A Collaborative Community-based Oral Care Program for School-age Children

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Purpose/Objectives: In Vermont in 2001, less than half of school-age children on Medicaid received dental services. Vermont is a designated resettlement area for refugees, many of whom have never had dental care. A school-based oral health program was designed to meet the needs of this high-risk pediatric population. Program: A plan was developed to offer dental services to this group of children. Through the efforts of a multidisciplinary committee the Tooth Tutor Program, developed by the Vermont Department of Health, dental care was made available to the children. The Tooth Tutor Program provides cost-effective dental hygienist care to children in the school setting and includes referral to community dentists. Outcome: The program was able to provide services to approximately 500 children in the first 2 years with an increase in preventative services and decrease in restorative services from year 1 to year 2. After 3 years, a school-based dental service opened in 1 of the 3 target schools. Conclusion: A school-based dental service that includes education, screening, and referral can be an effective program for improving oral health among impoverished children. Implications for Nursing Practice: For the community health clinical nurse specialist, the client is the community. Clinical nurse specialist practice in this community resulted in improved oral health for high-risk school-age children. This program can be adapted for other communities.

KEY WORDS: oral health, refugee children, impoverished children, school-based dental services, community health clinical nurse specialist

Historically, children’s oral health has not been on the forefront of healthcare issues for nurses. Former surgeon general, Dr David Satcher, stated that “dental caries is the single most common chronic disease of childhood, occurring 5 to 8 times as frequently as asthma.” In the school setting, poor oral health can be especially troublesome. Poor oral health has been related to decreased school performance as children endure distraction from chronic toothache, pain from dental abscesses, dysfunctional speech, and eating difficulties. Children experiencing pain are distracted and unable to concentrate on schoolwork. In addition, children with poor oral health may be embarrassed and humiliated by how they appear to others. In 1996, students aged 5 to 17 years missed 1.6 million school days because of acute dental problems. Many, if not all, of these dental problems are preventable.

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Oral health problems in children are more pronounced among children from lower socioeconomic status. The 20 million children and adolescents younger than 19 years in families with low incomes account for 80% of tooth decay.\(^3\) Children from impoverished families are 5 times more likely to have untreated dental caries than their counterparts in more economically privileged situations.\(^4\) According to the Surgeon General’s Report, more than 36% of children aged 2 to 9 years living below the poverty level have one or more decayed primary teeth, compared with 17.3% of nonpoor children.\(^4\) Among children living at or below 100% of the federal poverty level, nearly 80% of decayed primary teeth have not been restored in the 2- to 5-year-old group. Forty percent of decayed primary and permanent teeth have not been restored in 6- to 12-year-old children. Furthermore, as few as 3% of impoverished children aged 8 years have dental sealants compared with the national average of 23%.\(^5\) In the United States, only 50% of white children, 39% of African-American children, and 32% of Mexican-American children have dental insurance.\(^6\) Fewer than 1 of 5 children enrolled in Medicaid use preventive services in any given year.\(^6\) In addition, there is a direct link between dental health in children and the educational level of their parents. Children whose parents have less than a high school education have significantly higher numbers of cavities than children whose parents were more educated.\(^7\)

A long-term effect of poor oral care in children includes decay in permanent teeth, and while decay may lead to loss of natural teeth in adulthood, research is now showing that the consequences of poor oral health are far more significant than loss of teeth. Periodontal disease in adults has been linked to increased risk of premature labor and low birth rate in pregnant women and increased risk for cardiovascular disease and stroke in adults.\(^8\)

The Guideline Recommendations of the American Academy of Pediatric Dentistry state that preventive dental procedures should begin in the very first year of life and continue every 6 months thereafter.\(^9\) The national average for all children having a yearly dental visit in 1996 was 43%. The goal of Healthy People 2010 is to increase the percentage of children receiving yearly dental visits to 57%.\(^10\) Another goal of Healthy People 2010 is to reduce the proportion of children with untreated dental decay in primary and permanent teeth.

Vermont is a rural state situated in the north east region of the United States with a total population of approximately 600,000. In 2004, approximately 48% of Vermont children with Medicaid coverage had a dental visit.\(^11\) The University of Vermont School of Nursing has been placing nursing students in community-based healthcare settings in Burlington and surrounding towns, including elementary school settings, for clinical experiences. As a faculty member supervising students in these community clinical experiences, the author, a community health clinical nurse specialist (CNS), noted the poor oral hygiene practices among many school-age children. Children often did not have access to dental care and lacked fundamental hygiene supplies such as toothbrushes. Burlington, a city of 40,000 residents, is a designated resettlement area for refugees from Somalia, Vietnam, Sudan, and other countries of Africa and Southeast Asia. Providing care to the children of these refugees is a particular challenge as most refugees have never had any dental care. Healthy Vermonters 2010 has as a goal a reduction of the percentage of youth with untreated dental decay from a current 22% to 15%.\(^12\) The purpose of this article is to describe an oral health program initiated by a community health CNS and designed for medically underserved school-age children in Vermont.

