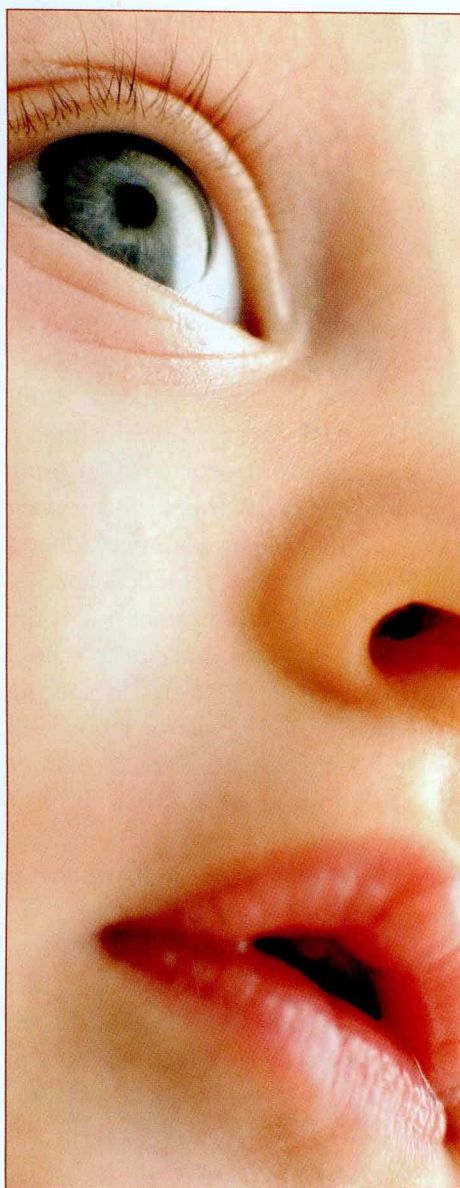


## Who should be taking care of children's eyes?: A survey of a Montréal population

### À qui doit incomber la responsabilité de prendre soin de la vision des enfants? : opinions d'une population montréalaise



#### Abstract

*Objectives:* The purpose of this study was to survey a population in the Montréal area (Québec, Canada) for its opinion concerning the importance of making children's first eye examinations legally mandatory before the children start school.

*Methods:* We recruited 290 persons over age 18 years in four different commercial sites in the Greater Montréal area. The interview was based on a six-question form containing forced-choice items. In order to obtain a better measurement of the target population's knowledge, other elements were collected on each participant's age group, gender, income level and parental status.

*Results:* The Montréal-area population surveyed appeared to favour a legal approach with regard to the first eye exam prior to the start of school, with 70% of respondents in favour of a bill on this topic. For 52.5% of respondents, parents hold the primary responsibility for their children's eye health. The respondents estimated the cost of a child's eye exam at \$44.80 ( $\pm$  \$28.40); 44.0% of respondents felt that this cost should be borne by the government alone; 43.7% to be shared between parents and RAMQ (Régie de l'assurance-maladie du Québec: Quebec's provincial health care plan). The ideal age for the first exam was considered to be 4.0 ( $\pm$  1.9) years old; 54.9% of respondents would choose optometrists to perform eye exams. These results did not vary with relation to age group, income status or the parental status of the respondents.

*Conclusion:* The Montréal population surveyed revealed that it was more knowledgeable than expected concerning the importance of a child's first eye examination. Al-

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*though they pointed to parents as those responsible for taking care of their children's eyes, the respondents felt that the government should be involved, both in making the first exam prior to the start of school mandatory and by paying for the professional services rendered to children. By choosing optometrists over ophthalmologists, the target population demonstrated that this profession is now recognized as a first-line provider of children's examinations and ocular health assessments. This finding was unexpected.*

## Résumé

**Buts :** Cette étude vise à sonder la population de la région de Montréal (Québec, Canada) sur la vision et les enfants, ainsi que sur la réaction des personnes à rendre obligatoire le premier examen visuel des enfants avant l'entrée à l'école.

