ABSTRACT

Objective: To evaluate the promotional materials used during measles mass immunization campaign.

Design: A telephone survey was conducted among parents of targeted children in Ontario and British Columbia (BC).

Results: The leaflet distributed at school was considered to be the most useful source of information for 79% and 69% of the parents of school-aged children in Ontario and BC, respectively. Newspaper articles (27%) and information obtained through public health nurses (24%) were the most appreciated sources of information for the parents of preschoolers only. There was a notable increase in the proportion of parents who considered measles immunization important as well as those who had concerns about measles immunization at the time of the interview compared with the period before the mass campaign.

Conclusion: The leaflet distributed at school (for parents of school-aged children) and newspaper articles and information obtained from public health nurses (for the parents of preschoolers only) were found to be the most useful sources of information.

ABRÉGÉ

Objectif : Évaluer le matériel de promotion utilisé pendant la campagne d'immunisation contre la rougeole.

Méthode : Une enquête téléphonique a été réalisée auprès de parents d'enfants ciblés en Ontario et en Colombie-Britannique (C.-B.).

Résultats : Le pamphlet distribué à l'école a été considéré comme la source d'information la plus utile chez 79 % et 69 % des parents d'enfants d'âge scolaire en Ontario et B.-C., respectivement. Les articles de journaux (27 %) et l'information obtenue par l'intermédiaire des infirmières hygiénistes (24 %) ont été les sources d'information les plus appréciées chez les parents d'enfants d'âge préscolaire seulement. Comparativement la période précédant la campagne de masse, il y a eu une augmentation considérable de la proportion de parents jugeant l'immunisation contre la rougeole importante, de même que ceux ayant des soucis au sujet de l'immunisation contre la rougeole au moment de l'entrevue.

Conclusion : Le dépliant distribué à l'école (pour les parents d'enfants d'âge scolaire), les articles de journaux et l'information obtenue par l'intermédiaire des infirmières hygiénistes (pour les parents d'enfants d'âge préscolaire seulement) ont été les sources d'information les plus utiles.

Evaluation of the Promotional Materials Used During the Measles Mass Immunization Campaign in Ontario and British Columbia

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Although the current one-dose immunization program for measles in Canada has had an enormous impact on the incidence of this disease, it has failed to prevent the occurrence of large outbreaks in some provinces. Following a special meeting on measles elimination held in August 1995, the National Advisory Committee on Immunization (NACI) recommended the implementation of a routine two-dose measles vaccination schedule. NACI also recommended a special catch-up program to prevent forecasted measles outbreaks and to achieve earlier elimination of measles.¹

As of April 1, 1996, six provinces and territories had officially announced their measles mass catch-up campaigns and some had already begun them. In order to promote this initiative to the parents, various information materials were developed at the local, provincial and federal levels. These ranged from TV advertisements to an information leaflet sent to all parents of school-aged children. In Ontario, the campaign targeted school-aged children and took place from February 1 to June 30, 1996. In BC, the campaign was also extended to preschoolers* and lasted from April 1 to June 30, 1996.

The objective of the survey was to evaluate the impact of the promotional materials aimed at parents of children targeted during the measles mass immunization campaign in Ontario and BC.

METHODS

A telephone survey was conducted from July 22 to August 16, 1996. The target population consisted of parents of children aged from 5 to 18 years in Ontario and from 18 months to 18 years in BC, who speak either English or French. Mothers were preferred as the respondents because it has been shown that generally they are more reliable answering questions about their children than fathers.²

The sample came from a list of residential phone numbers obtained from ProCD Canada Phone Book which is updated every three months. In order to ensure a good representation of the different regions of each province, the list was sorted by postal codes and alphabetical order prior to systematic sampling. In order to reach a minimum of 192 parents in each province, the list contained 1,802 and 1,394 phone numbers for Ontario and BC, respectively.

The households were contacted between 9:00 and 21:00 in Ontario and 9:00 and 19:30 in BC during weekdays. A maximum of five calls per household were made at different times of the day. Calls were made by two bilingual interviewers who received in-house training.

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* It was decided that the routine second dose of measles vaccine be given at 18 months in BC because the preschoolers accounted for a notable proportion of the measles cases in this province in recent years.

The main part of the questionnaire, which contained 16 questions, was similar for both provinces; each province had a few additional questions. The questionnaire was pre-tested with 10 mothers from each province. No personal identifier was collected.

Univariate and bivariate analyses were performed using Epi-Info 6.03 software.

