Health promoting schools and their impact on the oral health of mentally disabled people in Brazil

DORIANA CRISTINA GAIO*, SAMUEL JORGE MOYSÉS, JULIO CÉSAR BISINELLI, BEATRIZ HELENA SOTILLE FRANÇA and SIMONE TETU MOYSÉS

Pontifical Catholic University of Paraná, Paraná, Brazil
*Corresponding author. E-mail: dorianagaio@terra.com.br

SUMMARY

Health promotion aims to ensure that the population has improved living and health conditions, and schools are appropriate environments in which to do this. The purpose of this study was to investigate the impact of health promotion in terms of oral health in special schools for mentally disable pupils in Brazil. The study was cross-sectional and adopted a qualitative and quantitative approach, using triangulation methods to observe the reality. An epidemiological survey was performed in order to analyse the oral health status; a semi-structured questionnaire and participative observation were used for the qualitative analysis of the health promotion activities undertaken in the schools; case studies were carried out to evaluate the profile of oral health status in the context of the schools. The sample was comprised of 383 school-children aged 2–19, stratified among 7 schools, Curitiba/ Paraná/Brazil. The analysis was performed by means of frequency distribution and associations between variables, using the SPSS 16.0 program. The oral health status prevalences in the population studied were dental caries, 49.3%; bleeding gums, 23.8%; dental trauma, 11% and toothache in the last 3 months, 17.8%. Dental caries and bleeding gums experience was associated with the level of the mother’s education ($p < 0.00$) and age group ($p < 0.00$). Dental trauma and toothache in the last 3 months were associated with the level of the mother’s education ($p < 0.00$ and $p < 0.00$, respectively). Analysis of the dimensions of health promotion demonstrated that health is being promoted in all the schools studied. However, the analysis of oral health indicators per school revealed a possible interference of socio-demographic aspects in the results. It was concluded that the analysed special schools for the mentally disabled promote health. However, the socio-demographic profile of this population appears to have greater influence on vulnerability than the school context in relation to oral health status.

Key words: health promoting schools; mentally disabled; health inequities; oral health promotion

INTRODUCTION

Health promotion aims to ensure that the population has improved living and health conditions, and schools are appropriate environments in which to do this, since they can be considered social spaces capable of influencing students’ health, self-esteem, behaviours and life skills (WHO, 2008). The health and well-being of the school team, family and community members involved in the school can also be scaled up through school-based practices (Kwan et al., 2005).

Health promoting school (HPS) is a place where institutional health policies, the curriculum, the social and physical environment and ties with the community provide support for promoting the health of the school community, having been defined as ‘A school that constantly strengthens its capacity as a healthy setting for living, learning and working’ (WHO, 2008). The HPS model, which has been diffused in the
Americas since 1995 by the Pan American Health Organization, is a school context health promotion strategy based on the articulated development of three principal components: a comprehensive health education; the creation and maintenance of healthy surroundings and settings; the provision of health services, healthy food and active life (Moyse's et al., 2003; OPAS, 2003; Ippolito-Shepherd et al., 2005).

The participation of students on effective implementation of a HPS is widely encouraged and favours links with their life context (Jensen and Simouska, 2005). In a HPS, the evidence of effective practices is based on the recognition that improvements on health are influenced by the school community, public policies, the environment, partnerships and the acquisition of life skills at school (St Leger et al., 2007). For this reason, a HPS is considered to be a strategy for tackling social, health and education inequalities.

The health status profile of children and teenagers in the Americas is defined within a context of large social, economic, geographic, ethnic and gender inequalities, as well as inequalities in access to basic services such as health and education (OPAS, 2003). Analysis of the life course has shown just how much this context of social disadvantages accumulated or grouped together in critical periods, particularly in childhood, can contribute towards the creation of health inequities as a result of increased vulnerabilities (Watt, 2007; Peres and Peres, 2008).

People with disabilities are particularly vulnerable right from birth and deserve special attention (Groce, 2006). There is a close link between the limitations experimented by those people, the environment and the whole population attitude in a societal context. People with mental disability are considered to be part of the vulnerable group not only because of the difficulties imposed by their disability, but also because of the barriers imposed by the society. They are usually socially excluded, with limited access and qualification of the education and health care system to respond their needs. This can have a negative impact on their overall health status, also affecting their oral health (Sabbagh-Haddad and Gare, 2007).

