COST-BENEFIT ANALYSIS OF THE SUPPLY OF PREVENTIVE ORAL HEALTH CARE SERVICES

Fresh Perspective on the Report of the Ordre des hygiénistes dentaires du Québec

Report submitted to the Association des chirurgiens dentistes du Québec

Prepared by Les conseillers CTG inc.

MAY 2016

TITLE
Cost-Benefit Analysis of the Supply
of Preventive Oral Health Care Services
Fresh Perspective on the Report
of the Ordre des hygiénistes dentaires du Québec

A translation of *Analyse des coûts-avantages*
de l'offre de services en soins buccodentaires préventifs
Un nouvel éclairage sur le rapport de l'Ordre
des hygiénistes dentaires du Québec

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LEGAL DEPOSIT
Library and Archives Canada, 2016
Bibliothèques et Archives nationale du Québec, 2016
ISBN 978-2-9804843-5-3 (PDF)

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NOTES ON THE AUTHOR

Clermont Girard has a degree (Licence) in administration (concentration in actuarial mathematics) from Université Laval. He has been a Fellow of the Canadian Institute of Actuaries since 1974, and was a Fellow of the Society of Actuaries from 1974 to 2012. In a career spanning over 40 years, Mr. Girard has acquired in-depth expertise in the field of health care and public and private insurance plans. In the 1980s, he served as Director of the Actuarial Department of the Société de l'assurance automobile du Québec (Motor Vehicle Bureau) and as a benefit actuary and consultant for the Ministère de la Santé et des Services sociaux du Québec (Quebec Department of Health and Social Services, MSSS), among other positions. He also has extensive experience in actuarial consulting for various organizations that represent professionals in various fields of health, such as the Association des optométristes du Québec (AOQ), the Fédération des médecins omnipraticiens du Québec (FMOQ), the Association des chirurgiens dentistes du Québec (ACDQ), as well as several syndicates.

GOAL OF THIS REPORT

The economic study issued in November 2015 by the Ordre des hygiénistes dentaires du Québec (OHDQ)[1] provides a cost-benefit analysis of the supply of preventive oral health care services. The study claims that its purpose is to demonstrate the economic efficiency of independent practice by dental hygienists in Quebec.

The OHDQ hoped that "in light of this study, the government would be able to make preventive oral health care more accessible to a larger number of Quebecers" [translation].

The main points of the OHDQ document are essentially the following:

- Quebecers' oral health is poor compared to the oral health of the populations in the other provinces.
- The fees charged by dentists who work in private offices are the main barrier to the accessibility of dental hygiene care.
- If dental hygienists were allowed to practice independently, it would result in better access to preventive care.

In keeping with the terms of the engagement entrusted to us by the Association des chirurgiens dentistes du Québec (ACDQ), the goal of this report is comment on, explain, complete and, where necessary, correct the data and analyses contained in the OHDQ document. In this way, readers and decision-makers should gain a better understanding of all the aspects involved in oral health care accessibility, including dental hygiene care, and the implications of allowing dental hygienists in Quebec to practice independently.

1 Ordre des hygiénistes dentaires du Québec (OHDQ), "Étude économique de l'OHDQ, Analyse coûts-avantages de l'offre de services en soins buccodentaires," November 2015

HIGHLIGHTS

1. ANALYSIS OF THE SITUATION OF ORAL HEALTH CARE SERVICES IN QUEBEC

1.1. State of oral health in the population of Quebec versus the population of Canada

To determine the state of Quebecers' oral health, the OHDQ document presents the results of a study that concerns only individuals aged 45 and older. In addition, the results presented are partial: Data by age subgroup are not included in the study, thereby concealing a very different reality (see p. 16).

Contrary to what the OHDQ document claims, it is false to state that only 57% of Quebecers consult dental professionals (see p. 17).

The table provided in the OHDQ document based on the aggregate data of Quebecers aged 45 and older is incomplete. It does not adequately represent the state of oral health of the entire population (see p. 18).

1.2. Oral health spending

In 2015, oral health spending in Quebec totalled $1.7 billion, and not $3 billion, as stated in the OHDQ document. Based on average household spending in 2006 and in 2014, the average annual increase is less than 1.3%, which is less than the inflation rate for this 8-year period (see p. 19).

1.3. Children

Under the current practice model, the oral health of children has vastly improved in Quebec over the years. The OHDQ document simplifies its analysis of the causes by neglecting a set of socio-economic, behavioural and cultural factors (see p. 21).

1.4. Beneficiaries of last-resort financial assistance

Despite the non-existent cost barrier for primary dental care, including dental hygiene care, the participation rate of this subgroup of the population is very low, i.e. 34% in 2012, according to RAMQ statistics (see p. 21).

2. PREVENTION VERSUS SERVICES PROVIDED BY DENTAL HYGIENISTS

2.1. Public health problems

The socio-economic, behavioural and cultural factors that affect the oral health of the most vulnerable groups in the population are often the same as those involved in other aspects of their general health and must be taken into consideration by the authorities when adopting various prevention measures in oral health care (see p. 22).

2.2. Various prevention measure categories

Not all preventive actions are justified in themselves. It is even possible for a specific prevention measure to cost more than the benefits it generates. In a context of limited financial resources, government decision-makers must determine which of the entire range of preventive measures have the best cost/benefit ratio. To do so, various types of rigorous, evidence-based studies must be carried out as part of prevention efforts (see p. 24).

2.3. Preventive care in dental offices

The OHDQ document is incomplete because it totally disregards the role of dental hygienists in private offices, which account for 92% of the OHDQ's membership (see p. 25).

3. COST OF DENTAL CARE AS A BARRIER TO ACCESSIBILITY

3.1. Potential reasons for not consulting a dental health professional

In Quebec, only 10% of individuals aged 45 and older who have not consulted a dental health professional in three or more years cite cost as a reason, while this percentage is 20% in the rest of Canada (see p. 26).

For the entire adult population in Quebec, 15% of respondents state that they have not received dental care or examinations due to the cost. This is a fairly positive result compared to the results of the participating countries. In Canada, this percentage is 21% (see p. 26).

There is no basis on which it can be concluded that cost is the decisive factor for demand in oral health care services. Numerous sources draw a connection between social, behavioural and cultural factors and the use of dental services (see p. 26).

3.2. Role of private insurance

Private dental insurance plans do not make a difference for the vulnerable groups concerned by the OHDQ document (see p. 28).

3.3. Family income

The emphasis that the OHDQ document places on the family income level of low-income individuals is based on the same notion that there is a connection between a lack of access to dental care and a cost barrier. Other factors also come into play for this group. In addition, this document creates confusion about whether low-income individuals can take out private dental insurance (see p. 29).

4. CREATION OF INDEPENDENT PRACTICE FOR DENTAL HYGIENISTS

4.1. Other provinces' experiences

The OHDQ document does not provide any study or evidence that corroborates the conclusion that independent practice by hygienists would result in more affordable or accessible oral health care for patients (see p. 30).

The number of independent hygienist offices outside Quebec is very low. In Ontario, there are only 168 hygienists who practice independently, and 102 of them work in a dental office (with a dentist). Furthermore, it should be noted that 51 hygienists practice either in private offices or by offering mobile services. Finally, 121 of the 168 hygienists can be found in large centres (see p. 30).

Considering that there are about 6,000 hygienists in Quebec and around 13,000 in Ontario, the projected number of independent hygienists practicing outside dental offices in Quebec would be 30 and not 250, as claimed in the OHDQ document (see p. 30).

Before anything positive or negative can be stated about the effectiveness of other provinces' experiences, it is necessary to know the average number of patients treated by hygienists who practice independently, their patient type, their operating costs, the average number of hygienists per office, the way the practice environment is organized in residences for individuals who are losing their autonomy, the various payers, etc. (see p. 31).

4.2. One-stop model

The OHDQ document skirts the issue of the consequences of breaking up the current one-stop model of the dental office. Is it really in the patients' interest to have the option of receiving care at a private hygienist office when the examinations and other dental services would continue to be provided at dental offices? Patients' lost time and money should be taken into consideration in cost/benefit analyses (see p. 31).

4.3. Monopolistic situation in dental services

Contrary to what the OHDQ document claims, there is not a monopolistic situation in dental services in Quebec (see p. 32).

It is false to claim that the government would save if dental hygienists were able to negotiate their fees directly with the government: since the services they provide to children under 10 years of age are not covered by the public plan. For the other patients covered by this plan, the rates payable under the plan account for only 53% of the rates suggested in the ACDQ *Fee Guide* (see p. 33).

On what bases do the authors of the OHDQ document support the assumption that there would be a 33% reduction in fees if hygienists were allowed to practice independently? In Ontario, no notable reduction in fees has been observed as a result of this change in hygienists' practice (see p. 34).

4.4. Clientele concerned by independent hygienist offices

All patients who do not currently consult dental offices but would visit private hygienist offices would not see any reduction in fees, as claimed in the OHDQ document, but would have a new expense instead, estimated at $261 per year, according to the OHDQ data (see p. 35).

None of the items discussed in the OHDQ document indicate that independent practice by hygienists would primarily concern members of vulnerable groups or individuals who do not currently go to dental offices (see p. 35).

4.5. Dental hygienist training

The repercussions of independent practice by hygienists on the quality of care and hygienist training are not part of the analysis presented in the OHDQ document. These two items are nonetheless associated with the measures suggested in this document and should be examined (see p. 36).

4.6. Young children

The suggestion of creating 33 full-time equivalent positions for dental hygienists assigned to young children is vague. What would they do in connection with this measure and what would their practice environment be? In addition, this measure does not seem to be part of an approach adapted to the specific problems of young children or be integrated with the work done by all care providers (see p. 37).

4.7. School-age children

The OHDQ document provides no evidence of the connection it makes between independent practice by hygienists and a gain in efficiency in the school-based dental sealant application program for children in the second year of elementary school. Several aspects are neglected or poorly documented (see p. 38).

4.8. Individuals who are losing their autonomy, in CHSLDs, in residential centres or at home

Nothing supports the assumption of the OHDQ document that independent dental hygienists would be more mobile and therefore able to improve the oral health of individuals who are losing their autonomy. Furthermore, there is no indication of how their work would be integrated in residential and long-term care centres (CHSLD) and institutions. Due to the lack of answers to many important questions, it is absolutely still too early to evaluate the costs and benefits and, by extension, draw a conclusion on this issue (see p. 39).

4.9. Low-income individuals

It is unlikely that noticeably lower fees will result from independent practice by hygienists and thus significantly lower the cost barrier linked to the dental hygiene care provided to low-income individuals (see p. 40).

4.10. Individuals in rural and remote regions

Although the OHDQ document targets improved access to oral health for populations in rural and remote regions, none of the items presented provide evidence that this objective would be reached by the suggested measures (see p. 41).

5. ANALYSIS OF THE COSTS AND BENEFITS OF THE SUGGESTED MEASURES

The OHDQ document does not provide any evidence-based study to support its assumptions concerning the potential savings generated by one or more of its five suggested measures. As a result, unless evidence is provided, it must be assumed that the cost-benefit analysis presented in this document does not have a sound basis (see p. 42).

5.1. Young children

Without a serious basis for or a precise description of the suggested measure for young children, it is impossible to properly evaluate it. Nevertheless, the costs presented in the OHDQ document are underestimated, while the savings are overestimated (see p. 43).

5.2. Children in the second year of elementary school

The estimation presented in the OHDQ document for children in the second year of elementary school is flawed, as specific cost items are left out and the savings are overestimated (see p. 44).

