# Evaluation of the Ministry of Health school oral health programme in the West Bank region of Palestine

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## تقييم برنامج وزارة الصحة المدرسي المعني بصحة الفم، في الضفة الغربية، بفلسطين

إلهام طالب الخطيب

**الخلاصة:** تقدِّم هذه الدراسة تقييماً لأنشطة ونتائج البرنامج المدرسي لصحة الفم الذي أجرته وزارة الصحة في المدارس العمومية في الضفة الغربية بفلسطين خلال الفترة من 1997 – 1998 إلى 2003 – 2004. وقد تَرَكَّزَ التحليل الاستعادي الذي أُجري للسجلات الرسمية على مَنَاسب صحة الفم وإحالات الطلاب. وكان وجود تحسُّن طفيف في معدلات الأسنان المنخورة، والمقلوعة، والمحشوة في بعض المحافظات خلال السنتَيْن الأخيرتَيْن، بمثابة مؤشِّر على بعض التقدُّم في مجال مكافحة التسوُّس. ومع ذلك، فإن هناك حاجة لاستمرار الجهود للحفاظ على معدَّل التسوُّس عند هذا الحد وضمان عدم ارتفاعه في مناطق استقرار المرض، وزيادة الجهود الاستراتيجية للتعاطي مع معدلات التسوُّس المرتفعة في المناطق العالية الاختطار. وأظهرت المقابَلات المتعمِّقة التي تمت مع أصحاب الشأن، نقاطَ القوة ومواطنَ الضَعْف في برنامج التحرِّي، وساعدت في وضع التوصيات الرامية إلى تحسين ذلك.

ABSTRACT This paper reports an evaluation of the activities and outcomes of the school oral health programme conducted by the Ministry of Health in public schools in the West Bank region of Palestine from 1997–98 to 2003–04. Retrospective analysis of official records focused on oral health indices and student referrals. A slight improvement in DMFT scores in students in some governorates in the last 2 years showed some progress in caries control. However, maintenance efforts are required to ensure that caries level does not rise in disease-stable areas, and an increase in strategic effort is required to address the high caries level in high-risk areas. In-depth interviews with stakeholders identified the strengths and weaknesses of the screening programme and recommendations for improvements.

**Évaluation du programme de santé bucco-dentaire en milieu scolaire du Ministère palestinien de la Santé en Cisjordanie**

RÉSUMÉ Cet article se fait l'écho d'une évaluation des activités et des résultats du programme de santé bucco-dentaire en milieu scolaire conduit par le Ministère palestinien de la Santé dans les écoles publiques cisjordaniennes de 1997-1998 à 2003-2004. L'analyse rétrospective des dossiers médicaux officiels a essentiellement reposé sur les indices de santé bucco-dentaire et le nombre de consultations chez le dentiste. Une légère amélioration de l'indice CAO (nombre de dents cariées, absentes ou obturées) observée ces 2 dernières années chez les élèves résidant dans certains gouvernorats traduisait un progrès dans la maîtrise des atteintes carieuses. Toutefois, des efforts sont nécessaires en termes de surveillance bucco-dentaire si l'on veut éviter une augmentation du taux de caries dans les zones de stabilité de la pathologie, de même qu'est indispensable un renforcement des démarches stratégiques visant à limiter le pourcentage élevé d'atteintes carieuses dans les zones à haut risque. Des entretiens approfondis avec les différents acteurs ont permis d'identifier les atouts et les faiblesses du programme de dépistage et d'élaborer un certain nombre de recommandations destinées à améliorer ce dernier.

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## Introduction

Most childhood tooth decay could be avoided through simple preventive measures such as screening, monitoring, combined use of fluorides and dental sealants and regular professional care. These measures can save children pain, complicated procedures and high dental treatment costs. In order to apply the measures effectively, public health care administrators and decision-makers need the tools, the capacity and the information to assess and monitor oral health needs, choose intervention strategies, design policy options appropriate to their own circumstances and improve the performance of the oral health system [*1*]. Dental screening data can be used to identify trends and to assist in allocating scarce resources [*2*] and are an important indicator of a community's health status [*3*].

