Saskatchewan's school-based dental program staffed by dental therapists: a retrospective case study

Kavita R. Mathu-Muju, DMD, MPH[1]; Jay W. Friedman, DDS, MPH[2]; David A. Nash, DMD, MS, EdD[3]

1 Faculty of Dentistry, University of British Columbia, Vancouver, BC, Canada
2 Dental Public Health Consultant, Los Angeles, CA, USA
3 College of Dentistry, University of Kentucky, Lexington, KY, USA

Keywords
dental therapist; dental care delivery; dental nurse; dental care for children.

Correspondence
Kavita Rohini Mathu-Muju, Faculty of Dentistry, University of British Columbia, Vancouver, BC, Canada. Tel.: 859 323 5388; Fax: 859 323 4685; e-mail: kmmuju@dentistry.ubc.ca. Kavita Rohini Mathu-Muju is with the Faculty of Dentistry, University of British Columbia. Jay W. Friedman is a Dental Public Health Consultant in Los Angeles, CA. David A. Nash is with the College of Dentistry, University of Kentucky.

Received: 5/16/2016; accepted: 9/09/2016.

doi: 10.1111/jphd.12184

Journal of Public Health Dentistry **00** (2016) 00–00

Abstract

Objectives: The poor oral health of Saskatchewan's children, in concert with a significant shortage of dentists, prompted the province in the early 1970s to seek an alternative method of addressing the oral health care needs of children. The result was the Saskatchewan Health Dental Plan (SHDP), which trained and employed dental therapists in school-based clinics to provide basic dental care to all children. The program was initiated over the opposition of Saskatchewan's dentists. The purpose of this research was to provide information and data previously not documented in the refereed dental literature regarding the only school-based program staffed by dental therapists to ever exist in North America.
Methods: This case study reviews the program's planning, opposition, implementation, and achievements based on a comprehensive review of published articles as well as a search of the grey literature. Additionally, Saskatchewan Health provided annual reports for each year of the program's existence.
Results: During its thirteen years of existence, the school-based program proved popular with parents and achieved significant success in providing necessary dental care for children. It was terminated in 1987 by the newly elected provincial Conservative government, which was not supportive of such social programs.
Conclusions: The SHDP serves as a successful model of school-based dental care for children. However, the termination of the plan demonstrates the vulnerability of publicly funded dental health programs to conflicting political ideologies and special interest groups.

Introduction

A 1968 survey of Saskatchewan's children indicated they suffered from poor oral health. Seven year olds had an average of 5.4 decayed, restored, and extracted primary teeth. Eleven year old children had an average of 2.3 decayed permanent teeth, with 75 percent of these children needing restorations and 26 percent requiring extractions (1). The poor oral health of the province's children, coupled with a significant shortage of dentists, prompted the New Democratic Party (NDP) provincial government to seek an alternative method of meeting the oral health needs of children. The result was the Saskatchewan Health Dental Plan (SHDP), which employed dental nurses, hereinafter designated as dental therapists (the accepted designation since 1981), working in school-based clinics to provide basic dental care for the children.

The initiative was unsuccessfully challenged by Saskatchewan dentists. The program achieved significant success during the course of its existence from 1974 to 1987. However, it was terminated in 1987 by the newly elected provincial Conservative government, which was not supportive of such social programs. This case study reviews the program's planning, opposition, implementation, and achievements. The purpose of this research was to provide information and data not previously documented in the refereed dental literature regarding the only school-based program staffed by dental therapists to ever exist in North America.

Piloting the program – the Oxbow dental care pilot project

In 1970, the dental division of the Saskatchewan Department of Health, with funding from the federal government, launched a pilot project in Oxbow, a small rural community in southeastern Saskatchewan (1). A mobile home was converted into a dental clinic to serve the four elementary schools in the area. A dentist was employed to direct the program and two dental nurses (therapists) who had been trained at the New Cross school in London were hired to provide the dental care, along with two dental assistants. After 2 years, the pilot demonstrated that parents would enroll their children in the program, and that care provided by the dental therapists was of an acceptable quality as evaluated by a team of private dental practitioners. Based on these results, the provincial government determined it was feasible to proceed with a province-wide school-based program staffed by dental therapists.