5.3. Individuals in CHSLDs

The cost/benefit analysis presented in the OHDQ document in connection with the measure concerning individuals in CHSLDs is unfounded, given the absence of a sufficiently detailed proposal on how examinations and preventive and curative care would be provided. In addition to this, there are no major cost items or evidence-based data to support its assumptions on the potential benefits (see p. 45).

5.4. Children in the second year of secondary school

The measure concerning children in the second year of secondary school advanced in the OHDQ document is different than the one concerning children in the second year of elementary school. The authors of the OHDQ document have completely failed to take into account that sealants are also applied in dental offices. In addition, there are major flaws in the evaluation of costs and savings (see p. 47).

5.5. Independent dental hygienists

The analysis presented in the OHDQ document regarding independent practice in private hygienist offices does not make sense. It overestimates the savings and the number of hygienists likely to practice in this way and does not take into account the additional costs for individuals who do not currently go to dental offices (see p. 49).

5.6. Overall effect of the five suggested measures

The five measures suggested in the OHDQ document would ultimately redirect nearly 1 out of 5 hygienists who currently work in dental offices to the public network or a private dental hygiene office. That would put upward pressure on hygienist salaries, both in the public and private network, as well as on rates. These additional costs resulting from all of the measures suggested in the OHDQ document have not been analyzed (see p. 50).

INTRODUCTION

The OHDQ document[2] points out that in recent years, this professional order:

- "has publically expressed its concern about the profession's inability to meet the prevention and dental hygiene needs of Quebecers" [translation].
- "is particularly concerned about the absence of preventive oral health care services in CHSLDs, residential centres and homes in rural and remote regions or about individuals for whom the economic barrier is insurmountable" [translation].
- "is concerned about the uneven application of the public dental health program for Quebec children and the way in which MSSS resources are being used for it" [translation].

In reaction to these concerns, the OHDQ document[3] aims to:

- "demonstrate the importance of the role and services of dental hygiene and the beneficial effects they have on health;
- promote greater accessibility to preventive oral health care for the entire population, particularly for the most vulnerable individuals;
- help reduce health care costs for the population and for the government by taking action in preventive oral health care" [translation].

Indeed, only the final item is "economic" in nature, while the first two items fall into the public health domain.

In order to evaluate the relevance of the solutions suggested in the OHDQ document, special attention is given to the above-mentioned concerns throughout this report, including the absence of preventive oral health care services for:

- individuals who are losing their autonomy, in CHSLDs, in residential centres or at home;
- individuals in rural and remote regions;
- individuals for whom the financial barrier is unsurmountable;
- Quebec children concerned by the school-based dental health program.

Our comments are grouped into five basic categories:

- Analysis of the situation of oral health care services in Quebec;
- Prevention versus services provided by dental hygienists;
- Cost of dental care as a barrier to accessibility;
- Creation of independent practice for dental hygienists;
- Analysis of the costs and benefits of the suggested measures.

2 Ordre des hygiénistes dentaires du Québec (OHDQ), "Étude économique de l'OHDQ, Analyse coûts-avantages de l'offre de services en soins buccodentaires," November 2015, p. 3

3 Ibid.

1. ANALYSIS OF THE SITUATION OF ORAL HEALTH CARE SERVICES IN QUEBEC

1.1. STATE OF ORAL HEALTH IN THE POPULATION OF QUEBEC VERSUS THE POPULATION OF CANADA

The OHDQ document presents statistics drawn from a study[4] by the Institut de la statistique du Québec (Quebec statistics institute, ISQ) entitled "Coup d'œil sur la santé buccodentaire des aînés au Québec : une comparaison avec le reste du Canada," published in November 2014.

This study concerns only the oral health of people aged 45 and older. The OHDQ document presents the results of this entire group, which conveys a very different reality than when the results are subdivided into subgroups, following the ISQ study:

TABLE 1

Certain characteristics of the condition of teeth, by age, for Quebec and the rest of Canada in 2008-2009 (as a percentage)

	Have natural teeth		No natural teeth		Wear dentures*	
	Quebec	Rest of Canada	Quebec	Rest of Canada	Quebec	Rest of Canada
Total — 45 years old and older	75.8	87.2	24.2	12.8	57.8	33.2
45-54 years old	91.5	96.3	8.5	3.7	39.8	15.4
55-64 years old	79.5	90.4	20.5	9.6	58.3	29.9
65-74 years old	60.4	80.2	39.6	19.8	74.6	50.2
75 – 84 years old	51.2	66.1	48.8	33.9	79.8	65.6
85 years old and older	30.5	60.1	69.5	39.9	89.6	71.2

* The term "dentures" refers to dentures, partial dentures and false teeth that can be removed. Permanent implants are excluded.

Remarkably, the smallest gap between the percentage for Quebec and the percentage for the rest of Canada in terms of the presence of natural teeth (91.5% in Quebec and 96.3% in the rest of Canada) and the percentage of edentulous individuals (8.5% in Quebec and 3.7% in the rest of Canada) is found in the 45-54 subgroup. Furthermore, the second smallest gap for these two variables is found in the 55-64 subgroup.

A careful analysis must be given to the third variable in Table 1, which is the presence of dentures, due to its definition. In fact, excluding the costly treatment of implants may widen the gaps between the province of Quebec and the rest of Canada, given the socio-economic differences of their populations.

4 Rosanna Baraldi, in collaboration with Valeriu Dumitru, "Coup d'œil sur la santé buccodentaire des aînés au Québec : une comparaison avec le reste du Canada" [on line], Zoom-Santé, no. 48 (November 2014), Enquête sur la santé dans les collectivités canadiennes, Institut de la statistique du Québec, p.1; address: http://www.stat.gouv.qc.ca/statistiques/sante/bulletins/zoom-sante-201411.pdf

Everyone who works in the field of dental health recognizes the major progress that has been made in Quebec since the early 1970s, thanks to the introduction of the public dental insurance plan in 1974, a better educated population, the increased use of fluoride toothpaste, better dental hygiene habits, the development of the dental profession and the better regional distribution of dentists.

The table below shows other results taken from the ISQ study for the period of time that had elapsed since the last visit to a dental health care professional for the five subgroups of individuals aged 45 and older.

TABLE 2

Last visit to a dental health care professional, by age, for Quebec and the rest of Canada in 2008-2009 (as a percentage)

	Less than one year		One year to less than three years		Three or more years	
	Quebec	Rest of Canada	Quebec	Rest of Canada	Quebec	Rest of Canada
Total - 45 years old and older	56.5	70.7	19.1	15.1	24.4	14.2
45-54 years old	65.6	77.0	21.2	15.3	13.2	7.7
55-64 years old	61.9	73.1	17.3	14.6	20.9	12.4
65-74 years old	45.4	66.6	18.8	15.0	35.8	18.4
75 – 84 years old	38.9	55.7	18.0	14.9	43.1	29.4
85 years old and older	23.3	48.3	17.4	19.2	59.3	32.5

Here again, the situation is very different from one age subgroup to another. And the behaviour of individuals aged 45 to 64 shows the smallest gap between the two territories in the study. When considering the individuals in Quebec who stated that they had consulted a dental health care professional in less than three years, nearly 87% of individuals aged 45 to 54 and 79% of individuals aged 55 to 64 had done so, compared to 92% and 88% respectively in the rest of Canada.

The OHDQ document extrapolates the observations for individuals aged 45 and older to the entire population, which is unacceptable.

In addition, overall, 56.5% of individuals aged 45 and older had consulted a dental health care professional in less than a year. This percentage reaches 75.6%, compared to 85.8% in the rest of Canada, when considering the individuals in this age group who had consulted a dental health care professional in less than three years.

Therefore, it is false to claim, as the authors of the OHDQ document do, that only 57% of Quebecers consult dentists.

It should be noted that these observations do not take into account the condition of the mouth. As shown in Table 1, the percentage of edentulous individuals aged 65 and older or who wear dentures is much higher in Quebec than in the rest of Canada. This variable greatly influences the frequency of consultations of a dental health care professional: In fact, according to the document of the Canadian Dental Association entitled "Dental Health Services in Canada, Facts and Figures 2010,"[5] only 18% of edentulous individuals consult dental health care professionals every year.

To better understand the gaps between Quebec and the rest of Canada shown in Table 2, it would have been relevant to know the frequency of consultations based on these variables. Moreover, to provide a complete table, the analysis should not have been limited to individuals aged 45 and older, but include the entire population.

The table shown in the OHDQ document is incomplete. It does not adequately represent the state of oral health in the entire population. It fails to indicate the major improvements made since the early 1970s, mainly for Quebecers under 55 years of age. Finally, it falsely claims that only 57% of Quebecers consult dental health care professionals.

1.2. ORAL HEALTH CARE SPENDING

The title of Table 5 in the OHDQ document indicates that the data concern average household spending by age group of the reference individual in Quebec in 2006 and that the data were published by the ISQ.[6] Yet, the data shown in this table are not the data on households, but rather the data on **households reporting**, i.e. only those households that reported spending in this category. The table below shows the 2006 data published by the ISQ on average spending on dental care per household and average spending per household reporting.

TABLE 3

Average household spending, by age group, for Quebec, in 2006–Gaps with the data provided in the OHDQ document

Age group of the reference person	Average household spending	Average household reporting spending
Under 30 years old	142	310
30-44 years old	289	472
45-64 years old	423	755
65 years old and older	328	786
Average	**333**	**625**

5 Canadian Dental Association, "Dental Health Services in Canada" [on line], *Facts and Figures 2010*; address: http://www.med.uottawa.ca/sim/data/Dental/Dental_Health_Services_in_Canada_June_2010.pdf

6 Institut de la statistique du Québec, "Dépenses moyennes des ménages, selon le groupe d'âge de la personne de référence, Québec, 2006" [on line]; address: www.stat.gouv.qc.ca/statistiques/conditions-vie-societe/depenses-avoirs-dettes/depenses/depdeclar_age.htm

The authors of the OHDQ document made an error on page 13 when they took the average spending of households reporting and associated it with all households, as this nearly doubles the estimated total spending in Quebec.

Statistics Canada has published more recent data on household spending on dental care, in 2010 and 2014 and by province:

TABLE 4

Average household spending, per province, in 2010 and 2014

	2010	2014
Canada	**359**	**350**
Québec	404	368
Ontario	358	315
Alberta	380	447
Colombie-Britannique	367	419

Source: Table 203-0021, CANSIM

This table reveals that average household spending on dental care stabilized in Canada and decreased in Quebec in 2010 and 2014. Furthermore, based on average household spending in Quebec in 2006 and 2014, the average annual increase is lower than 1.3%, which is less than the increase of the inflation rate during this 8-year period.

No conclusion whatsoever can be drawn on the rates charged by the dentists in these provinces from the provincial differences in average household spending on dental care. These gaps may reflect the differing prevention measures and population characteristics of the various territories. One example of these differences concerns water fluoridation, a preventive measure known for its effectiveness : In Quebec, only 6% of the population has access to this type of water; in Ontario, this percentage is 76%.

The estimate provided by the authors on page 11 of the OHDQ document indicating that average spending on oral health care per Quebecer was $365 in 2015 is inaccurate. This amount is very close to the amount in 2014, i.e. $368 **per household** in Quebec, according to Statistics Canada. By taking the latter amount and adding government expenditures on the public dental plan and school services to it, total spending on oral health care in Quebec would be around $1.7 billion, and not $3 billion.