One successful model of oral health programmes is school-based screening and education. School-based programmes are increasingly being seen as a strategic way to identify children who need dental care the most and thus improve access to health and social support services for vulnerable populations. Studies show that school dental screening is capable of stimulating dental attendance among children with a treatment need [*4*,*5*] and improving the dental health status of schoolchildren [*6*].

However, there are inherent problems and challenges with school-based screening programmes. Al-Tannir discussed the importance of outreach activities in promoting awareness of a dental screening programme and highlighted the need for personal contact by programme staff to ensure that children get the necessary follow-up [*7*]. Cooperative relationships between dental practitioners and the schools are required [*8*]. Furthermore, school-based dental screening programmes can be very time- and labour-intensive [*9,10*]. Other challenges include developing a standardized screening protocol, including both the establishment of standardized criteria for referral [*11*] and sufficient training and calibration of screeners [*12*]. It is important, however, to highlight that training does not fully resolve problems with consistent identification of dental needs between screeners [*13*]. Another question is who should carry out the screening: dentists and dental hygienists [*9*] or primary care providers or paediatric dentists [*14*].

This paper outlines the oral screening programme that has been set up in public schools in 9 governorates in the West Bank region of Palestine, and details the evaluation of the effectiveness of the programme in minimizing oral health diseases, particularly caries.

## West Bank oral health screening programme

As a global concern, in 1979 The World Health Organization (WHO) announced that by the year 2000, the global average for dental caries was to be no more than 3 decayed, missing or filled teeth (DMFT) at 12 years of age [*15*] and in 1989 WHO endorsed the promotion of oral health as an integral part of health for all by the year 2000 [*1*]. To achieve this, WHO urged Member States to establish oral health information systems and offered assistance in efforts to develop these systems and provide them with core standardized methods but with flexibility to expand by adding information relevant to the local situation.

To meet national needs and international requests, an oral health screening programme was launched in West Bank public schools of the Palestinian Authority in 1997, aiming to screen schoolchildren

in the 3rd, 7th and 10th grades. It is a part of the national school health programme conducted by the Palestinian Ministry of Health (MOH) in collaboration with other international organizations. The programme is carried out and operated by the MOH's 17 dental clinics that are distributed all over the West Bank and report to the central office in Ramallah.

The programme started with oral screening, educational seminars and students' referrals to oral clinics operated by the MOH. After that, the programme developed into offering some necessary preventive procedures, such as fluoride gel application and fissure sealants for selected schools in school years 2002–03 and 2003–04. The programme uses WHO models and criteria [*16*] in screening for dental decay using the DMFT index and for gingival health using the CPITN index [community periodontal index of treatment needs]. Later, programme operators added fluorosis and malocclusion assessment to the screening programme.

Although the dental screening programme does not have specific objectives, the school health programme aims to improve the general and oral health of school students and increase their access to health services.

Programme effectiveness was measured in 2 stages: short-term and long-term. Short-term outcomes can be demonstrated by increasing coverage rate, increasing FT component and care experience index (i.e. more services delivered and more follow-ups made), and increasing the percentage of referred students who actually attended oral clinics (i.e. success in raising awareness of oral health care, increasing follow-up and stimulus for seeking treatment). Long-term outcomes can be demonstrated by lower DMFT values, especially the DT component. This outcome needs more time to be apparent, because caries progression is a relatively slow process; it takes about 2 years from the initial attack of caries to be clinically evident and be counted as D in the DMFT index.

## Methods

Two methods of evaluation were used: quantitative (retrospective analysis of official records) and qualitative (in-depth interviews).

### Retrospective analysis of official records

Data for the evaluation were drawn from 7 annual oral health reports organized by the central oral health department in the Palestinian Authority MOH (school years 1997–98 until 2003–04). These data provide a means for tracking changes in quantifiable behaviours. The oral health offices in the 9 Palestinian governorates send their monthly school oral health screening results to the central office in Ramallah, where they are organized and analysed into the final report. Each school in the designated governorate has the chance to be screened once a year. DMFT data (among other oral health indicators) are collected for each student in the selected grades.

