Dental caries rates in South Africa: implications for oral health planning

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Introduction

Oral diseases remain a major public health problem in South Africa because of their high prevalence, severity, and impact on individual quality of life. The resultant effect of persistent oral health inequalities in access to care suggests that a greater burden is placed on the public sector to deliver equitable, cost-effective primary oral preventive services. Given the underlying multifactorial determinants of dental caries, namely access to and availability and utilisation of oral health services, socio-economic status and dietary intake, oral health planning efforts need to focus on reducing the burden of oral diseases, especially in disadvantaged communities, by promoting healthier lifestyles to address the socio-economic and environmental risks to oral health, and developing policies and strategies that support oral health integration within other national and local health programmes.

Prevalence of dental caries rates in South Africa

The prevalence and distribution of dental caries rates make up the most documented research on oral diseases, yet the evidence suggests that caries rates differ significantly and are on the decline in some countries. The World Health Organization (WHO) Oral Health Country/Area Profile Programme suggests that 68% of 12-year-old children in the 184 countries examined had less than three DMFT (decayed/missing/filled teeth). This indicates a steady decline in the caries incidence rates for 12-year-old children over a 30-year period. A similar trend is observed in the South African oral health profile for 12-year-old children, with caries incidence rates decreasing from 2.5 in 1982 to 1.1 in 2003. However, these rates must be assessed critically with respect to the methodological changes that have occurred over this period.

Only three studies have been conducted on a national scale by the Department of Health to determine the oral health status of selected groups in South Africa. The most recent national oral health survey was conducted from 1999 to 2002 and was restricted to 4- to 5-year-olds, 6-year-olds, 12- and 15-year-old children in South Africa. The report also indicates that children living in urban areas have slightly higher rates of dental caries. The following extract demonstrates the relationship between geographical location and dental caries rates: “Percentage of children in the South Africa who needs treatment for dental caries ranges from 45-60 per cent and the mean number of teeth needing care per child ranges between 2 to 3. The needs varied widely from...”
province to province. The greatest need was recorded in the Western Cape province where almost 80 per cent of the children needed care. The lowest need for dental care was recorded in the Limpopo province.6

Applying the Unmet Treatment Need Index (UTN) to the recorded caries rates, the results demonstrate that 80% of carious lesions in children go untreated.8 The most common oral health need identified in children would be personal preventive services, restorative treatment and extraction of teeth.6,8 Oral health needs varied widely with the 4-5- and 6-year age groups, requiring more conservative and emergency relief of pain in comparison to the older groups. The need for preventive services was greatest in the 12-year group, and the need for extraction was lowest in both the 12- and 15-year-old children.6,8

**Implications for oral health**

Despite this availability of epidemiological data on caries prevalence rates in children, there is little evidence to suggest that childhood caries is adequately addressed through policy and service provision efforts in South Africa. Emergency relief of pain and sepsis has been identified as the most frequent clinical procedure performed at a primary oral healthcare-rendering service facility, while school oral health promotion programmes are fragmented, not uniformly distributed and implemented, and lack formal evaluation.1-3 This has important public health implications in terms of the quality, efficiency and effectiveness of public health services, the accessibility and availability of oral health services, and the appropriateness of oral health preventive measures.

Thus there is an urgent need for capacity building in oral health clinical service provision, with a greater commitment to implementing the basic minimum package for oral health. This includes emergency relief of pain and sepsis, scaling and polishing, simple restorations, and periapical radiographs in response to local oral health need.10 It is important to ensure access to and availability of oral health services, including policy commitments in resource allocation. Efforts in primary oral health services need to be equitable and evidence based. Community-based efforts need to include community participation and stakeholder involvement.

**Health integration**

Health promotion efforts include policy development, advocacy and healthy environments, the settings approach, education and information, community participation and reorienting health service delivery.11 Health promotion settings such as schools, clinics, and others provide a viable platform to address unmet oral health need, through comprehensive and integrated strategies and interventions.

Strategies and interventions on oral health promotion need to be directed primarily at women receiving antenatal care, mothers and children, and the youth and adolescents.12 School oral health programmes will provide additional support for oral health promotion efforts, because of their potential to reach all children, thereby addressing social inequities. A comprehensive approach to maternal and child health care, involving efforts to encourage additional fluoride uptake, nutritional intake and safe breast-feeding practices, could provide strategies to address early childhood caries, as opposed to individual interventions.13-14

**Oral health planning**

**Dietary intake**

The impact of nutrition, especially the consumption of refined sugars on the progression of dental caries, has been widely documented.15-16 However, an exclusive focus on education, counselling, dietary knowledge and attitudes to food and ignoring the impact of socio-environmental factors on the development of dental caries is incomplete.17-20 The role of dietary sugars in the causation of dental caries requires an integrated approach with public health policy, practice and research.21-23