Oral health care spending by Quebecers, as presented in the OHDQ document, is greatly overestimated. Average spending per household in Quebec was $368 in 2014, and not $365 per Quebecer. As for total spending, it is $1.7 billion, and not $3 billion.

7 Institut national de santé publique du Québec (INSPQ), "Fluoration de l'eau : Analyse des bénéfices et des risques pour la santé" [on line], June 2007; address: https://www.inspq.qc.ca/pdf/publications/638-FluorationEau.pdf

1.3. CHILDREN

The data on page 18 of the OHDQ document concerning the number of dental surgeries performed under general anesthesia, which indicate that 5,700 young children (under 5 years of age) received these surgeries, is an estimate that includes only surgeries in hospitals. Not only do we not know the exact number of dental surgeries performed under general anesthesia in Quebec, but to gain an exact idea of the seriousness of the cases treated under general anesthesia, we would need to know how these cases break down by sufficient cause and what type of background the children concerned have. For example, a significant number of these cases result from the non-cooperation of children under the age of 5. In addition, a large number of these types of surgeries are performed in private clinics in Quebec.

Seen from another angle, based on the statistics published by the RAMQ[8] for 2012, the participation rate of children aged 5 to 9 in the public dental plan is 70%. Which factors, other than the non-existent cost barrier, cause 3 out of 10 children in this age group to not consult their dentist annually?

The ISQ[9] publication of February 2015 entitled "Des premiers balbutiements à un sourire en santé: l'importance d'intervenir tôt pour prévenir la carie dentaire" provides explanations. It clearly states that the probability of belonging to the small group of children considered at a high risk "is greater when the language spoken most often at home is other than French or English, the family income is less than $50,000, neither parent has a secondary school diploma, one of the parents is completely edentulous or the children have fair to mediocre oral hygiene (Bordeur et al., 2001)" [translation].

In its conclusion, the ISQ study states that the socio-demographic characteristics present in the first months of life tend to increase the chances of a child having a carie at age 8: for example, having a mother who is under 25 years of age or less educated, or being the third or later child in the family.

This study also reveals that: "The majority of irreversible caries* are observed in a minority of students in the 2nd and 6th years of elementary school:

- In 2012-2013, nearly one-fourth of 2nd-year students in elementary schools accounted for 76% of the irreversible caries observed on temporary teeth in students at this grade level.
- In 2012-2013, just over than one-tenth of 6th-year students in elementary school accounted for 63% of the irreversible caries observed on permanent teeth in students at this grade level.
- Like other health problems, irreversible caries are found most frequently in less fortunate students in socio-economic terms" [translation].

8 Régie de l'assurance maladie du Québec (RAMQ), tables PA.01 and SD.21 [on line], April 2009; address: http://bit.ly/1rd7q4R

9 Institut de la statistique du Québec, "Des premiers balbutiements à un sourire en santé: l'importance d'intervenir tôt pour prévenir la carie dentaire" [on line], *portrait & trajectoires*, no. 19 (February 2015), p.1; address: http://www.stat.gouv.qc.ca/statistiques/sante/bulletins/portrait-201502.pdf

* Irreversible carie: presence of an untreated lesion at an advanced stage of disease, an extracted tooth or a repaired tooth.

The OHDQ document states on page 21 that there is currently a " … limitation on dental hygienists' right to practice [that] deprives the population of essential preventive oral health care services. … " [translation]. This type of statement, which was made in regards to applying sealants in schools, seems exaggerated and unfounded. It is a sweeping statement and fails to mention the findings of the clinical study on the oral health condition of elementary students in 2012-2014 by the INSPQ[10] (Étude clinique sur l'état de santé buccodentaire des élèves du primaire 2012-2013 de l'INSPQ). Here are some of them:

- "The health of the permanent teeth in 6th-year students in elementary schools has vastly improved. In 2012-2013, 36% of 6th-year students in elementary schools had irreversible caries on their permanent teeth, while at the end of the 90s, this percentage was 59%" [translation].
- "Many 6th-year students in elementary schools now have sealed permanent teeth. In 2012-2013, 58% of 6th-year students in elementary schools had at least one sealed permanent tooth, while only 29% had at least one at the end of the 90s" [translation].
- "Socio-economically vulnerable populations must continue to be taken into consideration when implementing public dental health measures aimed at reducing the social inequalities in oral health" [translation].

Under the current practice model, the oral health of children has vastly improved in Quebec over the years.

Even though there are problems with the use of professional dental services in some groups of more vulnerable children, measures that improve their condition are conceivable only if their specific reality is taken into consideration. Simplifying the analysis of causes by neglecting a set of socio-economic, behavioural and cultural factors should be avoided.

1.4. BENEFICIARIES OF LAST-RESORT FINANCIAL ASSISTANCE

The fact that multiple factors come into play in the use of dental care is also evident when considering the participation rate of beneficiaries of last-resort financial assistance in the public dental program. In fact, despite the non-existent cost barrier for primary dental care, including dental hygiene care, the participation rate of this subgroup of the population is very low, i.e. 34% in 2012, according to RAMQ[11] statistics.

Here again, factors other than the cost barrier, such as social and behavioural characteristics, should be taken into consideration. Otherwise, how else can the low use of dental services be explained?

It must be acknowledged that pointing to the cost barrier as the main factor in reduced access to dental care does not explain the set of problems faced by the most financially disadvantaged group and may distort discussions.

10 Institut national de santé publique du Québec (INSPQ), National Report "Étude clinique sur l'état de santé buccodentaire des élèves du primaire 2012-2013" [on line], December 2015, p.1-2; address: https://www.inspq.qc.ca/pdf/publications/2034_sante_buccodentaire_primaire.pdf

11 Régie de l'assurance maladie du Québec (RAMQ), tables PA.02 AND SD.21 [on line], April 2009; address: http://bit.ly/1rd7q4R

2. PREVENTION VERSUS SERVICES PROVIDED BY DENTAL HYGIENISTS

2.1. PUBLIC HEALTH PROBLEMS

The fact that oral health is an integral part of a person's general health is acknowledged. Just like any facet of a person's health, prevention in oral health has multiple aspects and should include a range of active and passive measures that can be integrated with general health measures.

Furthermore, any preventive measure in the field of health care should be based on a serious, relevant and complete analysis of a problem. A simplified analysis based on unfounded premises may result in false conclusions that lead to lost time and money, despite a commendable objective like prevention.

On page 27 of the OHDQ document, the authors mention that the World Health Organization (WHO) recognizes "oral health as a factor of quality of life that is an integral part of the overall health condition.... By including oral health care in general health promotion programs and chronic disease prevention programs, the WHO recognizes that oral health plays a key role in the general health condition" [translation]. But when the authors of the OHDQ document add after this text that "six Canadian provinces have since taken the path toward independent dental hygiene practice ... " [translation], they draw a direct connection between the recommendation of the WHO and the independence of hygienists. However, this shortcut cannot be made. The WHO does not recommend that dental hygienists should be allowed to practice independently, but rather encourages authorities to include preventive oral health care measures in general health care measures.

Even though dental hygienists, just like dentists, play a key preventive role with patients in dental offices, they cannot claim that they play this role alone. This is especially true since, as explained above and acknowledged in the OHDQ document, the majority of oral health problems are found in a fairly small segment of the population.

Public health dentists play a pivotal role when it comes to prevention measures in oral health. Their expertise concerns monitoring the health condition of the population, promoting, preventing and protecting health, as well as organizing and evaluating health care services.

The prevention measures that should be implemented for the most vulnerable groups in the population, the groups targeted in the OHDQ document, must reflect the fact that this is a public health problem. The factors that affect the oral health of these individuals are often the same factors that are found in other aspects of their general health. This must be taken into account by the authorities when they adopt different prevention measures in oral health.

2.2. VARIOUS PREVENTION MEASURE CATEGORIES

Even though a consensus exists on the fact that prevention should be the preferred basis for intervention in the field of health care, the belief that any act of prevention is "cost-efficient" is particularly unfounded. A preventive measure is not justified in itself. It is possible to waste money and efforts on poorly designed prevention activities that are not properly adapted to the various problems. That is why generalizations should be avoided as a basis for justifying actions. As pointed out by the Public Health Agency of Canada in its document[12] entitled "Investing In Prevention–The Economic Perspective" of May 2009, "Accepting the general economic case for investing in prevention, however, does not by itself provide decision-makers with clear direction on the specific types of public health intervention to prioritize for investment. To meet this need, economic evaluations—the comparative analysis of alternate interventions in terms of their costs and consequences … across the spectrum of preventive health are needed."

Since choosing prevention measures is in reality complicated, it is necessary to refer to the analyses of public health experts, who have recognized expertise in this area and possess serious epidemiological studies, so that the proper measures can be selected and large sums of money are not needlessly spent.

Human health-related prevention measures differ in their nature and their costs and benefits. Once again, by referring to the above-mentioned Public Health Agency of Canada document, it is possible to establish four aspects of prevention:

- "Clinical prevention–includes one-on-one activities involving a health care provider and a recipient of care (patient or client), who may accept or decline the service or recommended health action.
- Health promotion–includes interventions delivered at a group- or population-level that encourage individual behaviours believed to produce positive health effects and discourage behaviours that produce negative health effects.
- Health protection–includes interventions delivered at the organizational (e.g., hospital policy), local, provincial, national or international level that reduce health risks by changing the physical or social environment in which people live, such that the role of individual beneficiaries of health protection interventions is either passive or limited to compliance with laws or regulations.
- Healthy public policy–includes social or economic interventions that act on the determinants of health, and thereby affect health but do not have health as the main policy objective."

12 Public Health Agency of Canada, "Investing In Prevention - The Economic Perspective" [on line], May 2009; address: http://www.phac-aspc.gc.ca/ph-sp/preveco-01-eng.php

On February 14, 2008, the *New England Journal of Medicine* published an article[13] entitled "Does Preventive Care Save Money? Health Economics and the Presidential Candidates," written by Joshua T. Cohen, Ph.D., Peter J. Neumann, Sc.D., and Milton C. Weinstein, Ph.D. This article was written during the U.S. presidential campaign in 2008, when several candidates made general statements about the savings that could be gained through prevention. The authors of this article analyzed 599 articles published between 2000 and 2005 that concerned the costs and benefits of various prevention measures. Here is an excerpt from it: "Our findings suggest that the broad generalizations made by many presidential candidates can be misleading. These statements convey the message that substantial resources can be saved through prevention. Although some preventive measures do save money, the vast majority reviewed in the health economics literature do not. Careful analysis of the costs and benefits of specific interventions, rather than broad generalizations, is critical. Such analysis could identify not only cost-savings preventive measures but also preventive measures that deliver substantial health benefits relative to their net costs. This analysis could also identify treatments that are cost-saving or highly efficient (i.e. cost effective)."

Furthermore, *The Journal of the American Dental Association* published a study[14] entitled "Reducing early childhood caries in Medicaid population," in April 2015, on the efficacy of nine prevention measures for the Medicaid population in New York. These measures are aimed at "water fluoridation, fluoride varnish, fluoride toothpaste, medical screening and fluoride varnish application, bacterial transmission reduction, motivational interviewing, dental prevention visits, secondary prevention, and combinations." The results of this study indicate that: "Model simulations help project 10-year disease reductions and net savings from water fluoridation, motivational interviewing, and fluoride toothpaste. Interventions requiring health professionals cost more than they save. Interventions that target children at high risk, begin early, and combine multiple strategies hold greatest potential. Defluoridating New York City would increase disease and costs dramatically."

This overview suggests that a prevention measure, whatever it is, does not necessarily generate savings.

