

ORIGINAL RESEARCH

Rural parents' perspectives about information on child immunization

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ABSTRACT

Introduction: Historically, health professionals have used information developed for parents to promote child immunization. Few studies have specifically examined the effectiveness of this information in meeting parents' needs. While the literature emphasizes the importance of clear, thorough, and unbiased information about child immunization, limited attention has been given to what this means from a parent's perspective. The aim of this study was to gain insight in parents' information needs regarding child immunization in order to improve and/or optimize information shared by rural health professionals. We explored: (1) whether any immunization information contributed to parents' decisions; and, if so, how (2) what types of information and content parents required; (3) the sources of information parents considered helpful and trustworthy; and (4) parents' suggestions on how information could be conveyed to them more effectively.

Methods: This was a descriptive qualitative study, using semi-structured interviews with legal-aged mothers responsible for decisions about immunizing their infant in the past year. The mothers were from the local rural communities south of Calgary, Alberta, Canada, within the boundaries of the Calgary Health Region. Public health nurses working in this area assisted with recruitment. Thirty-nine mothers expressed interest in the study. The investigator contacted respondents to answer questions they may have had as well as to gather more socio-demographic information. This assisted in drawing a sample that reflected a variety of ages, education levels, and decisions made about immunization. Interviews were conducted by the principal investigator. Data



collection and analysis took place simultaneously. Data collection continued until saturation was reached. All three investigators were involved in data analysis and data interpretation to ensure quality of the results.

Results: Eleven interviews were conducted. Participants were all mothers, most of whom lived in a stable relationship. Five mothers made the decision to fully immunize their child. The other mothers were varied in their decisions which included waiting to immunize the child until s/he was older, choosing vaccines selectively, being undecided about immunizing, and not immunizing. There were three mothers who had made a different decision about immunization with previous children. Three mothers were first-time parents. Five major themes were identified: (1) factors influencing mothers' decisions; (2) mothers' worries in making their decision; (3) mothers' perceptions about 'good' information; (4) mothers' information needs; and (5) mothers' recommendations to health professionals who convey immunization information to parents.

Conclusion: The study had some limitations. Only mothers responded to the request for participation and the geographical area of the study was limited to the rural area where those particular public health nurses worked. Participants provided insightful perspectives on the subject of information on child immunization and how that information is conveyed to them. Feedback from the nurses also indicated the results were useful and thought-provoking. Future research in this area, using larger and more diverse populations, would benefit health professionals developing and conveying immunization information to parents.

Key words: Canada, decision-making, immunization, infancy and childhood, information needs.

Introduction

Recognition of vaccine use through history has shown to be a significant intervention assisting in the reduction in childhood morbidity and mortality due to infectious diseases¹⁻⁴. The paradox of this success is that as the risk of vaccine-preventable diseases drops, parents' attention turns to the perceived risk of vaccines⁵⁻¹⁰. Fine et al.³ stated that the very success of these programs brings new problems. No intervention is entirely without risk, and even very rare adverse reactions to a vaccine increase in importance as the target disease itself disappears³.

In years past, public health nurses in Alberta provided provincially standardized information on routine public-funded child immunizations. This information was what was to be given to parents, and assumptions may have been made that this information was adequate for the parents to make a decision.

However, since the 1980s, information calling into question the effectiveness, safety, and long-term effects of vaccines

has become readily available, causing some parents to question the status quo^{11,12}. Although the healthcare community has responded by providing additional sources of information, the reluctance of some parents to immunize their children has continued¹³.

Historically, health professionals have used information, developed for parents, to promote child immunization. Few studies have specifically looked at how effective and helpful this information is in meeting the needs of parents^{5,11,12,14,15}. Although the literature stresses the importance of parents receiving clear, thorough and unbiased information about immunization so they can make an informed decision, limited attention has been given to how parents would, themselves, describe what clear, thorough, and unbiased information means to them.