The Saskatchewan dental plan

In November 1972, the provincial government prepared "A Proposal for a Dental Program for Children in Saskatchewan," (2) which outlined plans to provide dental care for all school-aged children in the province:

> *The dental health of children in Saskatchewan is poor. There is an insufficient number of practicing dentists in Saskatchewan to provide all the dentist services needed. Moreover, dentists are distributed throughout the province in such a way that a large number of people do not have adequate access to dental services. . ..it is clear that a bold and imaginative plan must be designed to attack the health problem and that the public, the dental profession and the government must act cooperatively and deliberately to meet the dental health challenge in this decade.*

The objectives of the plan were to improve the dental health of Saskatchewan children by providing a school-based program for the prevention and treatment of dental disease for all children from ages 3–12; the number of eligible children in the province was estimated to be approximately 140,000. Services to be provided included diagnosis (radiographs, treatment planning), prevention (oral hygiene instruction, both chairside and classroom, prophylaxis, topical application of fluorides), restorations (stainless steel crowns, intra-coronal restorations/fillings), oral surgery (extractions of primary and permanent teeth), pulpotomies and emergency procedures. Children would be re-examined on a semi-annual basis. Dental health education was considered to be the most important element of the program.

Care was to be provided by dental therapists under the "general supervision" of a dentist. Treatment beyond the scope of practice of the dental therapist would be referred to a dentist. Examples of referrals would include root canal therapy, complex extractions, and preventive orthodontics.

Response of the dental profession

The College of Dental Surgeons of Saskatchewan (CDSS) released its "Dental Care Plan for the Children of Saskatchewan" in 1973 (3). The dental association was highly critical of the provincial government's planned delivery system and the introduction of dental nurses to provide treatment for children.

Surveys of licensed Saskatchewan dentists conducted in 1970 and again in 1972 concluded:

> *. . .the new dental nurse* [therapist] *program, instituted by the government, is viewed by some as a threat to the dentists' independence as reflected by: 1) a preference for a children's dental program initiated by the profession; 2) substantial preference for fee for service private practice rather that salaried employment in a dental care program, and 3) that dental care services should be largely rendered in the private office.*(4)

In 1985, Barker, a Manitoba provincial medical economist, completed a study, "The Formulation and Implementation of the Saskatchewan Dental Plan" (5). It served as his dissertation for a PhD degree from the University of Toronto. He observed that the dental profession had virtually no influence upon the formulation and implementation of the Saskatchewan Dental Plan because "*the traditional way of providing dental care had failed.*" The Saskatchewan provincial government had successfully "*. . .redefined the problem: it was not the lack of dentists that mattered, but rather the lack of care for children. In other words, the goal was to provide care to children and all feasible means should be used to satisfy this end. With this, the Division of Dental Health* [provincial government] *broke the link between dental manpower and dentists. Auxiliaries counted, too.*"

Legislative authorization

In 1973, The Saskatchewan Dental Nurses' Act was passed creating the Saskatchewan Dental Nurses Board to: a) establish and maintain rules for the licensing of dental nurses; b) set standards of professional conduct for dental nurses; c) advise the Minister of Health on matters referred to the Board; and d) ensure that the regulations and standards of professional conduct are met by all registrants (6). The following year, The Dental Care Act of 1974 was passed, granting the Department of Health broad authority to operate a children's dental care program. The Act authorized the Minister of Health to enter into agreements with or to employ dentists, dental nurses, and certified dental assistants, and to do

whatever else is necessary for the establishment and operation of the dental care program (6).

On July 1, 1981, The Saskatchewan Dental Nurses' Act was rescinded and replaced by The Dental Therapists Act. The Act established the Saskatchewan Dental Therapists Association, which changed the name "Dental Nurse" to "Dental Therapist," and replaced the Saskatchewan Dental Nurses Board with the Saskatchewan Dental Therapists Council (7). Subsequent to this date all government documents and reports referenced dental therapists rather than dental nurses.

Training dental therapists

Development of a dental therapist workforce was a prerequisite to implementing the plan. In 1972, a 2-year training program was established at the Wascana Institute of Applied Arts and Science in Regina. The program was modelled after New Zealand's curriculum to train school dental therapists. The director of the School Health Dental Program, Dr. Michael Lewis, stated that greater emphasis would be placed on dental education and disease prevention than he thought existed in the New Zealand program (1). Additionally, students would be taught mandibular block injections, pulpotomies, and the preparation and placement of stainless steel crowns. These were not components of the New Zealand program at that time.