**Méthodes :** 284 personnes âgées de plus de 18 ans ont été interviewées dans 4 sites commerciaux de la grande région de Montréal. Un questionnaire comportant 6 questions à choix forcés a été administré à chaque participant. Dans le but de mieux cerner l'échantillon des personnes interviewées, d'autres éléments pertinents ont été recueillis sur l'âge, le sexe, le revenu et le statut parental de chaque répondant.

**Résultats :** La population interviewée semble favorable à ce que le gouvernement légifère concernant l'examen visuel avant l'entrée à l'école. En effet, 70% des répondants sont favorables à l'adoption d'une loi en ce sens. Pour plus de la moitié des répondants (52,5%), les parents sont les premiers responsables de la santé de l'enfant. Le coût estimé d'un examen visuel de l'enfant est de \$45 (+\$28); 44% des répondants estiment que ce coût devrait être payé par le gouvernement seul ou partagé entre l'État et les parents (43,7%). Le premier examen devrait être fait à 4,1 (+1,8) ans, la majorité des personnes interrogées identifiant l'optométriste comme celui le mieux placé pour ce faire. Les résultats ne diffèrent pas selon la location des répondants de même que quant à l'âge, le revenu ou le fait que les répondants soient ou non parents d'enfants.

**Conclusion :** La population montréalaise démontre une sensibilité plus grande qu'anticipée quant à l'importance de l'examen visuel de l'enfant avant l'entrée à l'école. Bien qu'identifiant les parents comme responsables de la santé des enfants, les répondants

*pensent que l'État doit s'impliquer en rendant l'examen obligatoire puis en en assumant le coût, en tout ou en partie. En désignant l'optométriste et non l'ophtalmologiste comme professionnel à consulter en premier lieu, les personnes interrogées indiquent que l'optométrie est maintenant reconnue comme porte d'entrée en première ligne des soins opculo-visuels.*

## Introduction

Ever since the state of Kentucky adopted a law in 2000 requiring every child entering public school to undergo a comprehensive eye examination,<sup>1</sup> a number of other North American governments have been solicited by optometric and public health associations<sup>2</sup> to adopt similar legislation. The American Optometric Association<sup>1</sup> and its Canadian counterpart<sup>2</sup> have made a top political priority out of pursuing the adoption of bills in each state or province that recognize the need for every child to obtain a comprehensive oculo-visual examination before the start of school. For these associations, this has become the most important political battle since the fight surrounding the right to prescribe therapeutic pharmaceutical agents (TPAs) to treat ocular diseases..

The government of Canada, in the Speech from the Throne in October 2004 and provincial officials, subsequently, have identified the importance of ensuring that children enter school ready to learn; they have been supporting a number of worthwhile programs. Alberta and more recently British Columbia funded specific programs aimed at increasing the awareness of the importance of the first eye examination prior to school and increasing the vision screening efforts in specific communities. The explicit connection between how well a child sees and how well a child learns, however, has not been fully recognized, addressed or prioritized in most Canadian provinces. It is clearly an unmet need that has fallen somewhere between the federal and provincial public policy jurisdictions.

The AOQ (L'Association des optométristes du Québec, Quebec' Association of Optometrists) has stated that one of its major goals is to establish a network of health professionals working with children, and to inform

<sup>1</sup> Consult the American Optometric Association's website [www.aoanet.org/x3732.xml](http://www.aoanet.org/x3732.xml), 'AOA endorses bipartisan bill to protect eye health of school children.

<sup>2</sup> The Children's Vision Initiative was established in 2003 to work towards ensuring that all children in Canada access and receive appropriate, quality eye health and vision care throughout the developmental years. ([www.opto.ca/en/public/04\\_eye\\_info/04\\_03\\_02\\_vision\\_initiative.asp](http://www.opto.ca/en/public/04_eye_info/04_03_02_vision_initiative.asp)).



these professionals on the relative importance of conducting the first eye examination early in life, and to convince the government to adopt a clear health policy favouring such exams for all patients entering school. Consequently, many breakthroughs have been made over the past two years: publications and pamphlets have been distributed in all social public clinics in Quebec communities; professional awareness programs have been conducted within and outside the field of optometry, and a partnership has been established with the INSPQ (*Institut national de santé publique du Québec*: Quebec's national public health institute). Here the collaboration has included the co-publication of a set of recommendations for eye health and ocular examinations in a booklet given out to the parents of all newborns.