Therefore, when the authors of the OHDQ document state on page 10 that "the costs of prevention in oral health are affordable, while the costs of dental restoration are expensive" [translation], this says absolutely nothing about the cost/benefit ratio of any of the five measures they suggest.

Not all preventive actions are justified in themselves. It is even possible for a specific prevention measure to cost more than the benefits it generates.

In a context of limited financial resources, government decision-makers must determine which of the entire range of preventive measures have the best cost/benefit ratio. To do so, various types of rigorous, evidence-based studies must be carried out as part of prevention efforts.

13 Joshua T. Cohen, Peter J. Neumann and Milton C. Weinstein, "Does Preventive Care Save Money? Health Economics and the Presidential Candidates" [on line], *New England Journal of Medicine*, February 14, 2008; address: http://www.nejm.org/doi/full/10.1056/NEJMp0708558

14 Burton L. Edelstein, Gary Hirsch, Marcy Frosh and Jayanth Kumar, "Reducing early childhood caries in Medicaid population" [on line], *The Journal of the American Dental Association*, volume 146, no. 4 (April 2015), p. 224-232; address: http://jada.ada.org/article/S0002-8177(15)00221-4/fulltext

2.3. PREVENTIVE CARE IN DENTAL OFFICES

It is very surprising that the OHDQ document does not address the preventive care currently provided by 92% of the some 6,000 dental hygienists practicing in dental offices in Quebec, who are all members of the OHDQ. How is it possible that their contribution to improving the oral health of Quebecers is not taken into consideration?

It is clear that the dental hygienists on dental office teams currently provide very high-quality dental hygiene care, which is part of a comprehensive treatment plan that is adapted to the needs of each patient and developed by dentists after examining and diagnosing them.

The OHDQ document is incomplete because it totally disregards the role of dental hygienists in private offices, who account for 92% of the OHDQ's membership. The authors of this document should have analyzed the strengths and weaknesses of their work and made recommendations, where necessary, on how to improve their practice in dental offices.

3. COST OF DENTAL CARE AS A BARRIER TO ACCESSIBILITY

3.1. POTENTIAL REASONS FOR NOT CONSULTING A DENTAL HEALTH PROFESSIONAL

The ISQ study[15] mentioned in section 1 (see p.9) provides reasons that may explain why individuals had not consulted a dental professional in three or more years. Some of the most frequent include:

- "The cost (10% in Quebec versus 20% in the rest of the Canada)" [translation].

Cost was mentioned by only 10% of individuals aged 45 and older who had not consulted a dental health professional in three or more years, while this percentage was 20% in the rest of Canada.

- "It wasn't necessary according to the respondent (57% in Quebec versus 39% in the rest of Canada)" [translation].
- "Wear dentures (25% in Quebec versus 33% in the rest of Canada)" [translation].

When the reasons "it wasn't necessary" and "wear dentures" are combined, they equal 82% (57% plus 25%) for Quebecers aged 45 and older, compared to 72% (39% plus 33%) in the rest of Canada.

A comparable finding, which concerns the entire population this time, can be found in an analysis[16] published by the Commissaire à la santé et au bien-être du Québec (Quebec Health and Welfare Commissioner), entitled "Perceptions et expérience de soins de la population: Le Québec comparé, Résultats de l'Enquête internationale sur les politiques de santé du Commonwealth de 2013." It states that: "In Quebec, 15% of respondents say that they have not received care or dental examinations due to the cost. This is a fairly positive result compared to those of the participating countries. In Canada, this percentage is 21%" [translation].

So there is no basis on which it can be concluded that cost is the decisive factor for demand in oral health care services.

15 Rosanna Baraldi, in collaboration with Valeriu Dumitru, "Coup d'œil sur la santé buccodentaire des aînés au Québec: une comparaison avec le reste du Canada" [on line], *Zoom-Santé*, no. 48 (November 2014), Enquête sur la santé dans les collectivités canadiennes, Institut de la statistique du Québec, p.8; address: http://www.stat.gouv.qc.ca/statistiques/sante/bulletins/zoom-sante-201411.pdf

16 Commissaire à la santé publique et au bien-être du Québec, "Perceptions et expérience de soins de la population: Le Québec comparé, Résultats de l'Enquête internationale sur les politiques de santé du Commonwealth de 2013" [on line], 2014, p.102 ; address: http://www.csbe.gouv.qc.ca/fileadmin/www/2013/CWF/CSBE_Rapport_Commonwealth_Fund_2013.pdf

Finally, the ISQ study[17] comparing Quebec and the rest of Canada for individuals aged 45 and older provides data on the reason for having or not having insurance:

- "Of the individuals who reported having insurance that covers dental fees, the percentage of these individuals who had consulted a dental professional in the 12 months preceding the study was significantly higher in the rest of Canada than in Quebec (81% versus 72%)" [translation].
- "The percentage of individuals who had consulted a dental health professional in the last year, whether they had insurance or not, tends to decrease from one age group to the next, particularly starting at age 65" [translation].

This also confirms the fact that several factors influence the level of access to dental care of a population.

More specifically as concerns children, the principles and practice tips of the Canadian Paediatric Society contained in a document[18] entitled "Oral Health Care for Children–A Call for Action," renewed on February 1, 2016, present a major finding that supports the above analysis: "In one Nova Scotia study, giving children access to a universal, publicly financed dental insurance program still did not eliminate disparities in caries rates based on socioeconomic status. This finding suggests that disparities in oral health status cannot be reduced solely through universal access to dental care, and that efforts need to be directed toward understanding the broader social and behavioural determinants of oral health."

Page 47 of the OHDQ document states that "the high price of the oral health care services and citizens' ability to pay are the most decisive factors in the use of private oral health care services" [translation]. It must be recognized that this statement is a simplification of reality, which does not reflect the complex situation involved in the use of dental care. This is especially true when the analysis specifically concerns the most vulnerable groups.

The OHDQ document steers the discussion along a narrow path by emphasizing the cost barrier and the ability to pay as the most important factors in reducing access to dental care. Even though the cost of dental care is one of the factors, no serious study presents it as the main factor. Many sources draw a connection between social, behavioural and cultural factors and the use of oral health care services, as these factors are particularly decisive in vulnerable groups.

17 Rosanna Baraldi, in collaboration with Valeriu Dumitru, "Coup d'œil sur la santé buccodentaire des aînés au Québec: une comparaison avec le reste du Canada" [on line], *Zoom-Santé*, no. 48 (November 2014), Enquête sur la santé dans les collectivités canadiennes, Institut de la statistique du Québec, p.10; address: http://www.stat.gouv.qc.ca/statistiques/sante/bulletins/zoom-sante-201411.pdf

18 Canadian Paediatric Society, "Oral Health Care for Children–A Call for Action" [on line], Position statements and practice points, January 2013 (reaffirmed in February 2016); address: http://www.cps.ca/en/documents/position/oral-health-care-for-children

3.2. ROLE OF PRIVATE INSURANCE

In volume 1 of its Quebec study on care experience in 2010 and 2011,[19] the ISQ states that 44% of individuals aged 15 and older participate in a private insurance plan covering dental care. However, the exact insured portion of the fees charged in the claims sent to private insurers is not known. Considering the deductibles, co-insurance, excluded procedure codes, limitations on the frequency of certain procedures and maximum amounts reimbursable per year, it is clear that the percentage actually reimbursed is significantly lower than 100%. Therefore, given these factors and the amount of fees in Quebec, which is around $1.7 billion, the amount of $1.1 billion indicated on page 15 of the OHDQ document is clearly overestimated. Based on data[20] taken from the fees paid to dentists by the Dentaide program in Quebec, the amount representing the portion of dental care that is insured by private insurance plans is estimated at around $700 million.

Participation in a dental insurance plan, when one is offered by an employer, is generally mandatory for employees, and some or all of the premiums are paid by the employer. Accordingly, an employer's decision to offer a group dental insurance plan to its employees is based on the general economic situation, the sector, the size of the company and the competition between companies. An individual does not decide to create a dental insurance plan.

But above all else, why does the OHDQ document put so much emphasis on private insurance plans? What is it trying to prove? It is difficult to see the relevance of such data, given the concerns raised about the most vulnerable groups and their low use of oral health care services, including:

- individuals who are losing their autonomy, in CHSLDs, in residential centres or at home;
- Quebec children concerned by the school-based dental health program.

Another statement is made about insurance on page 16 of the OHDQ document: In the future, "a growing percentage of families will pay for their dental care themselves rather than through insurance or they will simply go without dental care" [translation]. What is the basis for this rather pessimistic prediction? Was this conclusion drawn on the basis of an existing study? The OHDQ document does not mention any study, nor provide any evidence in support of such a statement.

Private dental insurance plans can only play a very limited role in the most vulnerable groups. In addition, the document provides no evidence that might lead one to believe that private dental insurance will become less important in the years to come.

19 Institut de la statistique du Québec, "Enquête québécoise sur l'expérience de soins 2010-2011" [on line], volume 1, 2011, table 2.11, p. 43; address: http://www.stat.gouv.qc.ca/statistiques/sante/services/generale/experience-soins-metho.pdf

20 Société de services dentaires (ACDQ) inc., unpublished data, March 2016.

3.3. FAMILY INCOME

The OHDQ document indicates that "the low-income population receives very few dental hygiene services" [translation]. It ought to have mentioned curative care too. How can it discuss prevention without concern for meeting curative care requirements or ensuring the healthy condition of mouths?

Low-income households have to solve many problems in connection with a multitude of vital needs: housing, food, transportation, prescription drugs, dental care, vision care, etc. The solution to these problems should be comprehensive and based on societal choices. As we will see in the sections that follow, the OHDQ document does not suggest any measure that would specifically improve access to oral health care for this group.

It bears repeating that private insurance plans are not a potential solution for low-income individuals. These individuals work in sectors where the employers quite often do not have the means to create group plans.

The OHDQ document states on page 15 that "the income gap between rich and poor grows every year and the burden of oral health care contributes significantly to this gap" [translation]. What is this statement based on?

As we previously pointed out (see section 3.1), public programs, like the program for beneficiaries of last-resort financial assistance, aimed at eliminating the cost barrier are not enough to encourage these individuals to consult dental offices in large numbers and receive the care they need. Many factors, other than cost, are at issue.

The emphasis that the OHDQ document places on the family income level of low-income individuals is based on the same notion that there is a connection between a lack of access to dental care and a cost barrier. Other factors also come into play for this group. In addition, this document creates confusion about whether low-income individuals can take out private dental insurance.

4. CREATION OF INDEPENDENT PRACTICE FOR DENTAL HYGIENISTS

As the OHDQ document states, "there has never been a meticulous cost-benefit study on the supply of preventive oral health care services independent of dentistry services in Quebec" [translation]. Indeed, this issue has not been the subject of a study in Quebec or elsewhere in Canada.

4.1. OTHER PROVINCES' EXPERIENCES

On page 47 of this document, the authors state that allowing hygienists to practice independently elsewhere in Canada has made it possible, nearly everywhere, "to make oral health care more affordable and more accessible to all citizens" [translation], without providing any study as a reference to support their statement. They continue by claiming, on page 25, that private dental hygienist offices elsewhere in Canada "make it possible to reach individuals and groups that have been ignored up until now by the current supply of dental services" [translation], without providing evidence to back this statement. Again, without providing a source, they also state that half of the 400 private offices outside Quebec, of which 200 are said to be in Ontario, provide mobile services at the homes or residential centres of individuals who are losing their autonomy.