In 1975, G. W. Keenan, the Chairman of the Dental Division of the Wascana Institute, provided a more detailed overview of the program (8). Curriculum time was approximately 2300 hours. In addition to basic preclinical and clinical dental science, the curriculum included 360 hours of general and oral anatomy, histology and bacteriology and 120 hours of general and oral pathology. Students prepared approximately 100 natural and artificial dentoform teeth. All restorative techniques were performed using a rubber dam. The clinical year provided experience in 250–300 restorative procedures. The outcome of training was a dental therapist capable of completing quadrant dentistry within a 1-hour appointment utilizing "four-handed techniques" with a dental assistant. Keenan also commented on the philosophy of the dental training program stating, "*The dental nurse must believe that preventive dentistry is her primary duty. Before any restorative treatment takes place, at least two or three appointments are devoted to preventive instruction*" (8).

Implementing the plan

For administrative purposes, the province was divided into six dental regions (Figure 1). A community in each region was selected in which to locate the regional dental headquarters. The headquarters consisted of an administrative officer, clerical staff, and an equipment maintenance technician. Children would be phased into the program over a 6 year period, until all of the province's 3–12 year old children were included (Figure 2).

In the first year of the program (1974–75), 212 school-based clinics were established; the equipment cost for each permanent clinic was $4,897.97 (6). Additionally, temporary clinics were set up with equipment costing $3,679.49, as well as two mobile clinics. Staff in the first year of the program included: 11 Dentists; 46 Dental Therapists; 64 Certified Dental Assistants; 5 Dental Hygienists; and 6 Equipment Technicians. Program invitations were sent to parents of all 6-year old children eligible for enrollment in the first year of the program. The 17,406 invitations resulted in 13,070 (75.1 percent) eligible children enrolling in the program. Only 1.2 percent of families refused enrollment, with 23.7 percent not responding (6). Rapid expansion occurred during the program's second year (1975–76) with the addition of 5 more dentists ($n = 16$), 38 more dental nurses ($n = 84$), and 32 more certified dental assistants ($n = 96$) (9). Three age cohorts of children were then included in invitations to join the school dental program and 44,801 invitations were sent, resulting in 37,032 (82.7 percent) eligible children being enrolled by the second year.

During the first (1974–75) program year, the actual cost of services was $2,079,968, which equates to $158 per child. Program costs in year two (1975–76) were $4,052,293, for a cost of care/child of $107 (1).

External evaluation of the clinical performance of dental nurses

After completion of the first year of the SHDP, a formal evaluation of its clinical services was recommended. Three external examiners were selected: Dr. E.R. Ambrose, Dean of the Faculty of Dentistry, McGill University; Dr. A.B. Hord, Chairman of the Department of Restorative Dentistry, University of Toronto; and Dr. W.J. Simpson, Chairman of the Department of Pedodontics, Faculty of Dentistry, University of Alberta (10).

The three examiners worked independently, each visiting different clinics toward the end of the second year of the program's operation. In all, 410 children were examined in 16 different clinics. Of these children, 300 were enrolled in the Dental Plan and were treated by dental therapists; 110 were not enrolled and were treated by dentists. A total of 2,107 amalgam restorations were assessed. The results indicated that 23.1 percent of the Class II amalgams placed by dentists in primary teeth rated between 1.00 and 1.49 on a 3.0 scale, with 3.0 being the highest score; thus, tending toward unsatisfactory. In comparison, 5.6 percent of Class II restorations placed in primary teeth by dental therapists were rated unsatisfactory, a statistically significant difference ($P < 0.001$). Conversely, 15.2 percent of amalgams on primary teeth placed by dentists were assigned a "superior" rating (2.51–3.00), compared to 44.9 percent placed by dental therapists;