The AOQ has also multiplied its contacts with government officials and bureaucrats, although no politician has as yet come out in favour of legislative change in the matter of the first eye examination (hereafter referred to as a FEE). In fact, many consider that, since the Québec's health insurance plan currently covers eye care services provided by optometrists or ophthalmologists for persons aged 0 through 17, the Quebec government should not be obliged to go any further. Although there appears to be agreement that such a public health policy would be good, many argue that any such legislative approach would be challenged in court through the provincial and national Bill of Rights, in an effort to prevent administrative rules from intruding into people's lives. Health choices are a personal responsibility, even when they have huge social impact.

## Objectives

Because we are aware of the efforts made by the OAO to make information available and to raise public awareness about FEEs, our study aimed to measure, in a Montréal-area population, the extent of knowledge on this and other related issues, such as: the amounts of professional fees estimated by the respondents; the ideal age for undergoing a FEE, and the most appropriate professional to consult for a child's ocular health examination.

## Hypotheses

Based on interviews of AOQ's officers, relying on non-published surveys, we expected that the public would favour legislative change making FEEs mandatory prior to the start of school. Secondly, we predicted that not only would the government be considered responsible for paying professional fees, but also that ophthalmologists, as medical specialists, would be identified as the most appropriate professionals to consult for comprehensive eye examinations.

## Methods

Respondents were randomly selected in four different commercial sites of the greater Montréal area: Site 1 - *Centre Rockland* (in a higher income, English-speaking community); Site 2 - *Carrefour Laval* (in a blue-collar, French-speaking community); Site 3 - *Marché Jean-Talon* (a fashionable area, home to young urban professionals: a French-speaking population), and Site 4 - *Plaza*

TABLE 1 - QUESTIONNAIRE (FRENCH)

1 - Croyez-vous que le gouvernement du Québec doit légiférer quant à l'examen de la vue chez l'enfant?	<input type="checkbox"/> Oui <input type="checkbox"/> Non
2 - Selon vous, à qui revient la responsabilité de la santé visuelle des enfants québécois?	<input type="checkbox"/> Parent <input type="checkbox"/> Gouvernement <input type="checkbox"/> Les 2 conjointement
3 - À combien évaluez-vous le prix d'un examen complet de la vue et de la santé oculaire d'un enfant?	
4 - Selon vous, le coût d'un examen de la vue et de la santé oculaire de l'enfant doit être assuré par qui?	<input type="checkbox"/> Parent <input type="checkbox"/> Gouvernement <input type="checkbox"/> Les 2 conjointement
5 - À quel âge croyez-vous qu'il est indiqué de faire effectuer un premier examen visuel complet à l'enfant?	
6 - Selon vous, qui est le mieux placé pour évaluer la vision et la santé oculaire d'un enfant?	<input type="checkbox"/> Infirmière <input type="checkbox"/> Ophthalmologiste <input type="checkbox"/> Opticien <input type="checkbox"/> Optométriste <input type="checkbox"/> Pédiatre
Âge :	<input type="checkbox"/> 18-39ans <input type="checkbox"/> 40-64ans <input type="checkbox"/> >65ans
Sexe :	<input type="checkbox"/> F <input type="checkbox"/> H
Revenu familial :	<input type="checkbox"/> 0-25 000\$ <input type="checkbox"/> 25-50 000\$ <input type="checkbox"/> 50-100 000\$ <input type="checkbox"/> >100 000\$
Avez-vous des enfants : <input type="checkbox"/> oui <input type="checkbox"/> non	
Si OUI, avez-vous une garde à temps plein ou partagé?	
Ont-ils déjà eu un examen de la vue complet en bas âge? <input type="checkbox"/> oui <input type="checkbox"/> non	
Qui prend en charge la santé de vos enfants à la maison?	