The data presented here were derived from routine dental examination conducted by the MOH dentists using visual methods without radiography or fibro-optic transillumination. In school year 2003–04 a grant from the United Nations Children's Fund (UNICEF) supplied all the governorates with WHO standardized examination sets for oral screening. The methods used for the diagnosis and reporting of caries experience followed those published by the WHO for oral epidemiological studies [*16*].

The dental screening programme targeted public school students in 3rd, 7th and 10th grades in all the 10 governorates. In

this evaluation, only data for 7th and 10th grades were used, because for the first 5 years 3rd graders were screened then substituted by 1st graders. The 7th grade (12-year-olds) and 10th grade (15-year-olds) are global monitoring cohorts; this allowed more permanent teeth to be included in the examination, and would facilitate international comparisons [*17*]. Only 9 governorates were used in this evaluation, because the 10th (Jerusalem) was added only in the last 4 years.

Five indicators were used [*18*]:

1. *DMFT index*: the mean number of teeth decayed, missing or filled because of decay among schoolchildren. The index may refer to permanent teeth or baby teeth. It is a general indicator of dental health status among children and is felt to be extremely reliable; the lower the index, the better the dental health of the population. The index records past history and is cumulative [*19*]. To be recorded as decayed, teeth must have evidence of carious cavitations to the level of the dentine.
2. *DT index*: the number of decayed teeth divided by the number of examined students. This shows the caries experience by population.
3. *Care experience index*: the number of filled teeth divided by the number of examined students [(FT/DMFT) ×100/100]. This indicator assesses the delivery of dental services to the population.
4. *Coverage rate*: the number of students examined in each governorate divided by the number of students in that governorate.
5. *Percentage of MOH oral clinic visits*: the percentage of oral clinic visits by referred students (referred by screening teams). This shows the effect of oral school health programmes in stimulating students and their parents to seek dental care and the amount of follow-up by the programme itself. This is a valuable indicator to measure programme effectiveness.

Analysis of the data extracted from the MOH's 7 annual reports was carried out using *SPSS* software package.

### In-depth interviews

The second method used in this report was in-depth interviews with programme administrators, dentists who conducted the oral screening and staff involved in interpreting and analysing data. Interviews comprised a series of questions, typically semi-structured or unstructured, conducted in person. A trained dentist with dental public health experience prepared and conducted those interviews.

The advantages and disadvantages of the programme and other programmes operating in the region, concerns about the implementation of the programme, suggestions and recommendations to improve it and general oral health policy in the Palestinian Authority areas were discussed.

## Results

### Oral health indicators

The analysis of the data revealed the following outcomes for the 5 indicators.

*Coverage rate:* All governorates showed a steady increase in coverage rates in the first 4 years and a boost in the last 3 years of the evaluation. Overall, the rate increased from 22.8% in 7th grade and 14.5% in 10th grade in 1997–98 to 92.4% and 88.2% respectively in 2003–04. The highest rates were obtained in school year 2003–04; coverage rates in 7th grade were consistently higher than 10th grade, as shown in

Figure 1. A major increase in coverage rates after year 2000–01 occurred after the school oral health administration assigned local dental staff for each region to screen school students, saving time and cost of dentists' travelling from one region to another.

*DMFT index:* Trends in DMFT over time demonstrated a slight decrease in DMFT scores for the West Bank in the last 2 years (Figure 2). The mean West Bank DMFT scores for 7th grade ranged from 1.35 in 1997–98 to 2.17 in 2001 and from 1.6 in 1997–98 to 2.9 in 2000–01 for 10th graders. In school year 2003–04 the mean DMFT was 1.49 for 7th grade and 1.9 for 10th grade.