According to the Brazilian National Demographic Census 2000 (Brazil, 2009a, b), around 24.5 million (14.5%) of the Brazilian population are people with disabilities, including those with difficulties to hear, walk and see. From those, 11.5% have some grade of mental disability. Social, economic, geographic, educational, ethnic and gender inequalities can be observed on the distribution of people with disabilities in Brazil. Until 1991, 60% of people with disabilities in Brazil were not literate, with the mental, hearing and visual disabilities the ones that contribute more for this reality (Brazil, 2007a, b, c).

Brazil is signatory, since 2007, of the United Nations Convention on the Rights of Persons with Disabilities (Brazil, 2007a, b, c). Inclusive national policies in areas such as health and education reinforce the national compromise with the right of people with disabilities (Brazil, 2007a, b, c, 2008). The key elements of these policies include the creation of favourable environments, access to information and social services, and also the promotion of individual abilities that support the development of the potentialities of people with disabilities. The National Policy on Special Education in the Inclusive Education Perspective (Brazil, 2008) supports the inclusion of people with disabilities in the regular educational network, although accepted the complementary of special schools, public or private, when the regular school cannot provide the individualized attention needed. In 2005, there were 207 234 schools in Brazil, 7053 of them as special schools (Brazil, 2006). As a consequence of this policy, during the last years, there is an important increase of people with disabilities accessing regular schools in the country. However, people with mental disability are mainly enrolled in special schools (Brazil, 2006, 2007a, b, c). In regards of health care, the National Health System by law guarantee the right to a comprehensive health care for people with disabilities, supported by specific local programmes aimed at this group, such as the Special Friend (Amigo Especial), in Curitiba (Curitiba, 2008).

Some studies had explored the oral health condition of people with mental disabilities (Mugayar, 2000; Varellis, 2005; Sabbagh-Haddad and Gare, 2007). There are few studies focusing on the impact of health promotion in schools on students’ oral health (Moyse's et al., 2003; Watt, 2007) and in special schools such studies are non-existent.

The purpose of this study was to investigate the impact of health promotion activities in special schools on the oral health of students with mental disabilities.
METHOD

The study was cross-sectional and adopted a qualitative and quantitative approach, using triangulation of methods to observe the reality through self-applied questionnaires, participatory observation, epidemiological survey and case studies.

The population studied comprised 16 special public schools for people with mental disability in Curitiba, Brazil. From this total of schools, nine were excluded. One of them did not authorize the research. The other eight were excluded because they are considered residences, and not schools, or because the students stayed at the school the whole day. The final sample encompassed seven schools.

A stratified sample per school was selected taking into consideration the proportion of students per school, using the following parameters: 95% confidence interval, 5% margin of error and dental caries prevalence estimated as being 50%. Following this, a random sample of students was calculated per school, resulting in a total sample of 385 students, aged 2–19, enrolled for at least 2 years at the school, distributed between 7 schools. The final sample was comprised of 383 students, representing a 99.5% response rate in relation to the original sample.

Information about the health promotion activities in the schools was collected by a semi-structured questionnaire answered by the schools’ headteachers complemented by a participatory observation (Robson, 1997). This research strategy allowed the researcher to gain a close perspective of the health promotion practices by informal talks and direct observations. The dimensions of health promotion in the schools considered was based on the HPS essential elements, as stated in the HPS Protocols and Directives (St. Leger, 2005) and adapted from the dimensions proposed by Moysés et al. (Moysés et al., 2003). These dimensions included:

1. Health Policies in the School—education and health promotion policies with regard to food, safety, availability of information about health and a staff member responsible for health promotion;
2. Curriculum/Personal Health Skills—curricular activities involving health issues, frequency of practical information on health issues, participation of the school community regarding education and health promotion contents, teacher training on health promotion and the use of health resources such as informative materials, and partnerships with health centres;
3. Physical Environment—quality of the physical environment, safety of the school’s equipment and materials, projects relating to environmental care and accidents at school;
4. Social Environment—relationships between teachers and students, between students themselves and relationships between family/carers and the school;
5. Relationship with the Community—participation of parents/carers in school activities, partnership with community institutions, participation of health professionals in the school, health services offered and the contribution of the oral health service to the health of the school community.

A pilot study was carried out in four schools that were not included in the study sample before starting the data collection in order to test the application of the health promotion questionnaire in the schools.