The purpose of this study was to gain insight into parents' need for information about child immunization, in order to improve and/or optimize information shared by rural health professionals. More specifically we explored: (i) whether information contributed to their decision; and if so, how (ii) what types of information and content parents required; (iii)



the sources of information considered helpful and trusted; and (iv) parents' suggestions on how information could be conveyed to them more effectively.

Methods

Given the limited amount of information available in this area of research^{14,15} and the exploratory nature of the study objectives, a qualitative study using semi-structured interviews was determined to be the best method to search out the information required from those participating in this study. These interviews were with mothers of children aged two years and under who had been eligible for routine immunizations in Alberta in the previous year.

Recruitment of study participants

Public health nurses working in the Rural South Area of Calgary Health Region assisted with recruitment of parents for this study. They had access to parents from a variety of settings, such as postpartum visits, 'Baby and Me' groups, breastfeeding support groups, community activities, and pre-natal classes.

Local public health nurses were asked to offer an information package to parents they had contact with who met the following criteria:

- were of legal age
- had faced making a decision about immunizing their infant in the past year (1 January to 31 December 2002). The child would be aged 2 years or less at the time of recruitment.
- were living in the rural area south of Calgary, within the boundaries of Calgary Health Region. This included small rural towns and villages serving the surrounding ranching and farming communities.
- could be fathers or mothers with varied ages, education levels, and family sizes

- were making different decisions in regard to vaccinating their children.

This information package included an information sheet, a reply card, and a stamped envelope. Interested parents filled out the reply card and returned it to the sealed drop box in each health unit office or directly mailed it to the investigator. Confidentiality was discussed in the information sheet assuring potential participants of their anonymity.

Recruitment was open for one month and the aim was to find as many eligible parents as possible over that month. Of the thirty-nine parents who volunteered and filled out reply cards, two were ineligible according to the study criteria.

The investigator contacted all but two of the respondents by phone (those two were set aside after numerous attempts to reach them by phone). This allowed respondents to ask questions about the study and gave the investigator an opportunity to gather socio-demographic information. It was hoped this would assist in drawing a purposive sample that represented as broad as possible a variety of ages, education levels, and different decisions about immunization (Table 1). While it was hoped that fathers would be included in the sample, no fathers responded to the call for participation. One potential reason for this was that mothers were more likely to bring their children to classes and clinics without the fathers.

The rural communities in this area included one minority group, namely the Hutterites. Those eligible parents living on local colonies were asked if they would be interested in participating but declined. Apart from this, the participants appeared to reflect the socio-demographic variables of the majority of mothers in this geographical area. This was confirmed by senior management working with the public health nurses in this area.



Table 1: Characteristics of participants (n = 11)

Characteristic		N
Gender	Female	11
Living arrangement	Stable relationship	10
Age (years)	< 28	4
	28–37	5
	≥ 38	2
Education (years)	10–12	4
	13–19	7
Decision about Immunizing	Fully immunized	5
	Immunized at older age	1
	Selectively immunized	2
	Undecided	2
	Not immunized	1
Same decision with previous children	Yes	5
	No	3
	First time parents	3
Both parents involved in decision	Yes	7
	No	2
	Left to wife	2
Live in	Small town/village	8
	Rural	3

Data Collection

Data were collected using semi-structured interviews of no longer than one hour in length. An interview guide was developed specifically for the interviews. Questions explored four different areas of interest: (i) whether information contributed to their decision; and if so, how (ii) what types of information and content parents required; (iii) sources of information considered helpful and trusted; and (iv) parents' suggestions on how information could be conveyed to them more effectively. The interview guide is provided (Fig1). While the intent was to audiotape all interviews, one tape was damaged which made transcription impossible; however, notes were made by the interviewer during this interview.

Qualitative content analysis was used to identify themes and concepts^{16,17}. This study was exploratory in nature and specific to assisting local public health nurses to better

support parents on their decisions about child immunization. The focus was on identifying major themes and concepts, not in studying them in depth.