Yet, our analysis of the situation in Ontario, which is based on information published on the site[21] of the College of Dental Hygienists of Ontario, reveals a different image of independent practice by dental hygienists. Here are our observations:

- Only 168 hygienists practice independently.
- Of this number, 102 hygienists work at a dental office (with a dentist).
- Of the 66 independent hygienists who do not work with a dentist, 51 practice in a private office or provide mobile services (15 hygienists have an unspecified place of practice).
- Finally, 121 of 168 hygienists work in large centres.

Therefore, considering the fact that there are about 6,000 hygienists in Quebec and around 13,000 in Ontario, the expected number of independent hygienists practicing outside of dental offices in Quebec would be 30 and not 250, as claimed in the OHDQ document.

Even though some private dental hygienist offices exist outside Quebec, there are no data on the percentage of their patients who receive mobile services, or on the socio-economic characteristics of the patients seen in private offices and those treated in institutions or at home, or the percentage of time that hygienists spend travelling to institutions or homes. Finally, there is no information about who pays for these services in the different provinces.

21 College of Dental Hygienists of Ontario, "Find a Registered Dental Hygienist" [on line], http://www.cdho.org/, consulted on March 24, 2016.

When reference is made to experiences in other provinces, all aspects of the issue concerned should be covered. Accordingly, for each of the provinces, the comparison should clearly indicate the description of the procedures that hygienists may perform independently, whether prescriptions are required from a dentist (written or verbal, collective or individual), whether a maximum period of time is imposed between the care provided by a hygienist and the final examination by a dentist, the additional training required for a hygienist to be entitled to practice independently, etc.

All these aspects of independent practice by hygienists outside Quebec are important and greatly influence the number of independent hygienists, the number of services provided, the type of patients treated, the fees required and the quality of care.

The number of independent hygienist offices outside Quebec is very low.

Before anything can be stated about the effectiveness of other provinces' experiences, whether positive or not, it is necessary to know the average number of patients treated by hygienists who practice independently, their type of patients, their operating costs, the average number of hygienists per office, how the practice environment is organized in residential centres for individuals who are losing their autonomy, the various payers, etc.

4.2. ONE-STOP MODEL

Quebec's dental services sector has set up a one-stop model, the dental office, where patients can receive all examinations and the vast majority of care they need for their oral health at the same location. For several years now, the medical world has also been trying to set up a one-stop model, in recognition of the clear benefits of grouping together professional resources and services for patients.

Some of the benefits of the way dental care is currently organized include:

- Patients do not have to travel to several different locations, but can make their appointments at just one, where they enjoy the convenience of a centralized file that contains all relevant information, regardless of the professional who has performed the care.
- A one-stop model facilitates collaboration between all care providers, permits efficiency gains and economies of scale, and allows a complete and integrated treatment plan to be prepared after dentists have examined the patients.

The OHDQ document does not examine the consequences for the population of separating the practice of the various health care providers into silos.

In addition, to enable patients to receive all the examinations, dental hygiene and curative care they need, which they can currently receive in dental offices, the authors of the OHDQ document ought to have analyzed the lost time and additional costs incurred by those who decide to receive their dental hygiene care at a private hygienist office, but their examinations and curative care at a dental office: two trips, two appointments, twice as much time away from work.

The OHDQ document skirts the issue of the consequences of breaking up the one-stop model of the dental office. Is it really in patients' interest to receive care at private hygienist offices when the examinations and other dental services would still have to be provided at dental offices? The lost time and money of patients should be taken into consideration in cost/benefit analyses.

4.3. MONOPOLISTIC SITUATION IN DENTAL SERVICES

Contrary to what the OHDQ document claims, there is not a monopolistic situation in dental services, just as there is not a monopolistic situation in the services provided by architects, lawyers, accountants and all other professionals who have an exclusive field of practice.

Each dentist is still solely responsible for the fees that he or she charges, based on the situation of the area where his or her office is located, his or her operating costs, and the type of care offered. Even though the ACDQ provides its members with a *Fee Guide*, it is published for information purposes only.

A fee study[22] requested by private insurers and conducted jointly with the MSSS in 2012 found that on average, the fees charged were 92% of those suggested in the ACDQ *Fee Guide* for all dentists in Quebec.

Another important finding was that the fees charged by dentists vary by care category compared to those suggested in the *Fee Guide*. This variation in fees stems from the characteristics of the procedures, the required equipment, the amount of time required to perform them and the dental office staff involved in providing them. Not only are the fees for dental hygiene services some of the lowest in the ACDQ Fee Guide, but the fees charged by dentists for these services show the biggest downward variation from the fees suggested in the ACDQ *Fee Guide*, i.e. nearly 83% of the latter[23].

The OHDQ document continues by suggesting on page 15 that if dental hygienists were able to negotiate the fees for their services directly with the government, the government would save money. Yet, as regards the public dental program, this is false:

- The services that may be provided by hygienists are not included in the public program's[24] range of services for children under 10 years of age: The creation of independent dental hygienist offices would not change this at all.

22 Ministère de la Santé et des Services sociaux (MSSS), Étude conjointe de l'ACDQ et du MSSS dans le cadre de négociations, unpublished data, 2012.

23 Ibid.

24 Régie de l'assurance maladie du Québec, Soins de services dentaires; address: http://www.ramq.gouv.qc.ca/fr/citoyens/assurance-maladie/soins/Pages/services-dentaires.aspx

- As concerns the public dental program[25] for beneficiaries of last-resort financial assistance, prevention services totalled $11.5 million in 2014-2015, and the average fees for these prevention services equalled 53% of those suggested in the ACDQ *Fee Guide*. With fees at this level, how can the authors of the OHDQ document state the independent practice by dental hygienists would generate savings for the government, without providing evidence of this?

Which rigorous data on Quebec's experience did the Canadian Competition Bureau use as the basis for its comment[26] in 2005, which is cited on page 28 of the OHDQ document: "We also understand that dental hygiene services generate revenues far in excess of their costs to the dentist. The ability of dental hygienists employed by dentists to generate net revenues for the dental practices creates a powerful economic incentive for the dentists to restrict the ability of dental hygienists to compete in the market." The wording "we understand" is not very convincing. Would the Bureau make the same comment in 2016 based on other provinces' experiences?

The OHDQ document states on page 47 that the hourly rate of $130 is the average cost paid by citizens for the services provided by a dental hygienist at a dental office. This cost is a reasonable estimate for patients who are not covered by the public plan. However, the authors of the OHDQ document indicated that the average hourly rate of hygienists working in independent offices would be $87. Unfortunately, there is no evidence to support this assumption, which is purely theoretical because Quebec has no independent hygienist offices at this time.

The OHDQ document does not provide any indication of how the average $87 in hygienist fees would break down between new and loyal patients.

According to the *Fee Guide* of the Ontario Dental Hygienists' Association (ODHA)[27] and the fee guide of the Ontario Dental Association (ODA) of January 2016, the fees for an adult who visits a private hygienist office are the following:

TABLE 5

Comparison of fees for dental hygiene care provided to an adult at a private hygienist office and a dental office in Ontario

	Ontario Hygienists	Ontario Dentists
New patient (scaling — 45 minutes, prophylaxis (22.5 minutes), hygiene advice)	$245	$265
Regular patient (scaling — 30 minutes, prophylaxis (15 minutes), reminder of hygiene advice)	$157	$169

25 Régie de l'assurance maladie du Québec, comparaisons faites par l'auteur de données tirées de fichiers fournis aux parties négociantes (le MSSS et l'ACDQ), unpublished data 2012.

26 Competition Bureau of Canada, "Dental Hygienists' Act–An Act Respecting the Regulation of the Profession of Dental Hygiene" [on line], December 2005; address: http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/02035.html

27 Ontario Dental Hygienists' Association, Suggested Fee Guide for Dental Hygienists (en italique), January 1, 2016; address: http://odha.scholarlab.com/drupal/system/files/pdf/FG.2016_0.pdf

- Even though Ontario hygienists provide mobile services and must travel to homes and institutions, their association's guide suggests adding $33.16 to $66.33.

This comparison reveals that:

- There is a very slight difference between the fees suggested by the ODHA and the ODA for dental hygiene care.
- Not only do these fees vary substantially depending on whether it is a new or loyal patient, which is understandable, but the fee suggested in the ODHA Fee Guide is significantly higher than the one suggested in the OHDQ document. How can this difference be reconciled?

In the case of Ontario, the anticipated lower fees have not materialized. In June 2013, during the Canadian Public Health Association's 2013 Annual Conference, G. Randall and P. Wakefield of McMaster University's DeGroote School of Business presented the results of their study entitled "Exploring the Impact of Expanded Roles for Dental Hygienists in Ontario."[28] Their conclusion on the issues of greater efficiency and lower fees is the following: "Improved efficiency and lower cost to the health system? No. Individuals who thought there may have been some cost saving (and lower fees) generally found that the cost of operating independent practices (with all of the associated overhead costs) meant they were unable to have any dramatic reduction in fees charges."

Unless serious and relevant studies are provided for Quebec, the statement in the OHDQ document that an independent supply of services from dental offices would create more social and economic efficiency should be seen as unfounded. In addition, what bases do the authors of the OHDQ document have to support their assumption that fees would be 33% lower in the context of independent practice by hygienists?

4.4. CLIENTELE CONCERNED BY INDEPENDENT HYGIENIST OFFICES

Without being specific, the OHDQ document suggests that patients who receive care in independent hygienist offices would be mainly people who do not currently go to dental offices. But nothing would prevent dental office patients from heading to these new offices. They may do so for different reasons: The hygienist office is located closer to their residence, familiarity with the hygienist, etc. This transfer of patients should be taken into account when evaluating the supposed gains resulting from independent practice by hygienists.

On page 49, the OHDQ document expresses the hope that in 10 years, there will be 250 independent dental hygienists who each treat 500 patients per year, which could be a "significant incentive for the population that does not go to dental offices (43% of Quebec's population, i.e. 3,532,450 citizens)" [translation]. The following items should also be noted:

28 G. Randall and P. Wakefield, "Exploring the Impact of Expanded Roles for Dental Hygienists in Ontario" [on line], McMaster University DeGroote School of Business, June 2013, p. 6; address: http://rorrhs-ohhrrn.ca/images/stories/Randall.pdf

- As demonstrated in section 1 (see p. 9) of this report, it is false to claim that 3,532,450 Quebecers do not go to dental offices. The 57% referred to in the OHDQ document concerns only Quebecers aged 45 and older. When considering the individuals in this age group that have consulted their professional in less than three years, this percentage rises to 75.6%. Furthermore, this percentage does not apply to Quebecers who are under 45 years of age.
- The projection of 250 dental hygienists in 10 years seems to be considerably overestimated compared to the situation observed in Ontario (see p. 24).
- The OHDQ document does not provide any indication of how the authors arrived at 500 patients per independent hygienist. What percentage of these patients do not currently go to dental offices? What percentage of these patients are in the most vulnerable groups of society? How many would receive care at home or in an institution?
- According to the financial data presented on page 48 of the OHDQ document, "with a difference of $43 per hour compared to the price charged at a dental office, an independent dental hygienist will help save $64,500 annually for his or her entire clientele" [translation], i.e. $130 minus $87 multiplied by 1,500 hours billed per year per hygienist. Accordingly, each hygienist practicing independently in a private office would bill $87 for each of the 1,500 hours per year spent providing dental hygiene care to his or her patients. As the supposed number of patients per hygienist is 500, each patient would receive 3 hours of care per year. Each patient would spend $261 annually for dental hygiene services received at a private hygienist office (i.e. $87 times 3 hours). Even though the authors of this document claim that this represents a reduction in fees compared to the fees invoiced by dental offices, the annual amount of $261 would nevertheless be a new expense for all patients who do not currently go to dental offices, and not a reduction in fees.