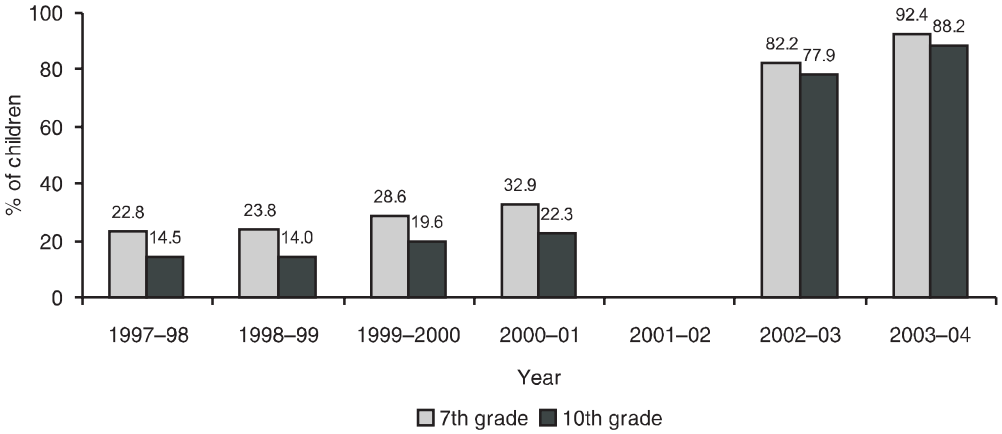


Figure 1 **Coverage rate of oral health screening for schoolchildren in grades 7 and 10 of West Bank schools**

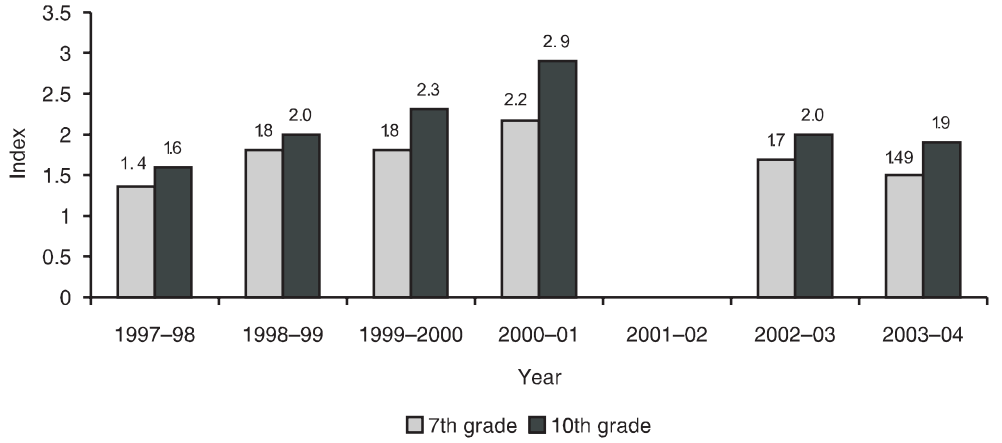


Figure 2 **Decayed, missing filled teeth (DMFT) index for schoolchildren in grades 7 and 10 of West Bank schools**

The lowest recorded mean DMFT for all areas of the West Bank was 1.35 in 7th grade students and 1.6 in 10th grade in school year 1997–98. The highest DMFT was 2.17 in 7th grade and 2.9 in 10th grade in school year 2000–01. In general, 10th graders had higher DMFT scores than 7th graders.

*DT index*: When the components of DMFT were examined separately, however, we can see that DT was the major contributor to the DMFT scores; FT was the smallest contributor. This was true in both 7th and 10th grades (Figure 3). Thus, although DMFT scores slightly improved over the 7-year period, the DT component had increased while FT and care index remained low. The measure of DT was higher in 10th grade than 7th grade children.

*Care experience index:* The care index ranged from 11.9% to 15.5% for the 7th grade children over the 7-year period of the programme. Care experience indices were higher in 10th grade than 7th grade children (Figure 4). The 7th grade children had a care experience index of 14.8% in school year 2003/04 and 10th graders scored 20% in the same year.

*Percentage of referred students visiting oral clinics:* The analysis showed that a small percentage of referred students attended dental clinics in school years 2002–03 and 2003–04 (Figure 5). The percentage was lowest in Salfit and highest in Jericho. School year 2003–04 had lower values than the preceding year, 2002–03. The mean percentage of students who attended dental clinics increased from 9% in 2002/03 to 11% in 2003/04 school year.

*Regional variations*

A wide range of DMFT values were seen across the 9 individual governorates. When analysed by governorate, the highest DMFT was recorded in Salfit (7.8 in 7th grade in school year 2002–03 and 7.0 in 10th grade in school year 2001–02), and the lowest DMFT was recorded in Jericho (0.7 in 1999–2000) and Nablus (0.62 in 1998–99 in 7th grade).