An epidemiological survey was performed in order to analyse the oral health status of the population studied, including experience of caries, bleeding gums, anterior teeth trauma and the perception of toothache by parents/carers during the preceding 3 months. The records were obtained by means of visual clinical examination undertaken in a school classroom, with natural light and using wooden spatula to retract soft tissue. The examination criteria followed the protocol proposed by the Brazilian Oral Health Epidemiological Survey (Brazil, 2001). In order to assess the reliability of the clinical examinations, they were repeated in 1 of every 10 examined student. The intra-examiner agreement observed for the outcome bleeding gums using Kappa’s test was equal to 0.92.

Information about toothache experience during the last 3 months, the family structure and socio-demographic characteristics of the students and their families, as well as the perception of the family/carer regarding the oral health status of the population studied was obtained by means of a structured questionnaire applied to parents and/or carers. The questionnaire was adapted from the instrument used in the Brazilian Oral Health Epidemiological Survey (Brazil, 2001).
Depending on the level of implementation of health promotion actions in the schools, the health promotion dimensions were qualified as being incipient (when the schools develop very few activities linked with the dimensions), intermediary (when they develop partially the dimensions) or advanced (when they develop activities in all the dimensions), in each school evaluated. As all the studied schools demonstrated to develop some of the previously defined dimensions, no one was qualified as no HPS.

Dichotomous-dependent variables were built in relation to oral health status (experience of caries, bleeding gums, anterior teeth trauma and perception of toothache in the preceding 3 months). Independent variables included age group, gender, housing, carer, level of the mother’s education and family income, as well as variables regarding parent/carers’ perception about the students’ oral health status.

Following data collection, a database was built and the data were analysed using the SPSS 16.0 program. The analysis was performed using frequency distribution and association between variables identified by the chi-square test and the Mann–Whitney test.

Finally, case studies (Robson, 1997) were performed to examine the profile of oral health status within the school context. Considering the extreme results in relation to the oral health aspects analysed, an analysis was made of the profile of the schools’ contextual variables.

This study was approved by the Research Ethics Committee of the Pontifical Catholic University of Paraná, as per report number 625/07. The data were collected after the signing of the term of authorization by the schools’ headteachers and after the signing of the term of voluntary informed consent by the parents and headteachers.

RESULTS

Population profile

The frequency distribution indicated that 57.7% of the sample studied was of the male sex and the predominant age group was 6–12 years (45.7%). Of the total sample, 58.2% lived with both parents and the average family income was between 1 and 3 minimum wages (78.9%). The reported level of education of the mothers was predominantly secondary school level (45.4%) or sixth-form level (37.8%). In the majority of the group studied, the mothers were the students’ carers most of the time (78.6%).

Parents’ perception with regard to oral health, the appearance of their child’s teeth and gums and chewing habits varied between regular and good. 60.6% of parents believe that their children’s oral health does not affect their relationships with other people.

Context of the schools

The qualification of the dimensions of health promotion in the schools revealed that all of them undertook health promotion activities, being either intermediary or advanced. None of the schools was qualified as non-health promoting or as being incipient in any of the considered dimensions. Figure 1 shows the qualification of the schools according to the health promotion dimensions analysed.

The participatory observation supports the view that the profile of the headteachers was an important factor in ensuring that the health promotion activities were undertaken. In all seven schools, the headteachers were women committed and sensitive to the care and protection of the population studied.

Oral health epidemiological profile

Figure 2 shows the result of frequency distribution for oral health status in the population studies, by school. 49.3% of the samples were seen to have experienced caries, 23.8% had experienced bleeding gums, 11% had experienced anterior tooth trauma and 17.8% had experienced toothache in the preceding 3 months.

Analysis of the data demonstrated that there was a significant difference in caries and bleeding gums experience between schools ($p < 0.00$ and $p < 0.00$, respectively). Dental caries and bleeding gums experience was associated with the level of the mother’s education ($p < 0.00$) and age group ($p < 0.00$). Dental trauma and toothache in the last 3 months were also associated with the level of the mother’s education ($p < 0.00$ and $p < 0.00$, respectively) (Table 1).

There was no statistically significant difference between the oral health status studied and family income, gender, housing and carer.
Oral health status in the context of the schools

As all the schools studied demonstrated a health promotion profile, case studies were undertaken with the aim of investigating the differences between the extreme cases of oral health status within the context of the schools.

Fig. 1: Qualification of health promotion dimensions in the schools.

Fig. 2: Frequency distribution for oral health status in the population studies, by school.