*St-Hubert* - (a low-income, multi-ethnic neighbourhood, where French and foreign languages are spoken).

The interviewers were optometry undergraduate students, but they did not introduce themselves as this or as having connections with any optometry groups or associations. They presented the questionnaire as part of a school project on public health issues. The interviewers were authorized to answer any questions asked by the respondents in order to clarify the forced choices proposed as answers. Any other details were to be provided following the interview, upon request.

The questionnaire is reproduced in Table 1.

## Statistical Analysis

All data were analyzed by the statistics department at the *Université de Montréal*. In most cases, t-tests using SAS 8.2 software were used to establish correlations between results.

## Results

A total of 284 respondents were interviewed, of whom 62.0% were female. The average respondent was 39.7

years old. Most respondents (58.1%) were 18 to 39 years old, with the remainder in either the 40 - 64 year-old age group (32.7%) or over 65 (9.2%). Annual family income was distributed among our sample as follows: 21.8% earning 0 - \$25,000; 33.8% between \$25,000 and \$50,000; 29.2% between \$50,000 and \$100,000 and 11.6% earning over \$100,000. Ten persons did not answer this question and were discarded from our analysis. A majority (57.7%) of our population were parents; 41.9% had no children.

This population of respondents was not selected to match closely the total population in the areas where interviews were conducted. Table 2 to 5 illustrate the variation of answers by location. Since there is no statistical difference among our 4 groups of respondents, the results are considered as a whole.

Most of the respondents (70.1%) stated that they would like the Québec government to pass legislation making the first eye exam mandatory prior to the start of school. They felt that the ideal age for starting this process is 4.1 ( $\pm 1.8$ ) years old. A slight majority of respondents (52.5%) considered that children's ocular

TABLE 2 - RESULTS TO THE QUESTIONNAIRE BY LOCATION

	Question 1		Question 2			Question 4			Question 6		
	Yes	No	Parents	Gov.	Both	Parents	Gov.	Both	Ophth	OD	MD
Total % of respondents	70.1	29.9	52.5	1.8	45.8	12.3	44.0	43.7	28.2	54.9	11.3
Laval	67.4	32.6	47.8	4.3	47.8	4.3	39.1	56.5	13.0	73.9	6.5
Rockland	73.8	26.2	51.5	1.9	46.6	10.7	51.5	37.9	32.0	52.4	12.6
Jean-Talon	66.7	33.3	56.6	1.0	42.4	17.2	37.4	45.5	29.3	49.5	14.1
St-Hubert	72.2	27.8	50.0	0.0	50.0	13.9	47.2	38.9	33.3	52.8	5.6

Question 1: Do you believe the Quebec government should legislate mandatory children's eye examinations ?

Question 2: Who should take the responsibility of the young Quebecers eye health?

Question 4: Who should pay for the complete eye examination of a child ?

Question 6: Based on your knowledge, identify who is the most appropriate professional to consult for the first eye examination of a child ?

TABLE 3 - ESTIMATED MOMENT (AGE) AND VALUE OF THE FIRST CHILDREN EYE EXAMINATION

	Examination (average) in dollars (\$)	Std dev (+)	\$ Median value	Ideal age of the 1st exam (average) in years	Std dev (+)	Age Median value
Total	45	28	40	4.1	1.8	4.0
Laval	41	20	40	4.2	1.8	4.0
Rockland	47	31	50	4.3	1.9	5.0
Jean-Talon	46	30	40	4.0	1.9	4.0
St-Hubert	42	27	40	3.7	1.5	4.0



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TABLE 4: DEMOGRAPHICS OF THE SAMPLE BY LOCATION

	Age			Sex		Familial Income \$			
	18 - 39	40 - 64	65 +	F	M	0 - 25,000	25 to 50,000	50 to 100,000	> 100,000
*Total % of respondents	58.1	32.7	9.2	62.0	37.0	21.8	33.8	29.2	11.6
Laval (46)	80.4	15.2	4.3	65.2	32.6	17.4	39.1	23.9	15.2
Rockland (103)	63.1	32.0	4.9	65.0	34.0	16.5	26.2	33.0	20.4
Jean-Talon (99)	38.4	45.5	16.2	55.6	44.4	23.2	36.4	32.3	4.0
St-Hubert (36)	69.4	22.2	8.3	66.7	33.3	38.9	41.7	16.7	2.8

