapsed: over one third (35\%) of all health facilities and 80\% of schools were destroyed, the remaining infrastructure was severely damaged and there had been an exodus of doctors, dental professionals and skilled health-management staff.\textsuperscript{3,4} This, coupled with a projected threefold increase in the population between 2005 and 2050,\textsuperscript{5} gave an indication of the problems in health-service delivery faced by the new Government of Timor-Leste.

To obtain the profile of oral-health status of the people and to aid the subsequent development of a National Oral Health Strategy, the Australian Agency for International Development (AusAID) funded the National Oral Health Survey in 2002, the first such survey undertaken in Timor-Leste.\textsuperscript{2} The study identified that the vast majority (>85\%) of children and adults had never made a dental visit.\textsuperscript{2} Fewer than half the adults who reported having done so had visited a dentist or dental nurse, with the remainder visiting traditional healers.\textsuperscript{2} The burden of
dental caries was found to be low to moderate, probably linked to a subsistence farming diet, but the disease was usually untreated or treated by extractions.\textsuperscript{2} The prevalence of smoking among male adults was above 70%, and more than one third (38.3%) of adults of both sexes chewed betel nut.\textsuperscript{2}

The United Nations Transitional Administration ended when Timor-Leste became an independent nation on 20 May 2002.\textsuperscript{3} At the end of 2002, there were two dentists and 39 dental nurses working in the country. By 2013, there were seven dentists and 40 dental nurses, with one dental nurse per 27,018 people.\textsuperscript{6} As of 2016, there were 10 public- and private-sector dentists in Timor-Leste. The present paper reviews the policy and practice relevant to oral health in Timor-Leste from 2002 to the present, and proposes ways forward.

### PREVIOUS POLICY RECOMMENDATIONS FOR ORAL HEALTH RELATED TO TIMOR-LESTE

**National Oral Health Survey, Timor Leste, 2002**

Recommendations on oral-health policy (see Box 1) from the 2002 National Oral Health Survey included the integration of oral-health promotion with general health promotion, and monitoring of the oral health of infants and children younger than school age, as a component of general health check-ups.\textsuperscript{2} It recommended that non-acidic and low-sugar fluids should be promoted for consumption by young children, and for infants, bottle removal was encouraged after feeding. At the general population level, salt fluoridation and access to affordable toothbrushes and fluoride toothpaste was encouraged. The integration of traditional methods of tooth cleaning with fluoride toothpaste was further suggested. It was also recommended that a campaign for promotion of oral health should be delivered through schools, warning of the dangers of smoking tobacco and chewing betel nut, articulating the benefits of fluoride, and encouraging tooth brushing and the use of fluoride toothpaste. It was recommended that a programme for screening and fissure sealing could provide preventive dental care for older children and that personal dental care should be provided as both urgent oral treatment and atraumatic restorative treatment, while routine dental treatment should be integrated with the primary health service.\textsuperscript{2}

#### Box 1. Existing policy recommendations for improved oral health in Timor Leste

**Australia–East Timor National Oral Health Survey, 2002\textsuperscript{2}**

**Population oral health integrated with general health promotion**

- Smoking cessation
- Betel-quad chewing
- Child dental caries:
  - Integrate oral health for infants and preschool children into general health measures
  - Promote non-acidic, non-sugary fluids and removal of bottle after feeding

**Specific population oral-health promotion**

- Salt fluoridation
- Affordable toothbrushes and toothpaste
- Continuation of traditional tooth-cleaning methods, but with fluoridated toothpaste
- School oral-health promotion campaign:
  - Anti-smoking
  - Anti-betel-quad chewing
  - Importance of fluoride
  - Use of toothbrushes and toothpaste
  - Screening and fissure-sealant programme


The *National Oral Health Strategy*\textsuperscript{7} was released in 2004 by the Ministry of Health (MoH) and largely accepted the oral-health policy recommendations of the National Oral Health Survey (see Box 1). It recommended salt fluoridation, affordable fluoride toothpaste, a school dental service and integration of oral health into general health promotion, and focused on preschool children, pregnant women and mothers of young children, schoolchildren and people who smoke or chew betel quid.
Provision of personal dental treatment

- Urgent oral treatment
- Atraumatic restorative treatment
- Routine dental care as part of personal dental treatment with a primary health-care service

Timor-Leste National Oral Health Strategy, 2004

National oral-health protection, promotion and prevention programme

- Salt fluoridation
- Affordable fluoridated toothpaste
- School dental service

Oral health integrated with general health promotion

- Preschool children
- Pregnant women and mothers of young children
- Schoolchildren
- People who smoke or chew betel nut

Support for service delivery

- Appropriate and affordable oral-health service
- Improve coverage and quality of oral-health services