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<th>Health promotion dimensions</th>
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<td>Health policies</td>
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<td>Curriculum/personal health skills</td>
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<td>Relationship with the community</td>
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Table: Health promotion dimensions in schools

Fig. 1:

Dental caries and school

Bleeding and school

Trauma and school

Pain and school

School 1: n=35, School 2: n=44, School 3: n=83, School 4: n=110, School 5: n=64, School 6: n=22, School 7: n=22
Study of caries

The analysis of the extreme results for dental caries showed that the school with least experience was school S1 (20.6%) while that with greatest experience was school S6 (67.2%).

Considering the characteristics of the health promotion dimensions studied in the schools, it was possible to perceive that school S1 stood out in terms of the advanced development of the dimensions of care and ties (curriculum/personal health skills, social environment and relationship with the community). In this school, the dimensions relating to the development of health and physical environment policies were considered to be intermediary. On the other hand, school S6 showed an advanced profile for all the dimensions analysed.

The quantitative analysis of the epidemiological survey demonstrated that the mother’s level of education was associated with caries experience. In school S2, 21% of the mothers had studied to university level and 2% had not studied at all, whereas in school S7, 14% had studied to university level and 19% stated they had not studied at all.

The age group was associated with the caries experience. When analysing the age profile in the context of the schools, a greater percentage of adolescents (76%) was observed, this group being more susceptible to caries in school S7 when compared with school S2.

Study of bleeding gums

The analysis of the extreme results for bleeding gums demonstrated less experience of this complaint in school S2 (2.3%), and greater experience in school S7 (57.1%).

School S2 demonstrated advanced development in all the health promotion dimensions analysed, whereas in school S7, the care and ties dimensions stood out (curriculum/personal health skills, social environment and relationship with the community), although there was less support in the dimensions of the physical environment and more general health promotion policies.

As in the case of caries, gum bleeding experience was associated with the level of the mother’s education. In school S2, 21% of the mothers had studied to university level and 2% had not studied at all, whereas in school S7, 14% had studied to university level and 19% stated they had not studied at all.

The age group was associated with the bleeding gums experience. When analysing the age profile in the context of the schools, a greater percentage of adolescents (76%) was observed, this group being more susceptible to bleeding gums, in school S7 when compared with school S2.

Study of anterior teeth trauma

The school with least experience of dental trauma was school S5 (3.7%) while that with most experience was school S6 (17.2%).

In school S5, knowledge and the practical means for development self-health care, characterized by the dimension of the curriculum/personal health skills, were classified as being intermediary. In school S6, all the health promotion dimensions analysed were classified as advanced.
Dental trauma in the population studied demonstrated itself to be associated with the mother’s level of education. In school S6, which had the highest prevalence of trauma, there was a higher percentage of illiterate mothers (6%).

When analysing the factors associated with the experience of trauma in the population studied, no association was observed with age or family income. However, the literature indicates these variables as being important in the determination of dental trauma. Little difference was observed among the predominant age groups in schools S5 and S6, whereas the families of school S5 were characterized by lower average income when compared with school S6.

Study of toothache
The study of toothache showed school S2 to have the lowest experience (6.8%) and school S6 to have the greatest experience (28.1%).

With regard to the schools’ profile, all the health promotion dimensions were classified as advanced in school S2 and in school S6.

Statistically significant association with the mother’s level of education was also demonstrated in relation to this oral health condition. The profile of the population having ties with schools S2 and S6 showed a higher percentage of university level mothers in school S2 compared with school S6. None of the mothers interviewed at school S2 stated that they had not attended school.

DISCUSSION

The analysis of the health promotion activities undertaken at the special schools demonstrated that all of them have a health promoting profile. These schools, even without being formally part of the Latin America HPS network, take on these principles as the basis of their actions. Successful HPS experiences in Brazil are the result of the initiative of education and health professionals and managers aimed at transforming schools and their surroundings into healthy living spaces. Examples of successful HPS having impact on health and quality of life have been reported in Brazil and other countries in the Americas and Europe (Ippolito-Shepherd et al., 2005). This emphasizes the importance of initiatives like this, relating to special schools, being increasingly encouraged in Brazil.

There are very few studies of the epidemiological profile of the oral health status of people with mental disability. The prevalence of caries was 49.3% in this group, demonstrating lower prevalence in relation to previous studies. A study carried out in special schools in Athens described 60% dental caries prevalence in people of mental disability (Mitsea et al., 2001). Rao et al. (Rao et al., 2001) undertook a study in special schools in India with individuals with disabilities and dental caries prevalence was 71.5%, being higher in people with mental disability. Slightly lower caries prevalence (53%) in special schools populations with people with mental disability and Down’s syndrome in Venezuela was reported by Dávila et al. (Dávila et al., 2006). A similar study was carried out in Holland among children with severe mental disability, whereby caries experience was 70.5% (Jongh et al., 2008).