\* Number of respondents is indicated after the location ( x )

TABLE 5 - CHILDREN'S BACKGROUND OF THE RESPONDENTS BY LOCATION

	Have Children		Children have had eye examination		Key person for health issues		
	Yes	No	Yes	No	Mother	Father	Both
*Total % of respondents							
Laval	65.2	32.6	66.7	33.3	60.3	0.0	39.7
Rockland	61.2	38.8	61.9	38.1	63.5	0.0	36.5
Jean-Talon	54.5	45.5	77.8	22.2	70.4	1.7	27.9
St-Hubert	47.2	52.8	47.1	52.9	82.4	0.0	17.6

health is the parents' responsibility only, while 45.8% of those surveyed felt that it is a responsibility to be shared with the government. Moreover, 1.8% of respondents stated that they would leave the entire responsibility in the hands of public administration.

Optometrists were the professionals preferred by 54.9% of the respondents for conducting a child's first complete eye exam (vision and ocular health); ophthalmologists were second on the list (28.2%), followed by pediatricians (11.3%), opticians (4.2%) and nurses (1.4%).

As for professional fees, we found a similarly split position, with 44% of respondents feeling that exam costs should be assumed by the government; 43.7% were open to a form of cooperative payment by parents and the government. Only 12.3% felt that the entire payment should fall to the parents alone. On average, the respondents estimated the cost for an eye examination at \$45 CAN ( $\pm$  \$28).

## DISCUSSION

Our sample of population was not selected to match closely the total population in the areas where interviews were conducted. However, if we consider the demo-

graphics (Table 4), we realize that the average respondent is a female, between 18-39, living with a moderate income of \$25-50000/year. Many communication analysts would confirm that this is exactly the target for health issues in Canada, since such individuals are considered as the key persons in that matter. This is confirmed by our results (Table 5) where mothers are considered the most important person to decide for health/ocular issues in the family. Therefore, we can estimate that our findings are relevant to the reality of low to middle-class families living in the Montreal area.

A look at Québec's demographics data and RAMQ statistics for the last year available (2003) reveals that 15,999 complete examinations that were performed on patients aged 0 to 4 were claimed by optometrists.<sup>3</sup> This represents 4.2% of the estimated Québec population within the 0-4 age group. During the same time period, ophthalmologists saw 23,500 patients aged 0-4 (6.1%). It was not possible to correlate the number of patients from the first group who may have been referred by optometrists to ophthalmologists for evaluation and treatment (for strabismus, for example). However, our fair estimate of the population of children examined before entering school is one out of ten (10%). By



comparison, 14% of all Canadian children below six years of age receive professional eye care.<sup>4</sup> Undetected and untreated vision problems interfere with a child's ability to learn at school<sup>5-6</sup> and to participate fully in sports and other childhood activities. Visual impairment in children is associated with developmental delays and the need for special education, vocational and social services, which are often prolonged beyond childhood and into adulthood.<sup>6-7</sup>

In a recent pilot study conducted in Alberta<sup>4</sup>, 45% of eligible children (453 children out of 1000) were examined, compared to 14% of eligible children in situations where no awareness campaign had been directed at parents. In that study, parents were first contacted by mail. A document explained the importance to get a complete eye exam for their children and to fill in an appointment with their family optometrist. A phone re-call was made 3 months later if the children did not bring back to the school nurse the results of the ocular evaluation. Published results indicated that 12% of the 453 children examined had vision or eye health problems that would have affected learning either moderately or significantly. A higher percentage of vision problems were found in specific groups of at-risk children (genetically predisposed children, of aboriginal people, children suffering from known neurological or systemic diseases that could have an impact on vision/ocular health).