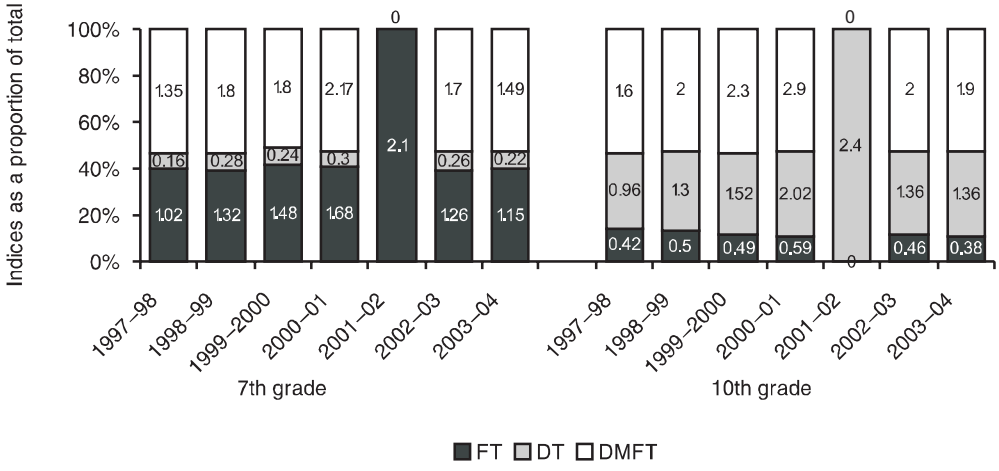


Figure 3 **Proportions of decayed, missing or filled teeth (DMFT), filled teeth (FT) and decayed teeth (DT) for schoolchildren in grade 7 and 10 of West Bank schools**

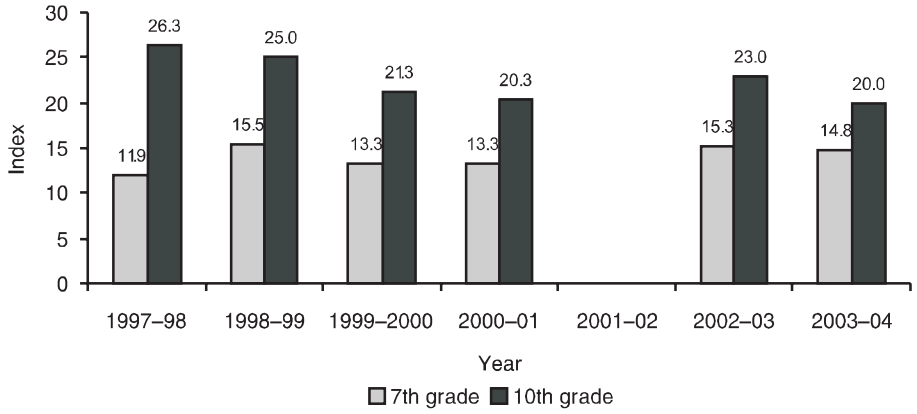


Figure 4 **Care experience index for schoolchildren in grades 7 and 10 of West Bank schools**

### Issues and recommendations identified in interviews

Comments on the programme performance, administration and equipment extracted from the in-depth interviews with the stakeholders highlighted a number of concerns. These are summarized on Table 1, together with recommendations to address the issues.

## Discussion

### Dental outcome indicators

The 92% coverage rate in the 7th grade cohort (12-years-olds) in 2003/04 could be considered a high figure when compared with an industrialized country such as the United Kingdom (UK). On average, 16% of the total population of children aged 14