Data collection and analysis occurred simultaneously, so that when themes/concepts emerged during the interview process they were documented, coded, and compared with previously established categories¹⁶. This also allowed adjustments to be made to the interview guide, as needed, prior to the next interview¹⁸. Despite minor changes to the wording of questions, the initial intent of the questions was not changed.

Participants were chosen from the thirty-five eligible and available respondents. After 11 interviews two of the investigators had identified the same themes and concepts reoccurring in the interviews. Therefore, it was decided that saturation had been achieved and recruitment was stopped.



1. Could you tell me about the journey/process you went through in making a decision about immunizing your child?
2. Did you use information in the decision? If yes, what role did the information play? Were there other influences in your decision about immunizing?
3. What were the sources of information you used? Where did you look? Please tell me if you found information readily available to you?
4. What information did you need and/or want to know?
5. Did you find information from the sources you used conflicting or confusing? If so, how did you handle it?
6. In your opinion, what makes up good information?
7. Credibility criteria:
 - How did you determine what kind of information was going to be helpful?
 - How did you decide who to believe and trust as sources of information?
 - How did you determine they were experts?
 - What specifically made the information reliable from your perspective?
8. Health professionals:
 - Did you find the information given you by health professionals address your concerns/ questions adequately? Please explain.
 - Did they give consistent information about immunization or were there differences?
9. What is your preference in how you receive information?
10. Do you have any ideas/recommendations of how information can be conveyed to parents more effectively?
11. Do you have any recommendations for health professionals in how they provide and share information to parents about immunization?

Figure 1: Interview guide.

The principal investigator was responsible for all coding of transcription text. All coding was done by hand and many safeguards were present to ensure credibility and quality of the data¹⁹. These safeguards included: (i) reflective notes written on interviews as needed; (ii) one of the co-investigators reviewed parts of all transcripts and the other co-investigator independently coded all transcripts; (iii) every participant was given the opportunity to review the transcript of her interview (all declined to do so); and (iv) verbatim quotes of participants were used to support conclusions and demonstrate how categories were developed.

After the analysis was completed, findings were shared with the public health nurses. To begin assessing the usefulness of the results, the principal investigator met with most of the nurses from each of the six offices within months of the study's completion and collected feedback from them. Approximately 16 nurses participated during this process. In

order to see what long-term effects this study may have had on their practice, feedback was asked of some of the nurses at a later date.

The design of this study and all tools used, including the participant information package and the interview question guide, were reviewed and given ethical clearance by the Community Research Ethics Board of Alberta (CREBA), Canada.

Results

Mothers' immunization decisions, about routine child vaccinations provided by the Alberta government, were classified as: (i) fully immunized with all routine vaccinations administered at recommended age in Alberta; (ii) immunized at an older age; (iii) selectively immunized



by choosing certain vaccines for administration and rejecting others; (iv) undecided; and (v) not immunized.

The content analysis of the 11 participant interviews revealed five themes and numerous sub themes (Table 2). The themes found in the transcriptions of these interviews provided a rich body of information that could then be helpful in fulfilling the purpose of this study.

Theme 1: Factors influencing mothers' decisions

Role of information: Virtually all participants found that information from a variety of sources played at least one of the following roles in their decisions about immunization: helping to make the decision; confirming the decision; causing confusion and making the decision difficult; and stimulating more questions.

Regarding 'causing confusion' and 'making the decision difficult', Respondent 3 said: 'I don't really know what to believe'.

Other influential factors: Most participants discussed the other influences they felt had contributed to their decision about child immunization. Such influences included past experiences of themselves or others; perceived risks of vaccines; not being aware they had a choice with regard to vaccinating; personal beliefs coloring their attitudes and decisions; and relationships with health professionals.

Regarding past experiences, Respondent 8 said: '...I knew that it was going to be a tough decision for me at the start because my brother had problems with his immunizations...'