Personal dental care

- Blend between promotive and curative interventions
- Strengthening of the referral system

Research directions

- Use of processed and other salt quantities consumed
- Oral mucosal changes related to chewing betel quid and smoking tobacco

Human-resource development

- Multiskilling the workforce

Institutional approach

- Integration of all community services with planning undertaken at the district level

Strategic alliances

- External assistance
- Contracting out
- Private sector

Monitoring and evaluation

- Monthly reports from health facilities to guide district operational planning
Formulating oral health strategy for South-East Asia, 2008

A report from the World Health Organization (WHO) South-East Asia Region recommended that WHO Member States should undertake a situational analysis, reflect oral health in their national health policies, have promotion and prevention plans for oral health, integrate oral health into other health programmes, adopt a multidisciplinary approach, strengthen the oral-health workforce and establish surveillance of oral health and regular monitoring of oral-health programmes.8

World Health Organization framework for oral health, 2010

The WHO framework for oral health, Equity, social determinants and public health programmes, published in 2010, gave an overview of international policy on oral health (see Box 2) and examined social determinants, entry points and interventions to address inequalities in oral health.9 The framework recommended that policies aiming to influence oral health should take into account the socioeconomic context and position, with the associated differential exposure and vulnerability to risk of oral disease, and differential health-care outcomes and consequences.9

The consultation highlighted five common themes on what had hindered implementation of the recommendations. These encompassed: (i) lack of local support for the recommendations, particularly on promotion of oral health; (ii) lack of financial and budgetary provisions for oral health; (iii) lack of focus on services, human resources and dental personnel; (iv) poor focus, design and implementation of policy and planning in oral health; and (v) lack of transport to facilitate health-care workers’ access to remote areas. Poverty posed a major challenge, alongside the pressure of competing priorities such as trade policies that are insensitive to public health (tobacco), a lack of information (disease burdens and economic impact), lack of awareness (limited health literacy), lack of advocacy, and a lack of resources (limited availability, affordability and access).
Box 2. Recommendations from the World Health Organization framework for oral health

Socioeconomic context and position

- Legislate local production of quality, affordable oral-health products
- Remove taxes on oral-health products
- Place oral health within the primary health-care approach
- Fair and equitable policies
- Develop infrastructure for oral-health services and population-based interventions

Differential exposure to risk of oral disease

- Regulation on tobacco
- Better labelling
- Address excess use of alcohol
- Restrict advertising of unhealthy food
- Promote the use of mouthguards and safety helmets
- Encourage interventions that adopt a common risk-factor approach
- Support healthy physical and psychosocial environments
- Encourage optimal exposure to fluorides
- Promote oral health through “healthy-settings” initiatives and encourage them to be part of a larger network

Differential vulnerability to risk of oral disease

- Greater availability of sugar-free alternatives and medicines
- Support interventions and make tools available for breaking poverty and social inequalities
- Support measures that promote healthy eating and nutrition and reduce the amount of sugar, salt and fat in foods and drinks
- Reorient oral health services to improve access and availability
- Promote the availability of quality affordable oral-health products, healthy foods and drinks
- Regulate the sale of harmful or unhealthy products to certain high-risk groups in certain settings
- Promote oral health through chronic disease prevention, health promotion and health education
- Integrate oral health into community, local, national and international health programmes
- Work in collaboration across government departments and with local communities, other sectors, agencies and nongovernment and other organizations to promote oral health

Differential health-care outcomes

- Target resources that support disadvantaged or high-risk groups
- Improve early detection of oral cancer and noma with timely treatment and referrals
- Provide tobacco-cessation services in dental practices
- Include oral health in training of members of the primary health-care team

Differential health-care consequences

- Regulate the sale of harmful or unhealthy products to certain high-risk groups in certain settings
- Encourage healthy diets and moderate consumption of alcohol
- Outreach oral health care towards vulnerable and poor population groups
- Provide third-party payment systems reducing inequity in the use of oral health service
By contrast, several developments have been initiated in Timor-Leste that were not advocated in 2002. These are: (i) the establishment of a dental therapy school in August 2011; (ii) the creation of a Timor-Leste Dental Service in May 2002, though it is small relative to the population of Timor-Leste and largely supplies urgent oral treatment; (iii) the introduction of dental nurses (trained in Indonesia) during the early 1990s, and after independence in May 2002, who can deliver preventive dental care, extractions and simpler restorations; and (iv) plans to establish a school of dentistry in Dili in 2017. Although not advocated in 2002, these developments align with the strategic priorities for oral health in Timor-Leste, to deliver oral-health promotion and prevention, to deliver personal dental care and to develop human resources for oral health.