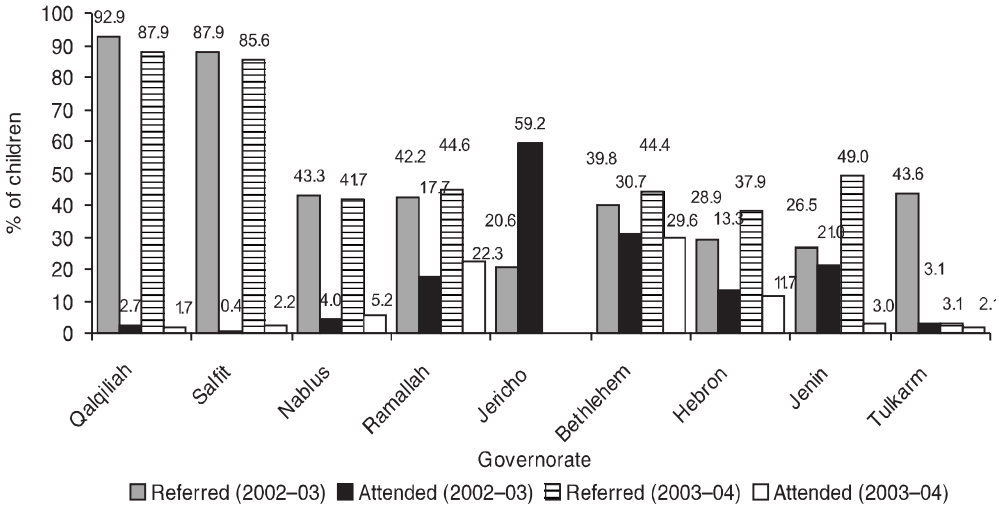


Figure 5 **Percentage of screened children who were referred, and who attended clinics, in grades 7 and 10 of West Bank schools**

Table 1 **Issues raised in the interviews with participants and stakeholders**

| Issues raised | Recommendations |
|---|---|
| *Validity and reliability* | |
| Poor diagnostic conformity among dental staff in different screening sites over the 10 governorates. Poor validity and reliability of the screening form. | Set up staff orientation and adequate training; peer/support monitoring; regular discussion forums, to discuss any issues arising during the programme implementation; field observations; random check-ups; and calibration sessions. |
| Large variations in lighting conditions for the visual examination among different screening sites. | Provide a source of light and a head rest to all screening teams. |
| *Workforce and transportation* | |
| Difficulties in conducting the screening and delivering community dental services due to workforce shortages in oral health in the public sector. | Expand the role and scope of practice of dental auxiliaries. With ongoing support and appropriate training, dental hygienists and auxiliaries can offer preventive and curative oral care at lower costs. |
| Difficulties in accessing schools due to transport problems for doctors and patients. | Use portable dental clinics to reach rural areas that lack dental clinics. |
| *Follow-up* | |
| No follow-up for students who need treatment. | Give more emphasis to follow-up of students at least twice a year after the students' initial dental screening. |
| Care offered in the MOH's dental clinics is mainly service-on-demand in nature (curative and not preventive) and is largely concentrated on the extraction of teeth. | Change the emphasis of the clinical component of the programme from restorative treatment services to preventive services, especially dental sealant applications. |
| *Cooperation and coordination* | |
| Lack of cooperation and coordination among programme operators, school administrations, students' parents and private clinics to document treatments in the provided referrals forms. | Establish effective channels of communication between ministries of health and education, local health and education authorities, schools, communities, teachers and students. Schools can be a focal point for dissemination of results, particularly to students, school staff, parents, families and community members and in establishing referral and follow-up systems. |
| *Collaboration and partnership* | |
| Need for collaboration and partnership among different national and international nongovernmental organizations (NGOs) and the MOH. | Foster stronger partnerships with local communities, such as dental schools, health-related NGOs and other interested parties will allow collaborators to focus on achieving common goals more firmly and successfully. A validation of the public–private partnership in providing public health dental services will improve quality and accessibility of services. Obtain more funding from government and NGOs for the programme to sustain its activities and objectives. |

Table 1 **Issues raised in the interviews with participants and stakeholders** *(concluded)*