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Table 1: Prevalence of dental caries and untreated caries by age group in South Africa

<table>
<thead>
<tr>
<th>Age group</th>
<th>4-5 years*</th>
<th>6 years*</th>
<th>6 years</th>
<th>12 years</th>
<th>15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Caries</td>
<td>% Untreated caries</td>
<td>% Caries</td>
<td>% Untreated caries</td>
<td>% Caries</td>
</tr>
<tr>
<td>Weighted national mean</td>
<td>50.59</td>
<td>46.56</td>
<td>60.32</td>
<td>55.11</td>
<td>6.28</td>
</tr>
<tr>
<td>Western Cape</td>
<td>77.1</td>
<td>72.0</td>
<td>82.3</td>
<td>75.2</td>
<td>9.6</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>84.1</td>
<td>82.7</td>
<td>84.1</td>
<td>82.7</td>
<td>16.4</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>58.9</td>
<td>53.7</td>
<td>67.7</td>
<td>63.6</td>
<td>4.1</td>
</tr>
<tr>
<td>Free State</td>
<td>60.1</td>
<td>57.8</td>
<td>59.2</td>
<td>56.8</td>
<td>4.9</td>
</tr>
<tr>
<td>KwaZulu-Natal</td>
<td>52.4</td>
<td>50.8</td>
<td>64.8</td>
<td>59.9</td>
<td>6.2</td>
</tr>
<tr>
<td>Gauteng</td>
<td>49.1</td>
<td>37.6</td>
<td>59.7</td>
<td>50.5</td>
<td>4.9</td>
</tr>
<tr>
<td>North West</td>
<td>41.0</td>
<td>39.5</td>
<td>52.3</td>
<td>48.2</td>
<td>7.8</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>40.2</td>
<td>35.1</td>
<td>56.2</td>
<td>48.4</td>
<td>10.1</td>
</tr>
<tr>
<td>Limpopo</td>
<td>31.3</td>
<td>30.8</td>
<td>37.2</td>
<td>33.8</td>
<td>4.9</td>
</tr>
</tbody>
</table>

*Primary dentition
individual behaviours has shown to have a limited effect on improving oral health status. 16

Policies aimed at individual behavioural changes amount to victim blaming. It is therefore important to develop specific policies that are directed at industry, in an attempt to create supportive environments to make healthier choices easier. These specific strategies in oral health promotion include the development of policies on integrated nutrition efforts at all levels of the health system. These policies need to address the impact of non-milk extrinsic sugar consumption through an integrated approach in dietary intake, as opposed to isolated risk factor approaches. The availability and cost of healthier foods, as well as providing information on food labels, are seen as important influences on food choices. 17, 18

Additional fluoride uptake

The introduction to additional fluoride uptake will need to take into account the extent and severity of dental caries, and its distribution and impact, carefully assessing the different options regarding the mechanisms in fluoride uptake, availability of resources, programme sustainability, other stakeholder involvement and client preferences.

Fluoridated toothpaste that is available at a cost that disadvantaged communities can afford, would be a viable method of introducing additional fluoride uptake to communities in South Africa. Fluoridated toothpaste containing at least 1,000 ppm has been shown to be effective in caries prevention in children. However, the risk-benefit ratio of additional fluoride uptake must be weighed in terms of risk to dental fluorosis. 19 Therefore the value of subsidised fluoridated toothpaste is an issue that needs to be put on the policy agenda.

Fissure sealant programmes

Systematic reviews have found strong evidence of sealant effectiveness on sound posterior teeth in children and adolescents. 20-24 Sealants delivered in clinics, mobile units or school settings can reduce caries in the pits and fissures by 60% from two to five years after placement. Placement of auto-polymerised sealants reduced caries by 78% in the first year, and by 59% at four years or more. 25 School-based sealant programmes have the potential to reduce racial and economic disparities. However, the extent to which the sealant programmes can eliminate the disparity will be influenced by the selection of the target population and the processes involved. 26 Given its value as a primary preventive strategy, fissure sealant programmes need to be included in the basic minimum package for oral health service delivery.

Conclusion

Oral health planning in South Africa needs to consider an integrated, evidence-based approach that is contextualised in response to local oral health needs to address dental caries prevalence rates in children. Sustainable and integrated oral health policy development and strategic planning, that have the potential to translate policy rhetoric into implementable programmes, would be important building blocks in the quest for improved oral health in South Africa. It is also imperative that capacity building in research is developed, to ensure that policy development and planning is guided by epidemiological evidence.

References


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