It is well documented that ten percent of all preschoolers have vision deficiencies and that this percentage increases to 25% for children in Grades K-6. The incidence of vision problems is much higher in children at risk. For example, The Harvard Graduate School of Education hosted a conference in April, 2001, where it was demonstrated that 53% of children of families living in poverty have uncorrected vision problems that interfere with learning and reading activities<sup>8</sup>. Another source stated that 70% of juvenile delinquents have undercorrected visual problems<sup>9</sup>. Aboriginal children have a significantly higher incidence of refractive error. With the increasing prevalence of diabetes within the Aboriginal population, ocular manifestations (i.e. diabetic retinopathy), are a growing concern. Diabetic retinopathy has been identified as the leading cause of vision loss in Aboriginal people.

On the basis of the abovementioned pilot's success, the Alberta government has strongly recommended that all school boards in the province implement the program, but the Alberta government has not provided the additional funding needed to start these projects.

Our results indicate that, at the very least, the Montréal-area population we surveyed favours government involvement in the form of legislation making a FEE mandatory for each child. Respondents identifying co-responsibility between parents and government in this matter were more prone to ask for legislation (88.5%) than were the 55% who felt that the responsibility lies solely with parents. This finding is statistically significant ( $p < 0.05$ ). We were interested to note, from the comments made during the interview, that most respondents favoured government involvement because they felt that many parents are negligent or do not assume proper responsibility for their children's health.

Should the government be concerned by the impact such a policy would have on the budget? Perhaps, if we take into account the fact that this measure would inject more than 150,000 new patients into the system, at an estimated cost of \$7 million CAN. We all know that new money is hard to find for public services, but governments should consider that 43.7% of respondents are ready to share the cost of these FEEs. Shared responsibility and shared funding seem to be rationales that are endorsed by the population surveyed.

Other significant findings include the fact that people without children estimated the cost of an eye exam as more expensive ( $\$50 \pm \$33$  CAN) than parents did ( $\$41 \pm \$24$  CAN) ( $p < 0.05$ ). This issue had been presented as an open question: no monetary range had been suggested. Surprisingly, there was no correlation between income level and the costs estimated by respondents, whose estimate, on average, was similar to the actual cost charged by Quebec optometrists for a complete exam (\$45.00), based on OAQ data.

Government responsibility should include a public awareness campaign. Two elements need consideration here. Firstly, there is the ideal time for bringing a child to an eye care professional: respondents stated that this was four years of age. Four years old is late, however, compared with the recommendations made by AOQ or public health associations<sup>2,10</sup> (6 months



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for an ocular health exam and 2 to 4 years for the first complete eye exam, yearly after). This gap could be filled if an appropriate message were targeted to the audience concerned, especially if such a message came from a public/government authority. Secondly, the fact that a large number of ophthalmologists rather than optometrists are consulted for primary care examinations could be viewed as inefficient spending in health services. Information sent to the patients might also address this issue. This could provide one way of reallocating money within the system, so that children's needs can be addressed more efficiently.

We did not identify significant differences in any other aspects of our survey. No other elements showed differences based on gender, income, interview site or age of respondent. No correlation was made with other elements of our survey.

## Conclusion

This study allowed us to ask the question "Who should be taking care of children's eyes?" of a population in the Montréal area. The answer they gave was quite clear: such care is seen as a shared responsibility between parents and government, the latter being involved primarily in funding, but also in taking action with regard to negligent parents by forcing them to provide FEEs for their preschool-age children. On this position, we found no difference with respect to respondents' age, gender, or site location.

This study also showed that, for the target population, optometrists were the first professionals chosen for conducting complete ocular health examinations. This may be seen as a new trend, compared to the data available for 2003 from the *Régie de l'assurance-maladie du Québec*. On the other hand, the optometrists' and public health association's message has not been heard, since respondents viewed 4 years of age as the ideal time to send a child to his or her first eye examination, rather than at 6 months and 3 years of age. Professional associations, public health organizations and governments must continue their efforts to change this attitude. Better knowledge and a joint effort to reach the target population can be rewarding: the Alberta experience is a particularly good example to follow and to keep as an inspiration.

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