Bleeding gums prevalence in this study was 23.8%, also demonstrating lower prevalence when compared to the study performed in Australia in special development schools and special schools, where 39% of children had condition (Dessai et al., 2001). Another study carried out in special schools in Mexico found 64.5% gingivitis in people with mental disability (Dávila et al., 2003). A higher percentage of bleeding gums (73.5%) was found in people with mental and visual disabilities in a school in Tanzania (Simon et al., 2008).

Dental trauma prevalence in this study was 11%, being similar to other studies with schoolchildren, but not with special needs (Moyssés et al., 2003; Soriano et al., 2007; Fakhruddin et al., 2008). In a special school in Jerusalem trauma prevalence was considerably above the average found here (33.85%) (Sgan-Cohen et al., 2008).

With regard to toothache, prevalence of 17.8% was observed, which is also lower when compared with other studies undertaken with the general population. A study carried out in a school in Pakistan found a toothache prevalence of 30.4% (Pau et al., 2008). Higher prevalence was observed in a cohort study in Brazil with 6- (39%) and 12- (63%) year-old children (Bastos et al., 2008). Another study done with adolescents in Brazil showed a toothache prevalence of 35.6% (Borges et al., 2008).

More positive results in relation to oral health status were observed in some age groups comparing with the data for the general population obtained through the national
epidemiological survey carried out in Brazil in 2003, and data in Curitiba, the city where the present study took place (Brazil, 2004). Lower caries prevalence results were observed in children aged up to 5 years comparing to Curitiba and Brazil (22.6% in the present study, 48.7% in Curitiba and 59.4% in Brazil) and teenagers (62.6% in the present study, 80% in Curitiba and 88.9% in Brazil). Worse results were observed in this study in relation to bleeding gums in children when compared with data from Curitiba and Brazil (2.2, 0.5 and 6%, respectively), as well in adolescents (44.3, 22.2 and 18.7%, respectively). On the other hand, toothache experience among adolescents was lower in this study (20.9%) than in Curitiba (32.6%) and Brazil (35.6%).

It is possible to conclude that, on average, people with mental disability assessed in this study showed better oral health conditions when compared with the general population. This fact may support the hypothesis of the possible influence of health promotion activities carried out in special schools on the oral health status of the people with mental disability that attend them.

A limitation of this study was the evaluation of a small sample of special schools (seven) for people with mental disability, so that it is therefore impossible to apply these findings to other schools attended by this population.

As all the schools were homogenous in the analysis of the health promotion activities undertaken, demonstrating a health promoting profile, the case studies carried out suggest a possible influence of factors external to the school on the oral health status of this group. This hypothesis further strengthens the idea that the school is only one of the components that bear influence on the condition of people’s health (St Leger, 2004). Considering that the students in this study only attended school part-time, spending more time outside school and having greater exposure to factors outside school may have influenced the results analysed.

The study of anterior teeth trauma demonstrated association with the level of the mother’s education. Contradictory results regarding the influence of the mother’s education and the experience of trauma in children are examined by Marcenes et al. (Marcenes et al., 2001) and Moysés et al. (Moysés et al., 2003). Despite not being statistically significant, the association of trauma with family income can be examined in the case study. Cortes et al. (Cortes et al., 2001) argue that higher income provides greater access to places or objects capable of causing trauma. Alternatively, Fakhruddin et al. (Fakhruddin et al., 2008) did not observe association between trauma experience and family income.

In the toothache study, as with the other complaints, there was an association with the level of the mother’s education. A similar result was found in the study undertaken by Hack-Comunello et al. (Hack-Comunello et al., 2008). The results of the study carried out by Sabbah et al. (Sabbah et al., 2007) showed the influence of educational levels on oral and overall health.

CONCLUSION

The oral health status of the group of mentally disabled children and teenagers assessed through this study was better than that described in previous studies with similar groups or with the general population. This may, possibly, be due to the health promotion activities undertaken in special schools. However, contextual factors external to the school, such as the level of the mother’s education and age group, appear to have greater influence on the oral health status of the group studied. Additional comparative studies exploring oral health of people with mental disability in special HPSs with no HPSs will help support this hypothesis. These findings indicate the need to scale up health promotion strategies in special schools, prioritizing attention to families in which the mother has a low level of education and population with higher age. Priority actions within health and education policies must ensure the principle of equity, thereby increasing care for those more vulnerable.
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**REFERENCES**