RESULTS

Contact was attempted with 3,184 households during the survey; of these, 55% were non-eligible, 16% could not be reached during the survey period, 11% were wrong numbers (not in service, commercial or fax numbers) and 2% refused before eligibility status could be ascertained. Overall 508 (16%) households were eligible. Among the 257 eligible households in Ontario and 251 in BC, 20% (51/257) in Ontario and 17% (42/251) in BC refused to participate in the survey.

Therefore, a total of 206 eligible households completed the questionnaire in Ontario and 209 in BC. The population surveyed in each province had a similar sociodemographic profile. In both provinces, the majority of the respondents were mothers with a mean age of 39 years and more than half had either a college or a university degree. English was the main language spoken at home in 90% of the families.

With regard to the different sources of information on measles obtained in the previous six months, the leaflet distributed at school reached most of the parents of school-aged children in both provinces. The other sources of information about measles immunization that reached approximately 50% of the targeted population were newspaper articles in both provinces, and public service announcements and reports (on TV or radio) and posters in BC only. Important differences in the sources of information obtained were observed between the parents of preschoolers only and those with at least one school-aged child (see Table I). Only 3% and 1% of the targeted parents in Ontario and BC, respectively, did not obtain information from any source.

TABLE I
Proportion of Parents Who Obtained Information from the Different Sources, Measles Mass Immunization Campaigns, Ontario and British Columbia, 1996

	Ontario (n=206) %	BC: Parents with at Least One School-aged Child (n=176) %	BC: Parents of Preschoolers Only (n=33) %
Leaflet	94	92	6
Newspaper	52	60	73
Radio/ TV reports	26	45	49
Radio / TV PSA*	28	56	49
Public health nurse	16	23	46
Doctor	23	12	36
School	18	23	9
Poster (at MD office or elsewhere)	—	44	48
Other	2	3	1
No source	3	1	0

* public service announcements

Figure 1. Most Useful Source of Information, Measles Mass Campaign, Ontario and British Columbia, 1996

In Ontario, four out of five parents interviewed found that the leaflet was the most useful source of information (24% of them received information solely through the leaflet). As well, the parents of school-aged children in BC preferred the leaflet (69%). However, for the parents of preschoolers only, the source reported to be the most useful varied considerably: newspaper articles (27%) and information obtained through the public health nurse (24%) were the most frequently mentioned (see Figure 1). In both provinces, the two main reasons cited for the preference of a source of information over the others were because it contained very relevant information (75%) and because the information presented was clear and simple (20%).

Before the mass campaign, only 54% of the parents in Ontario and 63% in BC considered measles immunization to be important, with a shift at the time of the interview to 86% and to 89%, respectively. In fact, overall 78% (133/170) of those who did not consider it important or did not have any opinion before, did consider it important after the mass campaign.

Only 7% of the parents in Ontario and 11% in BC had concerns about measles* immunization before the mass campaign, while this percentage at least almost doubled (17% in Ontario and 21% in BC) at the end of the mass campaign. There was

* Because BC used MR (Measles-Rubella) vaccine during its mass campaign, the question about concerns referred to both measles and rubella immunization in this province.

TABLE II
Characteristics of the Families (or Respondents) in Which None of the Targeted Children were Immunized Compared to Those in Which at Least One Child was Immunized, Measles Mass Immunization Campaigns, Ontario and British Columbia, 1996

	Families in Which None of Targeted Children were Immunized (n=21) %	Families in Which at Least One Child was Immunized (n=394) %	Risk Ratio (95% CI)
Residents of BC	76	49	RR: 1.56 (1.20-2.02)
Parents less than 40 years old	76	54	RR: 1.42 (1.10-1.84)
Parents with high-school or less	52	45	RR: 1.17 (0.77-1.79)
English/French being main language spoken at home	76	93	RR: 0.82 (0.64-1.04)
Parents of preschoolers only	10	8	RR: 1.21 (0.31-4.72)
Measles immun. considered important before the campaign	52	59	RR: 0.89 (0.58-1.34)
Measles immun. considered important after the campaign	52	89	RR: 0.59 (0.39-0.89)
Concerns about measles immun. before the campaign	24	8	RR: 2.93 (1.27-6.75)
Concerns about measles immun. after the campaign	43	18	RR: 2.38 (1.39-4.07)
No information about measles immunization obtained	14	0.8	RR: 18.8 (4.03-87.43)
Most useful source:			
Leaflet	52	70	RR: 0.56 (0.37-0.84)
Newspaper	14	11	RR: 1.34 (0.45-3.97)
Public health nurse	5	5	RR: 0.89 (0.13-6.33)

no statistically significant difference between the proportion of parents with concerns in Ontario compared to those in BC, even though the latter province used MR (Measles-Rubella) vaccine during its mass campaign. Overall, most of those who did not have concerns about measles immunization before the mass campaign, but became concerned in the course of the campaign, indicated they did so because they realized that measles vaccine had side effects or was "unsafe". Others considered that a second dose of measles vaccine was not necessary. On the other hand, the information received reassured 43% (16/37) of the parents who had concerns before the mass campaign.