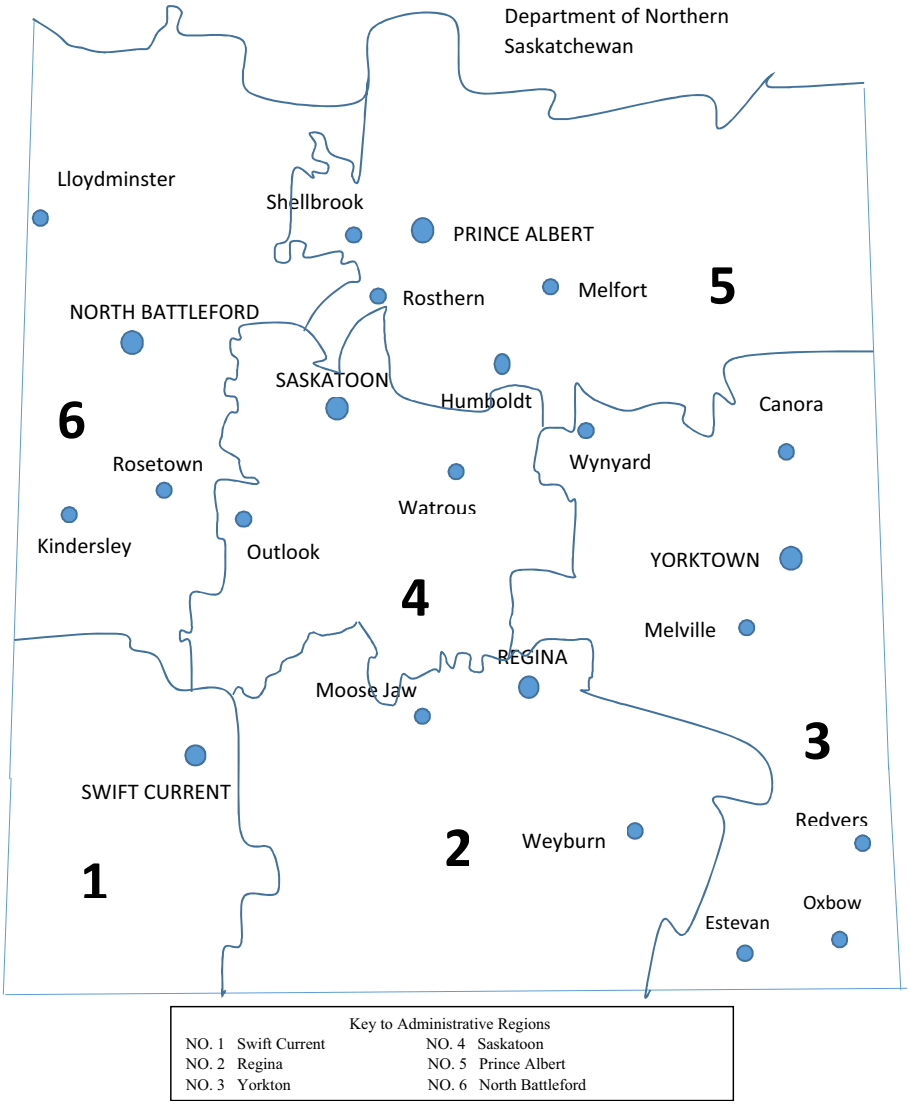

Figure 1 Saskatchewan dental plan administrative regions.
Source: Saskatchewan Department of Health. Saskatchewan Dental Plan Report: First Year of Operation, September 1, 1974 to August 31, 1975.

again, a statistically significant difference. A similar pattern existed in the evaluation of amalgam restorations on permanent molars.

The external examiners' report concluded:

1. *The Saskatchewan Dental Nurse placed amalgam fillings that on the average were better than those placed by dentists;*
2. *On the basis of 97 stainless steel crowns evaluated, there was no quality difference between the performance of dentists and that by dental nurses;*
3. *The x-ray films taken under the Dental Plan were acceptable in 80* percent *of the cases;*
4. *The combined quality and coverage of care after nearly 2 years of operation is impressive;*
5. *An evaluation of restorative dental care is adequate for the short term, but the long term evaluation must be based on the degree to which dental health has improved in the community as a whole.*

Dental plan results, 1974–87

In 1981, D.W. Lewis from the Faculty of Dentistry at the University of Toronto, submitted a report evaluating the first 6 years, 1974–80, of the operation of the SHDP (11). The report stated:

> *An important outcome of the SHDP is the extent to which the parents of enrolled children are satisfied with it. The findings from a sample survey of 600 parents/guardians in 1978-79 indicated that, despite some minor concerns, there was overwhelming support for the plan, its organization and the dental nurse services. Parents were very much*

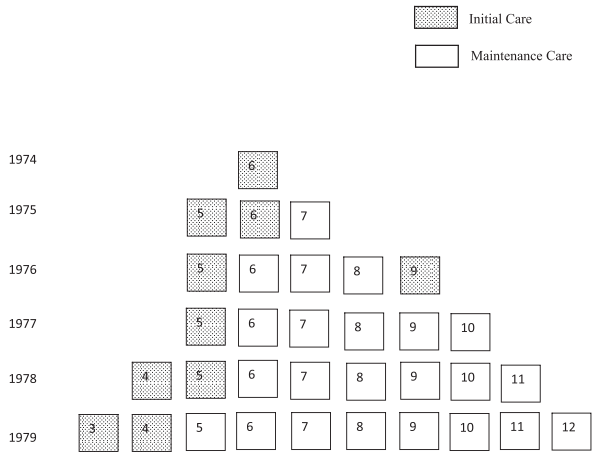

Figure 2 Phase-in schedule-dental care over 6 year period for Saskatchewan school children, ages 3 through 9.

satisfied. . .89.2% felt that dental nurses provide satisfactory services.

Highlights of his report included:

1. *Enrollment in the plan by eligible children averaged 83* percent *after the initial startup year.*
2. *The proportion of children enrolled in the program receiving complete care was between 76 and 90* percent*, which was a measure of the successful outcome of the process of care. Examinations represented 8–14* percent *of all services, with their average use increasing each year.*
3. *The number of x-rays being exposed dropped dramatically from 2.41 films/child in 1974–75 to 0.57 films per child in 1979–80. This was due to the decision that x-rays would only be exposed on the basis of their necessity to make a diagnosis, versus following a standard pre-determined protocol.*
4. *One quarter of the services rendered each year were preventive.*
5. *The average number of required fillings decreased by approximately 50* percent *over the 6 years.*
6. *The average number of pulpal treatments and extractions per enrollee dropped each year. It was also noted that about 1/3 of the extractions were for orthodontic reasons.*
7. *The number of children per dental nurse increased from 262 in 1974–75, to 638 in 1979–80.*

The report concluded:

The performance to date of the SHDP utilizing dental nurses gives early indications of the likely achievement of the long term goal of. . .improving dental health in Saskatchewan by making operative dental services readily accessible so as to encourage high utilization by eligible children.

In 1981, pit and fissure sealants were added to the services provided by the SHDP. Seventy-nine percent of sealants completed were retained 3 years after placement (12). Sealed teeth experienced 46 percent fewer carious lesions than unsealed teeth 4 years after placement. The study concluded that dental therapists successfully placed sealants with retention rates similar to those reported in the literature, and that sealants were effective in reducing dental caries incidence in children. The analysis indicated that sealants saved at least 10.4 surfaces per 100 permanent occlusal surfaces from becoming either decayed or filled within a period of 4 years.

Figure 3 documents the change in DMFT/deft in 6 year old children over the 13 year life of the program. When the program began, the total number of decayed, missing and filled teeth (DMFT/deft) of the 6 year old population was 6.5: 5 decayed; 1.1 filled; and .4 missing or extracted. There was an overall reduction of in the DMFT/deft of 43 percent by the final year of the program. In 1986–87, the DMFT/deft was 2.8: 1.8 filled; 0.9 decayed, and 0.1 extracted teeth. The percentage of decayed teeth that had been filled increased from 18 percent at the program's beginning to 66 percent at its termination.

Table 1 shows the DMFT by age group for each year of the program. Significant decreases are shown to occur in the DMFT for each age group.