The OHDQ document claims on page 26 that the mere fact of dental hygienists having private offices would help "better understand the components of the demand for service, develop a profile of consumers, define the problems and identify solutions" [translation]. All of these items fall within the purview of studies requiring the expertise of public health dentists. The purpose of a private office is to provide optimum quality oral health care to patients as efficiently as possible and at the best cost, not collecting data for epidemiological studies.

None of the information presented in support of independent practice by hygienists indicates that dental hygienists who practice independently would mainly provide care to individuals in vulnerable groups or individuals who do not currently go to dental offices.

4.5. DENTAL HYGIENIST TRAINING

Viewed from another angle, by demanding independent practice for dental hygienists, the authors of the OHDQ document imply that the prior examination given to patients by dentists before dental hygiene care is provided and the comprehensive treatment plan that dentists prepare for each patient after diagnosing them have no value. One of the reasons for this type of examination is that it can be used to diagnose any dental problem, such as a latent infection or any other illness, which needs to be treated before preventive care is provided.

If hygienists were allowed to practice independently, who would perform this examination and diagnose a patient's oral health condition? Dental hygienists are not trained to do either of these things.

The OHDQ document says absolutely nothing about this matter. An analysis of the potential advantages and disadvantages of independent practice by hygienists would need to consider them from the point of view of public health and the quality of care that should be provided to the population. This aspect of the suggestion presented in the OHDQ document should be carefully reviewed by experts in the field and is beyond the scope of this analysis.

The repercussions of independent practice by hygienists on their training and the quality of care are not covered by the analysis provided in the OHDQ document. Nevertheless, these two items are associated with the measures suggested in this document and should be examined.

4.6. YOUNG CHILDREN

A reading of the position statements and practice points formulated by the Canadian Paediatric Society and entitled "Oral Health Care for Children–A Call for Action,"[29] reaffirmed on February 1, 2016, is tremendously instructive. In its summary, it clearly states:

- "There is sound evidence that preventive dental visits improve oral health and reduce later costs, and good evidence that fluoridation therapy decreases the rate of dental caries, particularly in high-risk populations. Paediatricians and family physicians play an important role in identifying children at high risk for dental disease and in advocating for more comprehensive and universal dental care for children."
- "Because contact with a family physician or paediatrician typically occurs earlier than a child's first visit to a dentist, primary care providers play a critical role in promoting oral health in children. They must … be able to identify children at high risk for dental disease and provide anticipatory guidance to families. Often, they must also deal with the systemic complications of untreated dental caries."

Finally, some of the recommendations of the Canadian Paediatric Society include the following measures:

- "Ensure that all children in their respective jurisdictions be afforded equal access to basic treatment and preventive oral care, regardless of where they live or their family's socioeconomic status."
- "Ensure that every child has a dental home by one year of age."
- "Support the Canadian Paediatric Society and the Canadian Dental Association recommendations on fluoride supplementation."

29 Canadian Paediatric Society, "Oral Health Care for Children–A Call for Action" [on line], Position statements and practice points, January 2013 (reaffirmed in February 2016); address: http://www.cps.ca/en/documents/position/oral-health-care-for-children

- "Prioritize research investigating evidence-based paediatric dental practices and the long-term effects of social determinants on oral health."
- "Child health care providers receive appropriate training and continuing education in oral health, with emphasis on early risk assessment and provision of anticipatory guidance."
- "A multidisciplinary approach to paediatric oral health care be developed, involving physicians, dentists, hygienists, nurses and schools."

It does not suggest anywhere that dental hygienists should practice independently.

As for young children, the OHDQ document recommends that the government hire 33 full-time hygienists, who would be spread out across Quebec's territory. It does not explain how the hygienists' interventions in the field would reach all parents of the children in this group. Furthermore, it raises the following questions:

- How will these hygienists be linked to other care providers (paediatricians, general practitioners, nurses, etc.)?
- How can this measure be used to argue in favour of independent practice by hygienists?
- How will the services provided by these hygienists be integrated with the activities of public health dentists in these territories?
- How will the interventions of the 33 hygienists spread out across Quebec make a significant impact?

The idea of creating 33 full-time equivalent positions for dental hygienists assigned to young children is vague. What would they do as part of this measure and what would their practice environment be? In addition, this measure does not seem to be part of an adaptive approach to specific problems with young children or integrated with the activities of all care providers.

4.7. SCHOOL-AGE CHILDREN

The OHDQ document decries that dental hygienists lack resources in the sealant program for second-year students in elementary schools and the fact that public health dentists identify the healthy teeth that need to be sealed.

The issue of lacking resources has nothing to do with independent practice by hygienists, but rather with the government's ability to pay. Even if dental hygienists were allowed to practice independently, it would not increase the number of hygienists in the program for second-year students in elementary schools.

According to the Association des dentistes de santé publique du Québec (ADSPQ), the average number of hours that hygienists spend assisting public health dentists in selecting children who need to receive sealants in schools is unknown. Even though a number of hours could be freed up by allowing hygienists to practice independently, they would still have to screen for the teeth that should be sealed, which is currently not one of their responsibilities. The OHDQ document does not address this issue. Therefore, the number

of hours they spend applying sealants may possibly be the same or even less.

On page 32, the OHDQ document provides the salary of hygienists and the salary of public health dentists that are payable by the government. This has no bearing and is irrelevant because the responsibilities, tasks, requirements and education–a CEGEP diploma for hygienists versus a doctorate in dentistry combined with a master's degree for public health dentists–are absolutely not comparable.

The OHDQ report points out that some activities may overlap in the sealant program for second-year children in elementary schools because " … of dentists travel to schools to screen for healthy teeth that should be sealed" [translation]. Yet, the education acquired by dental hygienists in a CEGEP program neither qualifies nor entitles them to make diagnoses according to current standards. This right belongs to dentists under the law. So how can the OHDQ report talk about overlapping?

The document mentions a "rigorous protocol approved by public health dentists and the Ordre des hygiénistes dentaires du Québec"[translation], which provides for the absence of a prior examination of children's mouths by a dentist in the school-based program. According to the ADSPQ, no protocol seems to have ever been established with public health dentists. This Association maintains that a dentist must apply the criteria for selecting children.

How does requiring an examination by a dentist before sealants are applied constitute a limitation of dental hygienists' right to practice? Would there be repercussions on the quality of care if the examination by a dentist was no longer required as a precondition for dental hygiene care? Since hygienists do not have the training required to make a diagnosis, there is a risk that an increasing number of teeth with caries would be sealed, thereby requiring a filling later and causing additional costs as a result. The OHDQ document does not address this issue.

No evidence is provided for the connection drawn by the OHDQ document between independent practice by hygienists and a gain in efficiency in the school-based dental sealant application program for children in the second year of elementary school. Several aspects were left out or poorly documented.

4.8. INDIVIDUALS WHO ARE LOSING THEIR AUTONOMY, IN CHSLDS, IN RESIDENTIAL CENTRES OR AT HOME

Individuals who are losing their autonomy require not only preventive, but also curative care.

The OHDQ report acknowledges that CHSLDs lack the financial resources for oral health care services. Although dental hygiene care is important, individuals who are losing their autonomy very often have an extreme and urgent need for curative care. In many cases, preventive care must be preceded by curative care. The OHDQ report mentions that dentists and denturologists will need to travel: How would these professionals be encouraged to do so?

What type of practice environment would allow dentists to provide quality curative care? Who would pay for the dental equipment and supplies? How would they be remunerated? The OHDQ document does not provide any answers.

It bears repeating that the OHDQ document projects an average of two appointments per year per person. Would their interventions have any real impact, given the blatant lack of resources for providing basic daily dental hygiene care to this vulnerable group of people?

To provide dental care in CHSLDs and residential centres, whatever the type of care, several factors must be considered, including:

- a suitable place in the CHSLD or residential centre where care can be properly provided;
- compliance with sterilization standards;
- the transportation of individuals who are losing their autonomy with the assistance of competent personnel;
- the possibility of orderlies looking after the daily oral hygiene of beneficiaries;
- the availability of personnel for coordinating all resources, including the hygienists.

All of this creates costs for health care institutions that are not brought up in the OHDQ document.

Surprisingly, the OHDQ report (see p. 23) draws a connection between the access to care of individuals who are losing their autonomy and an opinion of the Competition Bureau.[30] This opinion is based on the premise that dental hygienists are " … more flexible and mobile in their delivery of dental hygiene services than are dentists." This type of opinion is not supported by a finding based on the actual situation in Quebec, but rather the assumption that with more independence, dental hygienists will be "mobile" and will travel to CHSLDs, residential centres or homes to perform preventive care. Why would dental hygienists be more mobile than dentists are currently? Nothing is clear here. To offer mobile services, professionals must be compensated for their travel time, reimbursed for their travel or living expenses, integrated in the health care system, have access to an appropriate site, etc. Who would plan, coordinate and pay for all that: the patients themselves, the government, the centre? The OHDQ document does not provide any answers.

Nothing supports the assumption that independent dental hygienists would be more mobile and that they could, for that reason alone, improve the oral health of individuals who are losing their autonomy. Furthermore, no explanation of how the work of dental hygienists would be integrated in CHSLDs and institutions is provided. Due to the lack of answers to many important questions, it is absolutely still too early to evaluate the costs and benefits and, by extension, draw a conclusion on this issue.

30 Competition Bureau of Canada, "Dental Hygienists' Act–An Act Respecting the Regulation of the Profession of Dental Hygiene" [on line], December 2005;
address: http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/02035.html

4.9. LOW-INCOME INDIVIDUALS

The only argument in the OHDQ document that supports the fact that low-income individuals would have better access to preventive care concerns the assumption that the fees invoiced by independent hygienists would be around 33% lower than those invoiced currently by dentists, i.e. $87 instead of $130. Yet, the fees invoiced by dentists already take into account the costs for providing preventive services. Additionally, according to a study,[31] fees have not been reduced noticeably by independent dental hygienist practice in Ontario (see section 4.3).

On page 48, the OHDQ document states that an individual who has never had dental hygiene care would pay $900 to $1,500 in a dental office for that care, which equals 2 to 4 one-hour appointments with a dental hygienist. It continues by explaining that this same individual would pay $200 to $400 in a private dental hygienist office:

- How is this 75% gap reconciled with the previously stated gap, i.e. 33% difference between the fees of dental offices and those of private hygienist offices? When referring only to hygiene care in the ACDQ *Fee Guide*, it is impossible to come up with $900 to $1,500 in fees: Are apples being compared with apples?
- These cases, if they exist, are rare. A justification for the relevance of the solution proposed by the OHDQ document cannot be based on such exceptions.

As far as this issue is concerned, if 250 dental hygienists practiced in independent private offices, while around 5,520 (6,000 multiplied by 92%) hygienists practiced in dental offices, how can it be claimed, as the authors of the OHDQ document do, that this could result in a significant reduction in insurance premiums. An estimate of this theoretical reduction in premiums would be less than 0.3%* in ten years. Is that significant?

There is no gain in terms of potentially lower fees resulting from independent practice by hygienists that would ultimately reduce the cost barrier by a significant margin for low-income individuals. Likewise, it is difficult to anticipate significant reductions in the premiums charged by private insurers resulting from this change in hygienists' practice.