REVISED POLICIES PROPOSED TO IMPROVE ORAL HEALTH IN TIMOR-LESTE

We propose an updated set of oral-health policies and recommendations for consideration by the government of Timor-Leste. Key priorities to improve the oral health of the population of Timor-Leste include promotion of oral health, legislative interventions, education of the oral-health workforce, dental outreach programmes, targeted dental treatment, dental infrastructure programmes and research and evaluation (see Box 3).

The proposals tackle the inadequate local support, shortfalls in financial and budgetary provisions for oral health, an inadequate focus on oral-health services and the lack of transport, by moving...
1.7 Research and evaluation

- Redesign the monthly report on dental service to obtain better collection of data on oral health

Stage 2

2.1 Promotion of oral health

- Promote oral health through “healthy-settings” initiatives in schools and networks of health-promoting schools
- Include oral-health campaigns in general health campaigns
- Encourage the use of toothbrushes and fluoride toothpaste in adults, but where that is not practical, encourage traditional cleaning methods
- Create locally designed pamphlets on oral cancer for health workers

2.2 Legislative interventions

- Label tobacco packets
- Provide affordable toothpastes and toothbrushes by removing or reducing taxes on these products
- Tax all imported sugar to replace, or more than replace, any tax lost from removing the tax on toothpastes and toothbrushes
- Label food and drinks showing the amount of fat, sugar and salt
- Ban smoking and betel-quid chewing in public buildings
- Restrict advertising of alcohol, tobacco and unhealthy food

2.3 Education of the oral-health workforce

- Monitor the numbers and mix of the dental workforce, to ensure the most appropriate workforce
- Create a referral pathway for dental treatment for people found to have oral disease.
- Train dental clinicians in the importance of mouthguards for contact sports and how to make them, for a later campaign to the public
- Train oral-health professionals in smoking-cessation interventions
- Teach all dental workers how to do basic repairs on dental equipment and include such training as part of the dental undergraduate programmes
- Teach some local trades people, such as electricians, more advanced repair of dental equipment
- Provide scholarships for training in public health, oral and maxillofacial surgery, paedodontology, orthodontics and oral medicine

2.4 Targeted dental treatment

- Move to basic and then more elaborate restorative dentistry
- Ensure every community health centre has at least one dentist
- Improve collaborations with oral-health volunteer groups

2.5 Dental infrastructure programmes

- Have more than one dental room and dental chair per community health centre
- Have the same brands of dental equipment, instruments and materials in all dental surgeries, selecting dental equipment that does not often break down, and that is easy to repair when it does break down

2.6 Research and evaluation

- Routinely collect, report and share data on population health and access to care
- Ensure research is used to inform planning and service delivery
- Conduct regular evaluation external to Timor-Leste to determine whether recommendations on oral-health policy are being implemented
- Improve access to the Internet for all dental clinicians, possibly via mobile phones and portable computers
towards community-based prevention of oral diseases, with dental care based on a community-based hub-and-spokes model. The use of inexpensive legislative interventions and the move away from the medical model of dental care to a community-based preventive and minimally invasive one, with services often supplied by local health workers, will be more affordable in the developing economy of Timor-Leste, move the support and focus on oral health from central administration to the local communities, and reduce the need for transport. The proposals are also more likely to succeed than previous ones because circumstances have changed. During the time of the previous reports, the 2002 National Oral Health Survey and the National Oral Health Strategy, Timor-Leste was going through a time of great change. The country is now better organized, has more resources and has researchers able to assist in the local development of evidence-based health policies.

Promotion of oral health

The first stage in promotion of oral health should start with children, as Timor-Leste has a rapidly growing and young population. The census of 2010 identified that only 42.5% of children attended school, despite this low attendance, the ready access to children in schools makes them the most suitable first recipients for promotion of oral health incorporated into general health promotion. At the same time, national efforts are required to improve access to education for those children currently missing out. Collaboration with education authorities, school administrators and teachers is required to further develop the school curriculum to cover chewing of betel nut, smoking tobacco, diet, oral hygiene (use of toothbrushes and fluoride toothpaste) and regular dental visiting. Parents should be invited to these classes to reinforce the messages at home.

Timor-Leste should progressively develop oral-health campaigns that encourage the use of toothbrushes and fluoride toothpaste in adults, but where that is not practical, they should encourage traditional cleaning methods, e.g. datum, leaves and charcoal. Also needed are locally designed pamphlets on oral cancer for health workers that discuss the presentation of early-stage oral cancer, and the creation of a referral pathway for people suspected to have oral cancer.