A study published in the *Economics Journal of Saskatchewan* examined the program from three dimensions: a) public acceptance; b) cost effectiveness; and c) quality of service (13). Citing the high enrollment in the program (over 90 percent the final year), the author, S. Rezansoff, concluded, "*High enrollment is a major strength of school-based plans, as parents must arrange for private dental care if they choose not to use the service. Clearly there is little evidence of a lack of public acceptability.*" She also cites data from a report by Brown in 1980 comparing the children's dental programs of Saskatchewan and Newfoundland. Newfoundland's program only had a 45 percent level of participation from eligible children, likely attributable to having treatment provided in private dentists' offices, rather than in school-based clinics (14). Using constant 1986 dollars, the cost of treating a child in Saskatchewan fell over 271 percent, from $341.89/child in 1974, the first year of the program, to $91.98/child in 1986, the last year, She stated: "*. . .the rate of growth of costs associated with this program was probably not the source of its demise.*" Citing the study by Ambrose and colleagues, she concluded: "*The high level of quality of care delivered by dental assistants (sic) must remain one of the hallmark achievements of the Saskatchewan Dental Plan.*"

Swanson states in her University of Alberta thesis that under a system of fee-for-service by private dentists, "*a relatively small proportion of the population is receiving dental care, and that much of this care is received by those in higher socio-economic groups.*" (15) She examined whether a change in delivery system would also result in a change in the relationship between social class and dental care utilization as a result of the SHDP. She found, "*The results of this study tend to support the contention that changes in the nature of the*

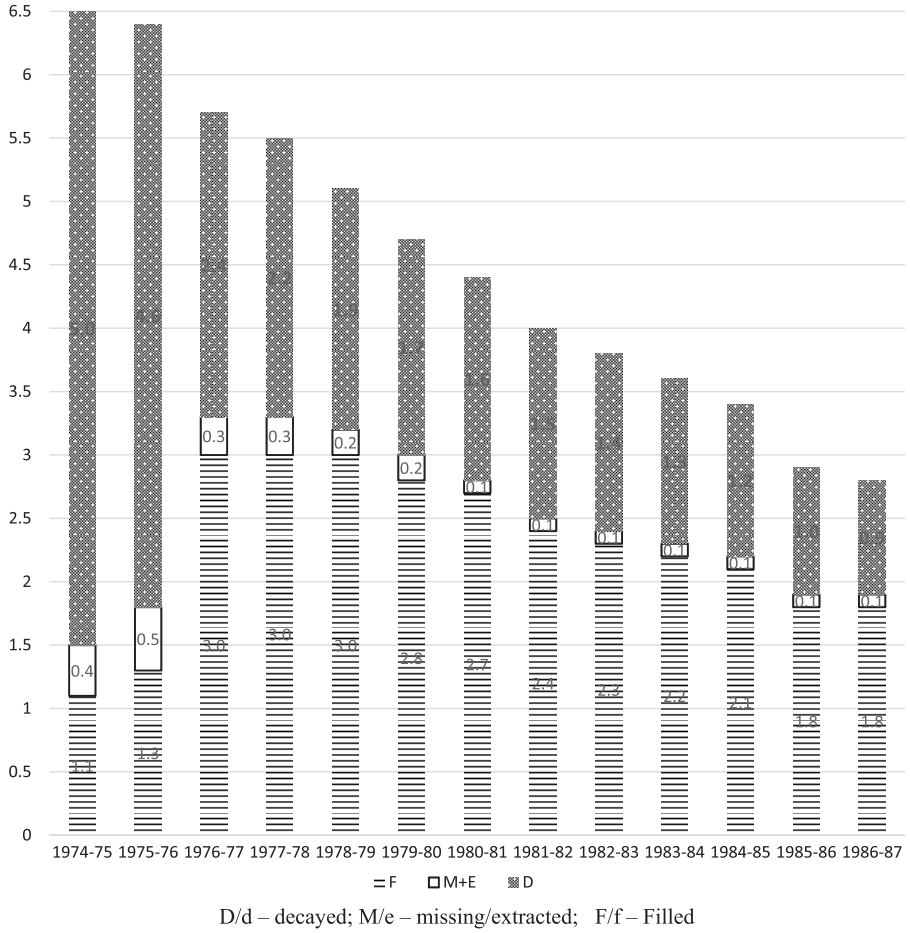

Figure 3 Total DMF/def for the average 6 year old by program year.

dental care delivery system are such that inequalities in the receipt of care are eliminated."

Termination of the program

In the 1981–82 school year, a bridging program had been developed to support the transition of adolescents to private practice dentists (16). The Department of Health contracted to make a capitated payment to the CDSS for each adolescent making one or more visits to a participating dentist. The College remunerated each dentist according to a fee schedule designed for the plan.