| Issues raised | Recommendations |
|---|---|
| *Information technology* | |
| Lack of accessible organized information databases, data analysis systems and essential technology requirements. | Use standardized, valid and reliable forms for data collection, with separate research to test the validity and reliability of these forms; staff orientation and training on approved data collection methods; reviewing inconsistent practices; and electronic data entry. |
| Need for more organized efforts to disseminate screening data and programme results in order to monitor oral health indicators, determine health policy, define the needy populations and create proposals for funding. Awareness about the programme among the key informants interviewed was low. | Disseminate the programme results to all parties involved: policy-makers, sponsors, universities, research entities and other national and international organizations. For example, press releases and articles for local professional publications such as newsletters and journals; presentations at meetings at the local health department, university, national conferences or other settings; listing the reports data in relevant databases and electronic bulletin boards; and sharing the programme experiences and results by phone and meetings with similar programmes. |
| *Distribution of dentists* | |
| Distribution of dentists in Palestinian Authority areas is biased towards urban areas and a preference for working in private clinics rather than the public health sector. | Establish more oral clinics under the supervision of MOH, offering free or low cost treatment for all referred students and expanding the types of treatment modalities that they usually offer (17 oral clinics all over the West Bank operated by MOH). More incentives should be offered for dentists who work in public clinics, especially in rural areas. |
| *Autonomy* | |
| Lack of autonomy in oral health departments makes fund-raising difficult. | Direct available funding towards preventive measures more than curative ones; fissure sealants, fluoride mouth rinses and improving existing screening programmes would be beneficial. |
| *Evaluation* | |
| Need for evaluation of the programme (At the time of the interviews, no evaluation had been documented since the programme launch). | Use evidence-based research to evaluate operating programmes, determine oral health risk factors and define at-risk populations. |
| *Objectives* | |
| Need for well-defined, specific objectives to periodically assess programme progression. | Formulate well-defined, specific, measurable and realistic objectives for the school oral health programme; targets and standards of national oral health to be established to assess activities and outcomes of screening. |

years were examined in year 2003–04, 32% less than in the 1998–99 UK survey [*20*]. However, the coverage rate in the Palestinian authority MOH's screening programme was calculated from the ratio of examined students to the total number of students. This ratio did not consider the total population in the same age group, which could include children who attend non-public schools or other forms of independent learning.

The mean DMFT scores were 1.49 and 1.9 in 2003–04 in 7th and 10th grade respectively. The mean DMFT index compares favourably with some other countries in the region. Jordan scored 3.3 in 1999 [*21*], Lebanon scored 5.0 in 1996 [*22*], the Syrian Arab Republic varied between 1.4 and 2.5 in 2004 [*23*], Egypt scored 1.2 in 1991, and Tunisia scored 1.3 in 1994, Algeria scored 2.3 in 1987, and the Islamic Republic of Iran scored 4.0 in 1992 [*24*]. However, the West Bank compared less favourably with more developed countries; DMFT ranged from 0.63 to 1.31 in the UK in different regions [*17*].

Although high DMFT scores indicate high levels of the disease, unchanging DMFT or even a slightly increasing one might indicate a favourable change in care. This is true when all DT components convert to FT components; all the decayed teeth become filled teeth, which points to better treatment services. However, examination of the components of the DMFT index in the 9 governorates of the West Bank did not present this favourable change. DMFT scores in all areas over the 7-year period were largely attributable to the DT components, not the FT. This was also true in the last 2 years when DMFT showed a small reduction.

In most of the governorates under study, a slight increase in the DMFT scores after a gradual decrease in the last 3 years was noticed; this could be due to altering the examination strategy in school year 2003–04. Examiners switched from visual inspection to tactile inspection, using mirror and explorer, which is considered more accurate in caries detection.

Higher coverage rates demonstrated more representative samples and eventually more accurate DMFT values; this explains the boost in the DMFT index in the 9 governorates in year 2000–01. However, these report results could be more meaningful, if change indicators were weighted according to different coverage rates achieved.

There were regional variations in DMFT values across the 9 governorates. The low caries levels in Jericho are likely to be due to the high natural fluoride content in their water resources. Nablus and Ramallah also demonstrated low DMFT and this could be attributed to 3 factors:

- accessibility: dentists are easier to reach due to the wide availability of public transportation in these urban cities;
- affordability: these 2 cities are important commercial and political centres in the West Bank, which translates into more job opportunities, and thus higher individual incomes;
- availability: a high number of dentists work in private practice in these areas.

Although the DMF scores of these governorates (Nablus, Ramallah and Jericho) were within normal levels or even lower than WHO recommendations (DMF < 3 for 12-year-olds), the percentage of DT was higher than the FT component in these governorates. This indicates the need to enhance dental care measures among students by increasing awareness of good oral hygiene practices. Meanwhile, the school oral health programme should focus on teeth filling at an early stage of caries and application of fissure sealants.