4.10. INDIVIDUALS IN RURAL AND REMOTE REGIONS

The OHDQ document does not provide any analysis that might lead one to believe that independent practice by hygienists would improve the access to oral health care of individuals in rural and remote regions.

31 G. Randall and P. Wakefield, "Exploring the Impact of Expanded Roles for Dental Hygienists in Ontario" [on line], McMaster University DeGroote School of Business, June 2013, p. 6; address: http://rorrhs-ohhrrn.ca/images/stories/Randall.pdf

* Presuming that only 20% of the fees charged to private insurers would concern preventive care, 4.5% (i.e. 250/5,520) of hygienists would work in independent offices and their fees would be 33% lower, the calculation looks like this: (20% * 4.5 % *33%).

Why would an independent hygienist set up a private office in a rural or remote region? What reasons would a hygienist have that a dentist does not have?

It should not be forgotten that, in private practice, population density is an important factor in ensuring that the gross fees invoiced to patients are enough to cover operating costs and generate adequate individual remuneration for the professionals concerned.

Although the OHDQ document targets improved access to oral health care for populations in rural and remote regions, it provides no evidence that this objective would be attained by the suggested measures.

5. ANALYSIS OF THE COSTS AND BENEFITS OF THE SUGGESTED MEASURES

Remarkably, in all the cases listed above, the OHDQ document does not provide any references to support its assumptions:

- On page 33, "we estimate that investing $1 in preventive oral health care and education, particularly for vulnerable individuals and those who are losing their autonomy, would save $2 in general health care expenses, hospitalization, and medication used to treat complications from poor oral health" [translation].
- On page 26, "it is plausible that half of the cases of hospitalization for dental surgery (children under 5 years of age) could thus be avoided, which would save the government $8.25 million annually. This is a very conservative estimate" [translation].
- On page 45, "it is plausible that this (the work of 250 hygienists in CHSLDs) would reduce the annual number of short-term hospitalizations by 1% for this population (individuals living in CHSLDs)" [translation].
- On page 49, " … at a ratio of 1/3.5, i.e. $1 invested in prevention would save around $3.50 of the more expensive curative dental treatment costs … " [translation]. It is necessary to explain here that based on the calculations shown in Table 9, the authors assumed that the $3.50 in savings stays the same over time: Every 6 months when a patient receives preventive care, the patient can save $3.50 in curative expenses in the next 6 months.

What is the basis for the assumptions made by the authors of the OHDQ document? Are they drawn from evidence-based studies that specifically concern one or more of the five measures suggested in this document? There is no indication of this in the text of this document: It uses the phrase "we estimate," or even "it is plausible" [translation].

Unless the authors of the OHDQ document can provide evidence-based studies to support their assumptions for each of the five suggested measures, it must be concluded that the cost/benefit analysis provided by this document has no sound basis.

5.1. YOUNG CHILDREN

The OHDQ document suggests that the government should recruit 33 new dental hygienists, i.e. 1.5 full-time positions per CISSS and CIUSSS, to apply the public dental health action plan (PASDP). The authors of this document assess its cost at $1.45 million (i.e. 33 times $44,200) and project an annual benefit of $8.25 million for the government.

Employer contributions to public plans and benefits have not been taken into account in the costs. Furthermore, several costs have not been estimated, such as the cost of supervising these new employees, the cost of office space, the cost of furnishings and the cost of travel and living expenses. Will hygienists need special equipment or supplies for their work?

Clearly, by taking into account only the salaries paid to dental hygienists, the actual costs of the suggested measure are underestimated.

In terms of savings, the authors of the OHDQ document state on page 36 that "half of the cases of hospitalization for dental surgery could be avoided in this way" [translation]. What is the basis for this assumption? Why didn't they claim that this measure would reduce 10% or 75% of these cases? How can they make an assumption on the efficiency of a measure that is nothing more than a vague notion and then not provide any details on how it would actually be applied?

In addition, as we previously mentioned, in Quebec, the total number of children under 5 years of age who are treated under general anesthesia in hospitals is unknown. The causes of these treatments would also need to be known. For example, cases of non-cooperation by children will not be reduced by the suggested measure.

Without a serious basis for or a precise description of the suggested measure for young children, it is impossible to properly evaluate it. Nevertheless, the costs presented in the OHDQ document are underestimated, while the savings are overestimated.

5.2. CHILDREN IN THE SECOND YEAR OF ELEMENTARY SCHOOL

The OHDQ document suggests that the government should increase spending by $3.95 million on the application of sealants by hygienists in schools. Based on the estimate for young children, this would require 90 additional hygienists. According to the authors of the OHDQ document, this expenditure would potentially enable the government to receive an annual benefit of $8.6 million for children aged 9 and younger and $14.22 million for the parents of children aged 10 and older.

The document does not state how allowing hygienists to practice independently would benefit this measure. Perhaps there would be a few more days available to apply sealants since hygienists would no longer have to assist public health dentists during the examinations of children. However, the additional time required by hygienists to screen for teeth with caries would need to be taken into account, provided they had the training to do so.

Here several other comments on costs and savings:

- As mentioned in the analysis of the measure for young children (see section 5.1), employer contributions to public plans and benefits, the time involved in supervising the hygienists, and the costs of office space, furnishings and other similar expenses are disregarded.
- Mobile dental equipment and supplies are required to apply sealants on the grooves of molars. The cost of the materials, gloves, sterilization measures and other expenses need to be calculated for each sealed tooth. These costs are high.
- The travel and living expenses of hygienists must be included in the estimation of the costs of such a program. The dental hygienists responsible for applying sealants in schools have to travel between their CLSC and the schools during regular work hours. In addition, what costs would schools incur? The more dental hygienists, the higher the costs.

- On page 40, the OHDQ document states "we have used the most relevant data to estimate the costs/benefits" [translation], without referring to data concerned and their sources.
- On page 40, the OHDQ document makes the assumption that in 2013-2014, there were 29,617 children with unsealed molars who should have received sealants. Yet, some of these 29,617 children surely received the sealant treatments in dental offices. This would considerably reduce the estimated savings.
- In addition, are they certain that the only reason 29,617 children did not receive sealants on the grooves of their molars was because hygienists lacked resources? Could there be other reasons, such as the presence of caries or a parent's refusal to allow his or her child to receive this care?
- A cost estimate for a molar restoration should not include the examination fee. In fact, sealing the grooves of the first molars does not reduce the number of examinations, considering the number of teeth in the mouth and the fact that maintaining a healthy mouth concerns all of an individual's teeth. In addition, caries can appear on other surfaces of a molar with sealed grooves and even on the grooves themselves if a carie was present before the grooves were sealed or if the sealant has to be reapplied. This would reduce the supposed savings.
- The OHDQ document allows for 2 restorations per unsealed molar for the 29,617 children who did not receive sealants, as one of the 2 restorations occurs before the age of 10 and the other afterward. The OHDQ document does not provide any source to support this assumption. Furthermore, when making this assumption, did the authors take into account that the first molars can erupt starting at age 5, which is well before the second year of elementary school? Accordingly, a significant proportion of these at-risk children would have caries on molars or their teeth sealed when dental hygienists visit the various schools. Finally, hygienists would not be able to perform all of their activities at the beginning of the school year, which means the number of molars with sealants, caries or fillings would increase gradually over the school year.
- The OHDQ document does not mention any plans to follow up with the children who have received sealants, even though experts recognize that a follow-up is necessary. The authors of the OHDQ document seem to suggest that sealants would not be reapplied. They do not mention any source that could be used to estimate the percentage of reapplied sealants by dental hygienists in schools. However, sealants would inevitably need to be reapplied: How much would this cost and who would pay for it?
- Given the current training of hygienists, there is a potential risk that independent practice by hygienists may create costs for both the government and parents due to the higher number of reapplied sealants or caries that would occur if sealants were applied on molars with caries.

The estimate presented in the OHDQ document for children in the second year of elementary school is unacceptable because specific cost items are neglected and the savings are overestimated. A more thorough estimation of the costs and savings would need to be based on credible studies.

5.3. INDIVIDUALS IN CHSLDS

The OHDQ document recommends that the government recruit 250 new dental hygienists, i.e. 1 full-time position per 300 people requiring an average of 2 appointments per year. The authors of this document estimate its cost at $11.05 million (i.e. 250 times $44,200) and project an annual benefit of $23.4 million for the government.
The document neglects several items when estimating the costs and savings:

- As previously mentioned, the cost of employer contributions to public plans and benefits, the time involved in supervising the hygienists, the cost of office space, furnishings and other similar expenses are disregarded.
- The costs for CHSLDs, i.e. the direct and indirect costs of hygienists' work in these institutions, would also need to be estimated: the required office space, the necessary dental equipment and supplies, the time spent by orderlies to accompany the patients, etc. In addition, some of the CHSLD staff members' duties would have to be reorganized. These costs are by no means minimal.
- What about the dental equipment and supplies required to provide the dental hygiene care? Who would cover the costs?
- Given the challenges of working with patients who are losing their autonomy, a longer period of time than usual would need to be allotted for the care provided to them. Has this factor been taken into account by the authors of the OHDQ document?
- As for the benefits, they suggest that the consultant and caregiver duties of the 250 dental hygienists who would work with CHSLD patients, combined with their support role with auxiliary staff, would reduce the annual number of short-term hospitalizations of this clientele by 1%. The authors did not provide any evidence to support this assumption.
- Furthermore, is it possible to isolate the oral problems of the most challenging clients in the health care network from their many other, often serious, pathologies? Oral health problems interact with these other health problems: What percentage of the short-term hospitalizations of these patients is in reality caused only by their oral health problems?
- The authors of the OHDQ document do not provide any source confirming that the costs of short-term hospitalization of individuals in CHSLDs would total $2.34 billion (1% of that amount is $23.4 million).
- The suggested measure plans for non-dental-hygiene care to be provided in CHSLDs by dentists and denturologists, who would travel with their mobile equipment. But who would pay the fees of the dentists and denturologists, as well as their travel time and expenses, for the services they provide in CHSLDs? Why are these costs not estimated when they would have to be incurred to generate the savings associated with better oral health in these patients?

The cost/benefit analysis presented in the OHDQ document for the measure concerning individuals in CHSLDs is unfounded, given the absence of a sufficiently detailed proposal on how the examinations, preventive care and curative care would be provided in CHSLDs. In addition to this, the authors of this document do not provide important cost items or evidence-based data to support their assumptions on the potential benefits.

5.4. CHILDREN IN THE SECOND YEAR OF SECONDARY SCHOOL

The OHDQ document suggests that sealants be applied in schools on the second permanent molars of all children in the second year of secondary school. The OHDQ document provides an analysis of the costs and benefits that could result from this measure: For an annual expenditure of $9.2 million, it predicts annual savings of $33.2 million for the parents of these children.

It does not explain why the suggested measure is not limited to at-risk children in the second year of secondary school, as it does in the suggested measure for children in the second year of elementary school.

This measure involves recruiting some 210 full-time equivalent hygienists. The authors of the OHDQ document presumably obtained this number by failing to factor in the salaries payable to hygienists in the calculation of the cost, just like they failed to do in the other suggested measures.

Table 10 on page 51 of the OHDQ document shows that this measure would not benefit the government in any way and that society, i.e. the parents, would save the cost of restoration services.

The OHDQ document does not explain why it would be necessary to allow hygienists to practice independently for this new measure.