As noted, in 1984, a Conservative government came to power in Saskatchewan. Despite the documented and undisputed success of the SHDP in improving the oral health of the province's school children, the new government announced that the program would be dismantled and all dental care transferred to the private sector.

With the closure of the school-based program in 1987, the capitation plan was expanded to include all children between ages 5 and 13 years old. The program name was changed that year from the SHDP to the Children's Dental Program. In 1987–88, all children's services were provided by over 300 private dentists in Saskatchewan and by the College of Dentistry at the University of Saskatchewan in Saskatoon (16). Even though the NDP was re-elected in 1993, the decision was made to terminate all funding for the Children's Dental Program.

As a result of the school program's closure, some 400 dental therapists were put out of work, and the training of dental therapists at the Wascana School for the Applied Arts and Sciences in Regina was terminated. The cessation of the children's program met with opposition in the legislative assembly, by the employees of the Plan, and by parents who were "outraged" at the transfer of the school-based service to the private sector (17).

Ewart conducted an analysis of the Saskatchewan program from a social studies perspective (18). He was motivated to pursue the political aspects of the SHDP due to his belief that "*the implementation and cancellation of this innovative program has failed to receive the attention and consideration that it deserves. It seems that the majority of*

Table 1 Progression of Decayed, Missing and Filled Permanent Teeth by Age 1974-75 to 1986-87

	Age in years								
School year	6	7	8	9	10	11	12	13	14
1974–75	0.94	-	-	-	-	-	-	-	-
1975–76	0.80	1.95	-	-	-	-	-	-	-
1976–77	0.72	1.81	2.71	3.1	-	-	-	-	-
1977–78	0.67	1.52	2.54	3.21	3.68	-	-	-	-
1978–79	0.57	1.46	2.26	3.01	3.65	4.42	5.23	-	-
1979–80	0.53	1.24	2.08	2.69	3.43	4.2	5.24	6.25	-
1980–81	0.38	1.17	1.8	2.47	3.07	3.94	4.96	6.26	7.32
1981–82	0.32	0.93	1.76	2.3	2.96	3.63	4.71	5.86	7.17
1982–83	0.31	0.83	1.45	2.27	2.76	3.43	4.33	5.48	7.07
1983–84	0.26	0.71	1.23	1.8	2.67	3.18	4.05	4.99	6.38
1984–85	0.23	0.61	1.08	1.55	2.14	2.94	3.67	4.61	5.78
1985–86	0.17	0.52	0.88	1.32	2.78	2.42	3.35	4.06	5.33
1986–87	0.14	0.39	0.78	1.14	1.55	2.13	2.9	3.82	4.81

This table shows the improvements in the number of decayed, missing and filled permanent teeth for individual age groups from the 1974–75 program year to the 1986-87 program year. The number of decayed, missing and filled permanent teeth per 6-year-old child declined from 0.94 in 1974–75 to 0.14 in 1986–87.
Source: Saskatchewan Health. Statistical Report on Children' Dental Program: September 1, 1986 through August 31, 1987.

Saskatchewan citizens were very happy with this program, while a minority and the Progressive Conservative government was not. The minority decided what was best for the majority." His thesis concluded that the plan was not dismantled due to costs, which were well within the predicted range. Rather, it was due to a shifting of the government, in Saskatchewan as well as other parts of the world, to a more free market ideology, with associated reduction and/or elimination of social programs.

The Canadian Centre for Health Policy Alternatives, in a 2011 monograph on dental care, asked the question: "*How much would it cost to revitalize the Saskatchewan approach to providing preventive and basic curative care to set a solid foundation of oral health for all children across Canada?*" (19) The data from the Saskatchewan Health's 1980–81 report were cited as being $77.40/child. Using Statistics Canada census data, the Centre identified 3,740,000 children aged 5–14 in Canada in 2010.