Legislative interventions

The first stage in recommended legislative interventions should be to ensure that all salt is fluoridated, and that all toothpaste contains fluoride at 1000 parts per million. Water fluoridation is not practical in Timor-Leste because the country does not have an extensive or clean reticulated water supply. However, Timor-Leste and the Asian Development Bank have recently announced plans to improve the water supply and sanitation for rural areas. Salt and toothpaste are almost all imported into Timor-Leste and so arranging for them to contain fluoride can be done at little cost. At the same time, banning the use of tobacco and betel nut, as well as sweet stalls in schools, could be implemented by the Department of Education with little difficulty.

At a later stage, the Government of Timor-Leste could investigate affordable toothpastes and toothbrushes, by removing or reducing taxes on these products and putting a tax on imported sugar to replace the revenue thereby lost. It could also label food and drinks, indicating the amount of fat, sugar and salt, ban smoking and betel-quid chewing in public buildings, and restrict the advertising of alcohol, tobacco and unhealthy food.

Education of the oral-health workforce

The Government of Timor-Leste should continue to train dental therapists and dental nurses to supply preventive and atraumatic restorative dental care. Establishing a dentistry school will supply a workforce to attend to complicated treatments. A framework to monitor the numbers and mix of the dental workforce will enable better workforce strategies to support the needs of Timor-Leste.

The Timor-Leste dental service should train midwives, general nurses and health-promotion teachers in dental screening, using the “Lift the Lip” screening programme, and screening for oral cancer, promotion of oral health, fluoride applications and glass ionomer sealants. It should also create a referral pathway for dental treatment for children with oral disease. Next, the Timor-Leste dental service should train dental clinicians in preventive practices such as mouthguards and smoking cessation.

Dental outreach programmes

Timor-Leste should focus on strengthening the availability and quality of oral-health services offered at the community health centres, health posts and via the outreach programme, Servisu Integradu da Saude Comunitaria (SISCa). SISCa is an outreach programme designed to provide basic primary health-care services to communities and households at 602 posts all over the country.

Targeted dental treatment

Dental treatment should move from urgent oral treatment to prevention, with in-surgery oral and general health promotion, fissure sealants and atraumatic restorative techniques, not only by dental practitioners, but by outreach health workers. At a later stage, as determined by the Timor-Leste Dental Service, these services could include basic and then more elaborate restorative dentistry. The policy should be that every community health centre has at least one dentist, so that a process can be established whereby outreach health workers can refer people with oral problems to a dentist.

Dental infrastructure programmes

Dental equipment, instruments and materials in community health centres need to be improved in a staged process, and the existing portable dental chairs and equipment in community
health centres should be used for the outreach SISCa programme. There needs to be more than one dental room and dental chair per centre, so that they can act as incoming referral centres from the sucos (villages) and aldeias (sub-villages). The same brands of dental equipment, instruments and materials are required in all dental surgeries. Quality equipment should be selected that does not regularly break down and is easy to maintain and repair.

Research and evaluation

Currently, the Timor-Leste Department of Health collects basic data on the productivity of dental practitioners, such as the number of patients seen and the treatments provided. For research and evaluation, the first step is to redesign the current monthly reporting systems of the Timor-Leste Dental Service, in order to obtain data on oral health, rather than solely focusing on staff productivity. The National Health Sector Strategic Plan 2011–2030 proposed an improvement of the communication systems (including radio and Internet connections) to provide all health facilities with suitable systems for patient referral and the transfer of management data. Linking the collection of data on oral health with such a communication system would be ideal.

Later stages should include supporting research that develops and evaluates models of oral health care and access, routinely collecting, reporting and sharing population data on health and access to care, to ensure research is used to inform planning and service delivery; conducting regular evaluation external to Timor-Leste, to determine whether recommendations for oral-health policy are being implemented; and improving communications access through wider use of mobile phones and portable computers, so dental clinicians can remain informed of current literature and international practice in oral health.

Conclusion

Copying the medical model to improve oral health is not feasible in a developing economy with a rapidly growing population, as found in Timor-Leste. Hence, the approach should be preventive interventions: oral health promotion for schoolchildren, salt fluoridation, fluoride toothpaste and banning sweet stalls and use of tobacco and betel nut in schools. Timor-Leste should focus on strengthening the availability and quality of oral-health services offered outside of the larger cities, and train midwives, general nurses and health-promotion teachers in dental and oral-cancer screening, promotion of oral health, fluoride applications and glass ionomer sealants. Dental therapists and dental nurses who can supply preventive and atraumatic restorative dental care should continue to be trained, and Timor-Leste should continue to work towards establishment of a dentistry school to supply a workforce for more complex treatments. Ongoing research and evaluation is needed to ensure that the approach being used in Timor-Leste is leading to improved outcomes in oral health.

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REFERENCES


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