In contrast, Salfit and Qalqiliah presented the highest DMFT scores over the whole programme period; however, due to lack of research, no risk factors have so far been identified in these areas. This great difference in the DMFT values among individual governorates has implications for targeting interventions and services at populations that were identified at risk.

The care index results (11.9% to 15.5%) could be considered very low when compared with UK values. The care index mean in the UK was 12% in 1995/96 then improved to 55% in 2002/2003 [*17*]. Care experience index reflects the restorative care received by those who have suffered disease; it therefore has to be viewed in conjunction with DMFT. These results are of interest in studying the provision of dental services to the age groups under study.

Although the mean percentage of students who attended dental clinics increased (from 9% in 2002/03 to 11% in 2003/04), the results are still considered low, when compared with other regions in the world. In Northern Ireland, the school-based dental screening programme stimulated 45% of the screened students to attend dental clinics, in contrast to 27% of the control group [*4*]. In Davangere, India, the dental screening programme stimulated 31% of screened students to seek dental treatment, compared with only 10% of the control group [*5*]. In the West Bank, the low percentage of referred students who actually visited dental clinics could be due to the following:

- Accessibility problems due to difficulties in transportation and checkpoints, curfews and border closures at the Israeli West Bank barrier, especially for students living in rural areas travelling to the city for care.
- Insufficient oral clinics operated by MOH that offer free treatments (only 17 clinics throughout the West Bank).
- Oral clinics are clustered in urban areas. Suburbs and rural areas lack this type of service.
- Inadequate services are provided in those clinics; very little dental specialties are offered.
- Oral clinics operated by MOH operate only from 08.00 to 14.00 hours, the same time period for school attendance.
- Dentists who carry out curative treatment in the clinics are the same people who are responsible for conducting the school screening; thus they are not always present in the clinics to treat the referred students.

## Challenges of the programme

Given the political situation in Palestine, the programme operating teams face a number of critical challenges. Like other Palestinians in the West Bank, they suffered from the direct and indirect consequences of military activities and border closures. It is reported that the dental teams and community health workers are prevented from passing through particular Israeli military checkpoints for days or weeks [*25*]. In addition, checkpoints and road blocks which divide the West Bank into 300 separate clusters cut off 70% of the population from reaching essential health care services for weeks and months [*26,27*].

Some limitations were also encountered in the data collection process:

- One of the most important issues that influenced the quality of data collection was the change in examination methods in school year 2003–04 from visual examination only to the use of examination sets which contain probes and mirrors.
- The percentage of referred students who actually visited oral clinics was available only in the last 2 years. In addition the 10th governorate, Jerusalem, was

added to the screening programme in the last 4 years.

- The available data from the MOH reports were not always complete because of staff changes and resignations.
- Finally, continuous change in staff, different training, and lack of commitment to WHO examination criteria [*16*] make comparability of the data difficult.

## Summary and recommendations

The existence of the school oral health programme in the Palestinian Authority areas as a database describing school children's oral health represents the commitment of the MOH to improving the school oral health care and services. The slight improvement in DMFT scores in students in some governorates in the last 2 years can be considered progress in caries control. However, maintenance efforts are required to ensure that caries experience at the population level does not rise in disease-stable areas, and an increase in strategic effort is required to address the high caries level in high-risk areas.

Many of the problems with delivery of the school oral health programme are symptomatic of the need for substantial improvement in programme management. The programme administrators and operating teams have divergent understandings and expectations of their roles and responsibilities. This is particularly so for observing screening sites, control referrals and follow-ups, and for managing and analysing data.

In summary, the MOH strategy for public dental health should use screening data to ensure that priorities for dental health are being properly identified and met, and that responsibilities for policy and operational activities are appropriately assigned and understood between different stakeholders. A national service plan should be developed by the MOH and other collaborators, including a reassessment of the appropriateness of the service planning principles in place, and whether the location and scale of public dental clinics established are meeting the needs of the eligible population. A national oral health promotion strategy should be launched which covers community education, development of an environment supportive of good oral health, facilitation of adequate access to fluoride, support for oral health research and development of a high quality trained workforce.

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