> *If 85% of them were enrolled in such a program today, based on inflation-adjusted per capita cost ($176.25) the price-tag would be $560 million, Canada wide. This represents 4.1% of the Canadian Institute of Health Information's estimate current total annual expenditures on dental services (forecast to be $13.6 billion for total private and public spending in 2010), and 0.3% of all annual expenditures for health care for 2010. An ounce of prevention is worth a pound of cure indeed.*

Conclusion

The SHDP for children, based in schools and staffed by dental therapists, was the first and, to this point in time, only such dental plan in North America. In its 13 years of existence, it demonstrated that school-based care by dental therapists:

1. Improved access to dental care for children by providing care in their local school, resulting in a 90 percent utilization rate.
2. Reduced the incidence of dental caries through effective preventive procedures;
3. Provided quality restorative care equivalent to what could be provided by dentists in private offices;
4. Resulted in more cost effective oral health care than traditional private dental office-based care;
5. Provided dental care that was accepted and appreciated by parents.

This "*bold and innovative*" (2) plan by Saskatchewan Health from 1972 to 1986, serves as a model of what can and should be done to address the dental health of today's children. The program's success raises the question as to why leaders in public health policy and the profession of dentistry are not motivated to introduce school-based, dental therapist-staffed programs throughout North America.

References

1. Lewis MH. Dental care delivery in Saskatchewan, Canada. In: Ingle JI, Blair P, editors. *International dental care delivery systems*. Cambridge, MA: Ballinger; 1977. p. 45-57.
2. Saskatchewan Department of Public Health. Proposal for a dental program for children in Saskatchewan. November, 1972. p. 91.
3. College of Dental Surgeons of Saskatchewan. *A dental care plan for the children of Saskatchewan: principles and concepts. College of Dental Surgeons of Saskatchewan;* 1973. p. 88.
4. Thomson HE, Mann JR, McPhail WB. Dentists' attitudes to prepaid dental children's dental care programs and expanded care duty dental auxiliaries in Saskatchewan. *J Can Dent Assoc.* 1973;**39**(1):47-54.
5. Barker PF. *The formulation and implementation of the Saskatchewan dental plan* [Dissertation]. Toronto: University of Toronto; 1985. p. 277.
6. Saskatchewan Department of Health. Saskatchewan dental plan report: first year of operation, September 1, 1974 to August 31, 1975. Regina, SK. p. 27.
7. Saskatchewan Department of Health. Saskatchewan Health dental plan, annual report 1980-1981. p. 34.
8. Keenan GW. The Saskatchewan dental nurse: an expanded duty auxiliary. *J Can Dent Assoc.* 1975;**41**:344-5.

9. Saskatchewan Department of Health. Saskatchewan dental plan report: second year of operation, September 1, 1975 to August 31, 1976. Regina, SK. 36p.
10. Ambrose ER, Hord AB, Simpson WJ. A quality evaluation of specific dental services provided by the Saskatchewan dental plan. *Regina*. 1976;**19**.
11. Lewis DW. *Performance of the Saskatchewan Health Dental Plan, 1974-1980*. Toronto, Ontario: Faculty of Dentistry, University of Toronto; 1981.
12. Ismail AI, Leake JC, Clark DC. An evaluation of the Saskatchewan pit and fissure sealant program: a longitudinal follow-up. *J Public Health Dent*. 1989;**49**(4):206-11.
13. Rezansoff S. SHDP: an experiment in success that failed. *Saskatchewan Economics J*. 1997;**1997**:1-10.
14. Brown MC. An economic evaluation of the Newfoundland and Saskatchewan children's dental programs. University of Calgary, 1980. Swanson E. The effect of an alternative delivery system on social class variations in utilization of dental care services: Saskatchewan [Thesis]. Alberta: University of Alberta; 1976.
15. Swanson E. The effect of an alternative delivery system on social class variations in utilization of dental care services: Saskatchewan [Thesis]. Alberta: University of Alberta; 1976.
16. Saskatchewan H. Statistical report on the children's dental program, September 1, 1987 to August 31, 1988. p. 11.
17. Niedermayer JW. Socialized dentistry for children in Saskatchewan: its beginning-1974, its demise-1993. *J Can Dent Assoc*. 1993;**59**(6):522-44.
18. Ewart G. The Saskatchewan children's dental plan: is it time for renewal? [Thesis]. University of Regina; 2010. p. 161.
19. Canadian Centre for Policy Alternatives. *Putting our money where our mouth is*. Ottawa, ON: Canadian Centre for Policy Alternatives; 2011. p. 42.