It is difficult to comment on this recommendation due to its ambiguity. However, the following items should also be noted:

- As previously mentioned, employer contributions to public plans and benefits, the time involved in supervising the hygienists, the cost of office space, furnishings and other similar expenses are disregarded. Likewise, dental equipment and supplies are required to apply sealants on the grooves of molars. All these expenses are omitted in the estimate provided in the OHDQ document.
- The travel and living expenses of hygienists must be taken into account when estimating the costs of such a program. Also, what costs would secondary schools incur?
- The authors of the OHDQ document claim on page 43 that 69,111 children in the second year of secondary school "have not received sealants and ... will require costly repairs in dental offices in the future" [translation]. They state that only 1,322 children received a sealant on their second molars in 2013-2014 in schools. Yet, 58% of the students in the sixth year of elementary school have at least one sealed permanent molar. So how can the authors of the OHDQ document suggest that nearly all of these children now aged 13 currently do not have any second sealed permanent molars? Logically, they should expect that at least an identical percentage to the first molars has been sealed in dental offices. But in doing so, a large chunk of the estimated savings would disappear.

- Furthermore, to estimate the savings, the authors of the OHDQ document used a ratio of "1/3.5, i.e. $1 invested in prevention would save around $3.50 of the more expensive curative dental treatment costs" [translation]. Yet, as we previously asked, is this assumption based on studies specifically concerning the suggested measure for children in the second year of secondary school? The authors do not mention any in the OHDQ document. Furthermore, why does their assumption for this measure generate different savings than their assumption for the measure concerning children in the second year of elementary school?
- By using this ratio, they suggest that the more expensive the measure is, the greater the savings will be. For example, if dental hygienists had an average salary of $50,000 instead of $44,200, the savings would automatically be increased by 13%. Likewise, if dentists themselves provided the dental hygiene services, would the anticipated benefits increase in proportion to the gap between dentists' remuneration and hygienists' remuneration, even though they would perform the same work? This is surprising and casts doubt on the assumption, which draws a direct connection between savings and salaries or the costs involved in such a measure.
- Second molars can appear starting at age 11, which is also well before the second year of secondary school. Therefore, a significant proportion of these children would have caries on molars or already sealed teeth when the dental hygienists visit the schools. Furthermore, hygienists would not be able to perform all of their activities at the beginning of the school year, which means the number of molars with sealants, caries or fillings would increase.
- Just like for children in the second year of elementary school, no follow-up will be provided to the secondary school children who have received sealing agents.
- Given the current training of hygienists, there is a potential risk that independent practice by hygienists may create additional costs due to the higher number of reapplied sealants that would occur if sealants were applied on molars with caries.

The measure concerning children in the second year of secondary school suggested in the OHDQ document is different than the one concerning children in the second year of elementary school. Why doesn't this measure target at-risk children? The authors of the OHDQ document have completely failed to factor in the application of sealants in dental offices in their analysis. In addition, there are major flaws in the estimated costs and savings.

5.5. INDEPENDENT DENTAL HYGIENISTS

The OHDQ document suggests that hygienists should be allowed to practice independently. The authors of this document project that 25 new dental hygienists would choose to practice independently in a private dental hygiene office every year for 10 years, for a total of 250 at the end of this period. No additional cost is estimated and cumulative benefits of $88.8 to $254 million are projected for society over 10 years.

According to the authors of the OHDQ document, this suggested measure generates only benefits, without any cost to government or society. These benefits are said to be of two types: The first type stems from the fact that the fees at private hygienist offices would be 33% (i.e. $87 versus $130) lower than the fees for dental hygiene services at dental offices, and the second comes from the reduced cost of curative dental treatments. Yet, the underlying logic of the calculations presented in the OHDQ document is inaccurate for the following reasons:

- In terms of savings, the authors of the OHDQ document multiplied the amounts calculated as the supposed reduction in fees by 3.5 (i.e. $43 or $130 minus $87). This is not consistent with the assumption that "$1 invested in prevention would save around $3.50 of the more expensive dental treatment costs" [translation]. In fact, this 3.5 ratio should be applied to all spending on prevention, as the authors of this document did when calculating the benefits of the measure for children in the second year of secondary school, and not to the supposed reduction in fees.
- What percentage of patients who do not currently go to dental offices would go to private hygienist offices? The answer to this question is decisive when it comes to costs and savings:
    - Supposing that hygienists were allowed to practice independently and only people who do not currently go to dental offices would be treated by them, then each of the 500 new patients per hygienist would definitely have new expense, estimated at $261 per year (see section 4.4), following the assumptions made in the OHDQ document. As a result, the $88.8 million in savings over a 10-year period turns into $179.4 million in expenses for all patients of independent hygienists. But the patients who would go to the new private independent hygienist offices supposedly do not currently go to dental offices, so they do not currently assume these costs. How can the authors of the OHDQ document justify $913 (i.e. $261 multiplied by 3.5) in annual savings in the cost of curative treatments for each of these people who do not currently go to dental offices and therefore do not incur the cost of dental care?
    - However, supposing that independent hygienists in private offices would treat patients who currently go to private dental offices to receive their dental hygiene care, following the assumptions stated in the OHDQ document, its authors should have also presumed that these patients may very well pay lower fees, supposedly $43 less per hour, but would not save on curative treatment costs since they already receive dental hygiene treatments in a dental office. Therefore, the $43 reduction should not be multiplied by 3.5 for each patient.

Additionally, the following comments on costs and benefits should be noted:

- As concerns preventive care and the lower fees billed by hygienists in private offices compared to dentists in dental offices: As previously explained, this gap is purely theoretical and highly improbable based on observations from Ontario and for other reasons (see section 4.3).

- The average fee per patient of a hygienist in a private office would be $261 ($87 multiplied by 1,500 hours and divided by 500 patients) per year or $130.50 per visit, supposing that a patient visits 2 times per year. Shouldn't the supposed $261 per year billed by hygienists for dental hygiene services in a private office be considered a cost barrier?
- The cost estimates totally overlook the fact that patients would have to go to two different places to receive all the dental services required by their oral health condition. Travel time and costs would be greater, as well as much more time away from work compared to the current framework of the one-stop model, i.e. the dental office. These items should be evaluated. In addition, the total duration of the visits would increase: Independent hygienists would have to take time to evaluate the condition of the mouth and dentists would have to perform the same exact examinations they currently perform.
- What percentage of patients who currently go to dental offices would be patients of independent hygienists in private offices?
- The OHDQ document does not break down the 500 patients per independent hygienist by group of vulnerable individuals. Independent hygienists would be free to set up their private offices wherever they consider it most advantageous. How can this be reconciled with the initial concerns about the most vulnerable groups?
- If the new patients of private hygienist offices were actually people who do not currently go to private offices, it is highly likely that their oral health condition would often be poor. If this were so, they would require curative treatments prior to hygiene care, thereby increasing the initial costs for these patients. Would a supposed reduction in the fees for dental hygiene care really be enough of an incentive for these people?
- The 250 dental hygienists who are expected to practice independently outside dental offices at the end of the 10-year implementation period for this measure is inconsistent with the experience observed in Ontario. Based on that experience, there would be around 30 of these hygienists in Quebec.
- As for the place where independent hygienists choose to practice, the laws of free enterprise and the market would dictate this. It would be naïve to believe that independent hygienists would not try to make sure that they receive adequate personal remuneration.

The analysis provided in the OHDQ document for independent practice by hygienists does not make sense. It overestimates the savings and the number of hygienists likely to practice independently and does not take into account the additional costs for individuals who do not currently go to dental offices.

5.6. OVERALL EFFECT OF THE FIVE SUGGESTED MEASURES

According to their estimate, the five measures suggested by the authors of the OHDQ document would require the government to recruit or direct 608 full-time equivalent hygienists to independent practices in the first year, and that this number would reach 833 after 10 years:

- Measure concerning young children: 33
- Measure concerning children in the second year of elementary school: 90
- Measure concerning individuals in CHSLDs: 250
- Measure concerning children in the second year of secondary school: 210
- Measures concerning independent practice (in private offices or mobile services): from 25 (1st year) to 250 (10th year)

Since 92% of the 5,963 OHDQ members practice in dental offices but not all on a full-time basis, it can be expected that about 1 out of 5 hygienists would be directed toward one or more of the measures suggested in the OHDQ document after 10 years. If these five measures were adopted, it would cause an imbalance between the supply and demand of hygienist resources. An imbalance of this magnitude would put major upward pressure on the remuneration of dental hygienists and, potentially, on all the salaries of dental office employees. These raises would in turn generate increases in the rates billed to patients. The higher costs would prevent any additional benefit and reduce all of the expected savings from these five suggested measures, without any benefit in return.

It should be noted that salaries and benefits represent on average 41% of the total operating costs of dental offices. For dental hygienists alone, the total payroll paid by dental offices is estimated at nearly $200 million per year.

In addition, the workforce shortage would have upward effects on the salaries paid by the government to the dental hygienists it employs and on the rates for services covered by the public dental program for children under 10 and beneficiaries of last-resort financial assistance.

Another question should be raised about the potential for a significant reduction in the number of hygienists working in private offices: How would the supply of services to the entire population be affected by such a reduction in personnel?

None of these consequences of the measures suggested in the OHDQ document have been analyzed.

The five measures suggested in the OHDQ document would ultimately redirect nearly 1 out of 5 hygienists who currently practice in dental offices to the public network or a private dental hygiene office. This would put upward pressure on the salaries of hygienists and on the rates. None of these additional costs generated by the measures suggested in the OHDQ document have been analyzed.

CONCLUSION

The OHDQ's economic study released in November 2015 is incomplete and not supported by sound bases. It attempts to analyze the costs and benefits of various measures related to the practice of dental hygienists that are often poorly defined in a number of ways: how the provision of care is organized, integration in various institutions, interactions with other health care professionals, and the terms and conditions for financing these measures.

After providing a rather alarming profile of Quebecers' oral health and exaggerated total oral health care costs, it suggests that the main factor for the non-use of this care by the most vulnerable groups is the cost barrier, but does not take into account the interaction between behavioural, cultural and socio-economic factors and the fact that an individual's oral health is part of his or her overall health.

Moreover, the vision of prevention that underlies the entire analysis is distorted because it is based on the premise that prevention is essentially the responsibility of hygienists. It suggests implementing various measures for hygienists that do not account for all the factors and the other care providers who work with the most vulnerable groups.

It does not refer to any scientific study in support of many of its key assumptions when providing an economic assessment of each of the five suggested measures. In our literature review, we did not find any reliable studies in support of the assumptions it makes to justify these measures. Without any such references, its estimated costs and benefits can hardly be viewed as credible.

For each measure suggested, the analysis provided in the OHDQ document does not succeed in demonstrating a link between independent practice by hygienists and better access to preventive care for the most vulnerable groups. Furthermore, the creation of private hygienist offices runs counter to the attempts in the medical world to set up the multidisciplinary practice that currently exists in dental offices.

In addition, it seemingly assumes that hygienists have enough training at this time to practice independently and provide the same quality care that patients now receive. Is this really the case, when in other neighbouring provinces, the hygienists are required to receive additional training?

The five suggested measures would require the government to recruit or direct some 833 full-time equivalent hygienists, which is between 15% and 20% of the OHDQ's current membership, to independent hygienist offices. How would that impact the current supply of dental hygiene services and the future costs of oral health care in Quebec?

Finally, the proposed analysis does not make it possible to determine whether the five suggested measures represent the best cost/benefit ratio in preventive oral health care. Decision-makers should be able to compare them to a set of other types of measures, based on rigorous analyses, in order to make the most well-informed decisions possible.