Theme 2: Mothers' concerns in making their decision

During the interview process, participants shared some of the worries they faced while making their decision about immunizing their child. These worries have been categorized into three sub-themes: making the right decision; being

respected for making a decision; and being given all the information.

Making the right decision: 'Either way, whether I decided to do it or not to do it, I was potentially putting them in harm's way. I needed to stop and think about it'. (Respondent 7)

Being respected for making a decision: 'They need to have respect that the parent is the one making the decision and sometimes they don't get that'. (Respondent 9)

Being given all the information: '...the health nurse did, in the beginning, give me some books on immunization shots, but they were only one-sided...they didn't explain the other side'. (Respondent 5).

Theme 3: Perceptions of 'good' information

During the interviews, an obvious pattern developed as participants described what 'good' information meant to them. The 'characteristics of information' and the 'credibility of information' were two recurring sub-themes in discussion of the definition of good information. Responses pertaining to credibility – specifically, sources which were believed and why – were notably varied.

Characteristics of information: The majority of participants made comments which outlined two basic characteristics of good information. First, information should be comprehensive, that is, current, accurate, and balanced in its presentation. Second, information needed to be logical, clear, and understandable so that parents could feel satisfied they truly understood the information. Respondent 6 said, 'You know...nobody really explains anything easily, you know? ...all these big words...'



Table 2: Outline of results section

<p>Factors influencing mothers' decisions:</p> <ol style="list-style-type: none"> 1. Role of information 2. Other influential factors
<p>Mothers' concerns in making their decision:</p> <ol style="list-style-type: none"> 1. Making the right decision 2. Being respected for making a decision 3. Being given all the information
<p>Perceptions about what 'good' information is:</p> <ol style="list-style-type: none"> 1. The characteristics of information 2. The credibility of information sources
<p>Mothers' information needs:</p> <ol style="list-style-type: none"> 1. Presentation of information 2. Quantity of information 3. Availability of information 4. Timing of receiving information 5. Content to be covered
<p>Recommendations to health professionals who convey information:</p> <ol style="list-style-type: none"> 1. Health professionals should: <ol style="list-style-type: none"> a. Make parents comfortable asking questions. b. Adequately address each parent's questions and concerns. c. Instil confidence when talking to parents. d. Be clear on where their professional allegiance lies. e. Understand parents may be affected by their attitude. 2. Other ideas parents have for health professionals

Credibility of information sources: Most participants shared their views on who they perceived to be trusted information providers and why. The opinions expressed were varied and underscore the impact of parents' experiences and feelings with regard to perception of credibility. Some parents found it essential to have official health sources from which to obtain information. Some required an established, trusting relationship with the information source, for example the doctor-patient relationship. Others found they had confidence in information sources they could relate to, whether someone acknowledged their concerns or had walked in their shoes previously. This was very powerful in establishing credibility.

I want it from my trusted people in my community...from my doctor and ...health nurses....
(Respondent 4)

I guess...it depends on their credentials a little bit....
(Respondent 8)

I get counsel from other people - they are people that are receptive and you know make thoughtful decisions...I know they've made thoughtful decisions...when sorting through the information I'm looking for facts versus blanks...I try to assess them as best that I can.... (Respondent 9)

Theme 4: Mothers' information needs

In discussing their experiences and views about the information presently available to parents, every participant contributed to some key recommendations for future development and distribution of the information on child immunization. These recommendations, although diverse, were organized into the following categories: presentation,



quantity, availability, timing, and contents of the information.

Presentation of information: The participants' responses indicated that a varied presentation of information is necessary to meet all parents' needs (eg written, oral, visual).

Quantity of information: A few participants addressed the issue of how much information was enough. It became obvious that parents' needs regarding the quantity of information, differ and must be met individually.

Availability of information: Some participants shared where they had found information and offered ideas on where they felt information should be available. The suggested places included doctors' offices, hospitals, health units, prenatal classes, libraries, and the internet.