### BARRIERS TO PREVENTATIVE ORAL CARE AND TREATMENT

There is a nationwide shortage of dentists which puts even more demands on the existing community dentists.\(^6\) In the United States, 6,000 dentists retire each year while there are only 4,000 newly graduated dentists per year. According to Dr. Tommy Ivey, former dental director with the Vermont Department of Health, 25% of the dentists in Vermont are older than 55 years (Dr. Tommy Ivey, oral communication, September 20, 2002). These numbers are of concern especially in the years to come. In addition, not all dentists have the skills and equipment to provide care for infants, toddlers, and young children who present with extensive dental needs,\(^13\) further limiting the number of dentists who are available to treat the pediatric population. Community-based dentists are often reluctant to treat Medicaid recipients, one of the single most significant barriers to dental services for children living in poverty. Low rates of reimbursement from Medicaid (65% of usual and customary fee) are cited as the reason many dentists are reluctant to see children on Medicaid.\(^10\) Cumbersome Medicaid-related paperwork is another reason. Missed appointments are a problem because dentists are not permitted to bill Medicaid for missed appointments.\(^11\)

There are a number of factors that contribute to missed appointments among this patient group. Many parents have several young children and are without reliable transportation or child care for siblings. Using public transportation can lead to arriving very early for the appointment or arriving late because of the bus schedule and perhaps weather conditions that affect the posted bus schedule. Persons in more rural areas lack access to public transportation and rely on relatives and friends for transportation. When patients arrive before or after the scheduled appointment, excessive wait times are created, adding the additional challenge of potentially missing transportation back home from the appointment. Frustrations may build until interactions with the office staff or dentist cause the parent to be reluctant in seeking dental care. In addition, it may be difficult for parents to miss work to accompany the child to the dentist, further delaying appointments until adolescence or beyond.

### PROGRAM DEVELOPMENT

The purpose of the program was to improve access to oral hygiene and dental services to impoverished school-age children. As a CNS, the first step was to meet with the chairperson of the University of Vermont Dental Hygiene Program. Several issues were identified, including the likelihood that the children in the target population would likely need extensive restorative services, and there was no
VERMONT'S TOOTH TUTOR PROGRAM

The Tooth Tutor Program is aimed at children in grades 1 to 6 and places most of its emphasis on identifying children without a dental home and increasing the number of children receiving oral preventive services and routine care in a dental office. Initially, the hygienist conducts a paper screen on all children in the school. This is done through examination of the health records that parents are asked to complete at the beginning of each school year. From this screening, a target group of children is established. These children either have no dental home (defined as not having seen a dentist in more than a year), have never seen a dentist, or have no information. The hygienist then sends home information requesting permission to conduct an oral examination (visual screen). Once the visual screen is completed, the hygienist then arranges for the child to be seen by a community dentist. The parents’ participation is crucial in making this intervention a success. The dental hygienist also assists with transportation and translation arrangements as necessary.

The classroom component to the Tooth Tutor Program includes yearly classroom presentations in grades 1 to 6. The curriculum outlines content to be discussed for each grade level and involves student participation with hands-on activities. Each child is given a toothbrush and floss and other information about general oral health, including information on use of mouth guards when playing sports.

<table>
<thead>
<tr>
<th>Type of Care</th>
<th>Year 1</th>
<th>Year 2</th>
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<tbody>
<tr>
<td>Preventive (cleaning, sealants)</td>
<td>52%</td>
<td>60%</td>
</tr>
<tr>
<td>Restorative (fillings, tooth extractions, etc)</td>
<td>22%</td>
<td>11%</td>
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<tr>
<td>Emergency care</td>
<td>22%</td>
<td>22%</td>
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Clinical Outcomes

The Tooth Tutor Program began in 3 Burlington area schools. These schools were selected based on the number of impoverished children and refugees. Two part-time dental hygienists were hired. In September 2001 (year 1), 59% of the children in the 3 schools had a dental home, and by June 2002, 78% of the children had dental homes. In September 2002 (year 2), 51% of the children had dental homes, and by June 2003, 87% of the children had dental homes. Table 1 outlines the types of dental care needed in years 1 and 2.

In year 1, 144 children were served, whereas in year 2, 353 children were served by the program. Seventy-five children received preventive care in year 1, which was 52% of the children in the target group. Thirty-two children received restorative care in year 1 (22%). In year 2, 212 children (60%) received preventive care, and 39 children (11%) received restorative care. In year 2, the number of children receiving restorative care decreased by 11%. The committee believed that the reduction in restorative care in year 2 was a direct result of the Tooth Tutor Program.