In both provinces, there was a total of 21 families in which none of the targeted children were immunized (excluding the families for which the reasons given were "children had measles or had already received two doses of measles vaccine"). The parents in these families were more likely to be from BC (16 from BC vs 5 from Ontario) and more likely to be less than 40 years of age. They were also more likely to have concerns about measles immunization before and after the mass campaign and less likely to consider

measles immunization important at the time of the interview. Moreover, they were more likely to have not obtained any information about measles immunization and they were less likely to have considered the leaflet distributed to be the most useful source of information (the proportion of these families with school-aged children was the same as the other group). No other association was found (see Table II).

When asked to rank, by order of decreasing severity, a list of five infectious diseases (including measles), respondents in both provinces cited (in this order): hepatitis B, measles, pertussis, varicella and flu. There was a positive relationship between the ranking of the severity of measles and the perception of the importance of measles immunization, but no association with concerns about measles vaccine.

DISCUSSION

The response rate among the eligible households in both provinces was quite good: 80% in Ontario and 83% in BC. However, if all of those who refused would have been eligible, then the refusal rate would have been higher: 29% in Ontario

and 24% in BC. Since no demographic information was collected in these households before the refusal, it is impossible to assess if they were different from those who agreed to be interviewed. However, the geographic distribution of the refusals is known in Ontario. The households located in the Greater Toronto Metropolitan area (area codes 416 and 905) were over-represented among those who refused (eligible or not). It is impossible to assume that the same applies to the province of BC since there was only one area code (604) in BC at the time of the survey. While there were only 33 respondents who were not eligible because they could speak neither English nor French, language problems may also have been a reason for refusal.

On the other hand, according to Statistics Canada,³⁻⁶ English or French is the main language spoken at home in 89% and 91% of the households in Ontario and BC (respectively), and 48% and 52% of those 15 and older have completed more than high school in Ontario and BC respectively. These rates are very similar to those of the population surveyed in our study.

Overall, the selection biases mentioned above are probably not sufficiently important to prevent the generalization of the results to the rest of the population targeted by the mass immunization campaign in these two provinces.

Recall and obsequiousness ("desirability") biases somewhat threatened the internal validity of the results of the study. A survey done prior to the implementation of promotional activities would have alleviated some effects of these two biases and would have allowed us to assess with more certainty the impact of the promotional materials.

Because the mass campaign in BC covered not only the school-aged children but also preschoolers, the promotional materials developed needed to be, and were, more varied in order to reach the parents of preschoolers also. The most useful sources of information were the leaflet for parents of school-aged children and newspaper articles and information from the public health nurses for the parents of preschoolers only. Both provinces were successful in reaching their target popula-

tion since only 3% of surveyed parents in Ontario and 1% in BC did not obtain information from any source.

A high proportion of the parents revised their opinion and recognized the importance of measles immunization during the course of the campaign, presumably as a result of the promotional materials. However, our conclusion would be more certain if baseline data had been collected in a survey before the mass campaign.

Another interesting finding is that parental concerns about measles immunization (safety or necessity of the vaccine) increased during the course of the mass campaign. Several reasons could explain this result: 1) it may indicate that the information the parents received was more comprehensive than anything they had ever received before, or 2) it may be due to the information in the media presented by anti-immunization groups, or 3) bad publicity about few cases or perceived cases of severe adverse reactions to the vaccine.

The families in which none of the targeted children were immunized represent a small proportion (5.5%) of our sample. These parents do not represent a homogeneous group. Their main characteristics are that they had more concerns about measles vaccine before the mass campaign than the other families, were even more concerned after the mass campaign, and did not change their opinion about the importance of measles immunization in the course of the campaign. Moreover, the leaflet distributed at school was less popular with these parents and they accounted for half of those who did not obtain information from any source even if they were not more likely to be parents of preschoolers only.

CONCLUSION

An information leaflet is a simple and cheap means to deliver relevant and easily understandable information promoting immunization to parents of school-aged children. However, in order to reach the parents of preschoolers, a variety of promotional materials should be developed. Newspaper articles and information obtained through the public health nurses

were found to have been the most successful in BC.

Since the families in which none of the targeted children were immunized have specific characteristics but do not represent a homogenous group, it appears that it would be difficult to develop specific sources of information to address their concerns and try to improve compliance with immunization.

The reasons for and the impact of the increased concerns about measles immunization by a notable proportion of targeted parents after the mass campaign should be further explored.

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