The timing of receiving information: Many participants agreed that information on child immunization should be available well before parents must make a decision. Some felt this information should come during the pre-natal period so the information could be considered without the additional stress of welcoming the new arrival. Most felt post-delivery was not an optimal learning time for this decision-making process.

Content to be covered: The quotes below elucidate some of the topics/concerns mothers mentioned during the interviews (Fig2).

...their immune system has never worked yet...they've never had the chance to fight anything off... there needs to be more study on that and...you know...how much benefit is there to letting their immune system start working on its own before you start injecting into it.... (Respondent 3)

...like I said...research studies...with dates on the publication or specific numbers-information that's as specific as possible. (Respondent 1)

I guess statistics would be what I would be looking for...how many years have they been giving this and the kids that have been followed along and they had no problems.... (Respondent 4)

Most participants emphasized the importance of having current information that addressed all sides of the immunization issue. The following remarks reflect this:

Both sides of the story. I got only the medical side...what the doctors have been taught...what the nurses have been taught. I only got the side that they've been taught in medical school...It works for some...What about the children who have problems? And what they didn't tell me was the other side of the coin...so that I could weigh it out for myself. (Respondent 5)

...everyone's got a right to know...it's just like when you get a prescription at the drugstore, they give you two sheets of what might happen to you if you take this pill and it's just worse-case scenario and I don't think it would frighten, I think it would just inform. (Respondent 4)

Theme 5: Recommendations to health professionals who convey information

During the interviews, each participant provided a perspective on how well health professionals convey information to parents. Their perceptions and observations pertaining to this final topic provided better understanding of the effect health professionals have on parents in the simple act of sharing information. Participants suggested that health professionals strive to provide an environment which welcomes questions and open discussion so each parent's questions and concerns can be addressed adequately. Furthermore, health professionals need to demonstrate that they are well informed and up to date with current research and practices relating to child immunization. Last, health professionals should recognize that parents can be affected by their demeanour and attitude. Being clear on where the health professional's allegiance lies can also be helpful to parents.



- Why immunization is important
- Vaccines and how they work
- Description of the contents in vaccines and what role they play
- Explanation of live vs killed vaccines
- How safe the vaccines are, including side-effects
- How long vaccines are effective
- Do vaccines fail in providing protection
- Are there interactions of vaccines given together
- Address concerns surrounding the immune system and vaccines including when vaccinations should be postponed or not given
- Up-to-date information on current scientific information, research and statistics
- Concerns about possible vaccine linked illnesses
- State of child immunization in other countries
- What to expect at well baby clinic when coming in for vaccinations

Figure 2: Participant identified topics/concerns helpful in making informed decisions.

...some nurses are better than others. There was a nurse that I had...I could go in there and feel like I was visiting an old friend...but there are other nurses that I couldn't wait to get out of there! I am there to be respected and someone caring for my children and one way that I handled that...is that I choose who I see. (Respondent 9)

The fact that they thought to explain things and exactly what they were going to do and what impact it might have or what side-effects...was reassuring. It made me feel like they were well informed and I've always had confidence in them. (Respondent 1)

Participants had other ideas that could improve how information was delivered to parents. These ideas included: (i) being willing to locate resources for parents; (ii) using teachable moments to prepare parents for the immunization process; (3) speaking in terms parents can understand; (iv) respecting parents as the decision makers; (v) providing overviews of diseases and vaccines; (vi) pointing out information specific to immunization when given at postpartum visits; and (vii) working together with alternative health communities in providing information. The following response illustrates this last idea:

I would actually be very, very happy if, um, the two health communities...the homeopaths and the MDs, would work together, because they both have a tremendous amount of information...um...they both, uh, I think are very, um, credible. I think they both carry a lot of weight and they both have some very valid points, but I think they need to work together. (Respondent 7)

A final comment illustrates both the recommendation to address parents' concerns and the suggestion to willingly locate resources for parents.