Financial Outcomes

The cost of providing this service was approximately US$70 per child served by the Tooth Tutor Program. This cost included all of the work that the dental hygienist provided before the child sees the community dentist, which included the oral screen, contacting the community dentist, and making transportation and translation arrangements.

The committee was very pleased with the outcomes of the first 2 years and believed that the significant reduction...
in restorative care, with an increase in preventive care in year 2, was a direct result of the Tooth Tutor Program. Restorative care is more costly than preventative care, thus increasing the amount of preventative care while decreasing restorative results not only in better oral health but also reduced overall costs.

PHASE 2 (YEARS 3 AND 4)

Clinical Outcomes

As of June 2004, 635 children had been seen by community dentists. Services that have been provided include cleaning, sealants, fluoride treatments, x-rays, crowns, extractions, and oral surgery. The breakdown of care provided was 54% diagnostic/preventive and 46% restorative services.

In fall 2004, a school-based dental clinic was opened in 1 of the original 3 schools, whereby the dental care is provided on site. During that year, 212 students were seen on site. The dentist comes from the Community Health Center in Burlington as does the dental assistant. The Community Health Center has contracted to provide both the services of the dentist and the dental assistant. Ongoing reimbursement for services rendered is derived from Medicaid. All transportation to the school-based dental clinic from area schools is paid by Medicaid.

The increase in restorative services needed in years 3 and 4 is attributable to continued immigration of refugee children requiring extensive dental care. Another contributing factor may be that new children continue to move into the school district.

In February 2005, for the first time, the program offered free skating at the local ice rink during school vacation. The plan included the distribution of information available on dental health and the Tooth Tutor Program with free toothbrushes and toothpaste. This approach is an example of primary prevention at the community level.

Financial Outcomes

The Dental Access Committee then began looking at the sustainability of the program. There appeared to be community support as evidenced by the committee members’ willingness to continue to be the driving force behind the program. The program continued using Early and Periodic Screening, Diagnostic, and Treatment Fund money through the health department and a yearly US$10,000 grant from the community care fund through the hospital. At the same time, the committee was very interested in expanding the program in the county. By fall 2003, the program had expanded to 5 area schools.

While the committee believed that the program could continue as it was, the committee decided to look for funds to construct a school-based dental clinic. The proposed clinic would be housed in 1 of the 3 initial schools, and children from other city schools would be provided dental services as well.

By fall 2003, a congressman from Vermont had developed a keen interest in dental health and was able to secure a 1-time line item capital appropriations allocation of US$100,000 to establish a school-based dental clinic. There was only one other school-based dental clinic in the state of Vermont. In August 2004, the school-based clinic opened with 2 dental chairs, a part-time dentist, and dental assistant.

CONCLUSION

The Dental Access Committee believed that the Tooth Tutor Program offered a unique model for the delivery of dental care to impoverished school-age children. The committee first came together as a community to address an unmet need. The efforts of the CNS were the driving force in spearheading the implementation of the Tooth Tutor Program in the Burlington area. The CNS has been credited with the implementation of the Tooth Tutor Program in the Burlington, Vermont area.

IMPLICATIONS FOR CNS PRACTICE

For a community health CNS, the client is the community. The CNS who initiated this dental health program for children worked to address a health need in an aggregate of impoverished and refugee children. CNS assessment of the community-level problem resulted in an innovative and multidisciplinary approach to accessible dental care for this high-risk population of children.

Community health CNS practice provides direction for community healthcare by conducting community assessments, identifying needs of populations at risk, and planning, implementing, and evaluating population-focused programs to achieve health goals, including health promotion and disease prevention. Community health CNSs collaborate with other health professionals in addressing community-level health needs. The outcome of community health CNS practice is the prevention, alleviation, and/or reduction of symptoms, functional problems, or risk behaviors in a population. The desired outcomes were achieved, that is, increasing dental health services to impoverished and refugee children.

Dental health is an uncommon area for CNS practice; however, it is a good fit for a community health CNS. Dental health is addressed in Healthy People 2010 as an area of need with the focus to increase the percentage of children receiving yearly dental visits and reduce the number of children with untreated dental decay in primary and permanent teeth. In this situation, it was the community health CNS who brought about the implementation of the Tooth Tutor Program in the county. With the combined resources of the multidisciplinary Dental Access Committee, ongoing funding has been obtained, thus meeting a previously underrecognized and unmet health need. The outcomes of the Tooth Tutor Program validate that this program has not only improved dental health for the children currently enrolled in the school system, but has also hopefully ensured improved outcomes for future generations. As more children are identified as at risk for dental health problems and more children enter the area from other countries where dental health is either nonexistent or limited, the need for ongoing dental services becomes more essential to the community. Community health CNSs can adapt this program for other communities in other parts of the country.
References