...and to have the answers, you know, or if...if they don't know, that maybe they could suggest where I might be able to find that information, you know...where I might look...you know? I'd like it to be validated that, you know, it is a concern...even though, to them, this one child in a million, right? But to me, it's my child. (Respondent 3)

In order to begin assessing the value of this study, it was important to know whether local public health nurses gained greater understanding of what parents needed from them when making decisions about child immunization. Initial



feedback indicated that the nurses realized there was room to improve their practice. Feedback given later indicated that the nurses had now incorporated these ideas and were using them in their practice.

Two particular words described the feedback from those nurses: enlightenment and confirmation. Here are a number of thoughts shared by some of the nurses:

Enlightenment: Nurses commented:

My practice changed as a result of the study.... I used to push for vaccination so that the stats would look good. Since the study, I spend more time making sure that the parents are feeling comfortable with immunization....I believe in the long term, this approach will yield an improved immunization rate as well as improved respect for other public health initiatives. (Nurse 1)

...I certainly give a lot more information than I might have in the past. I don't push vaccines, but offer as much info as possible to try to help parents make a decision. I don't skirt the issue of side effects and will offer to find more info if I can. I have also started letting people know that it is never too late to start vaccinations.... I think I try to give a balanced view, even though I am pro-vaccine. I find that arguing with people never gets you anywhere. (Nurse 2)

I am more ready to listen to parents' concerns. (Nurse 3)

...parents are not passive consumers – we need to be better prepared to answer their questions intelligently instead of just 'it is the right thing to do because we say so'. Also to respect the parents' right to make that choice. (Nurse 4)

What I learned is how important it is to acknowledge and respect a parents concerns around immunization. Give them the information and give them the time to make an informed decision. Parents are only acting out of concern for their children and it is important to recognize this. (Nurse 8)

Confirmation: Nurses commented:

...it confirmed my belief that one of my roles is to help parents access the info they need to be comfortable making a decision re: immunization. ...parents need to be able to trust the nurse: that s/he will not judge them for questioning the safety and need of vaccines, and that s/he will provide them with non-biased information sources. (Nurse 5)

...confirmed my belief that people need to be totally comfortable with their decision to vaccinate themselves or their children. (Nurse 6)

...reminded me that every parent makes the decisions about their child's health and immunization and it is my job to provide information and support and the rest is up to them! (Nurse 7)

Discussion

During the 1990s, local public health nurses began to notice a shift in how accepting parents were of child immunization. The nurses had observed reluctance of some parents to accept the information routinely provided as the only source they would use in making their decision. Other sources of information, which questioned the effectiveness, safety, and long-term effects of the vaccines, seemed readily available to these parents. They began to question whether it was safe and necessary to vaccinate their children, and local nurses found it increasingly difficult to know how to respond when confronted about these issues.

The fact that parents were seeking alternative sources of information for this decision showed an increasing need to look at the situation with new eyes. What were parents looking for that the standardized information was not providing? What did they need to know in order to make an informed decision? How were parents deciding whom to believe among the sources of information they encountered? Thus, this study explored these questions and a veritable wealth of information was gathered during the interview process.



Most participants confirmed that the use of information had played some role in their decision about immunizing their children. However, other factors were seen at times to have greater influence on those decisions. Other factors identified were: personal/others experiences; beliefs; perceived risks to the child; parents were unaware of their right in Alberta to make the decision; and relationships with health professionals.

Mothers expressed worries about making the decision to vaccinate their children. First, were they making the right decision? Second, would they be respected for the decision they had made? Third, had they received complete and balanced information on which to base their decision?

Study participants defined what 'good' information meant to them. Full disclosure about vaccines in a language easily understood was important to them. Mothers also determined what they considered credible sources of information. This criterion seemed to be based on their experiences and feelings.

The study results also identified participants' perceived information needs. Certainly it was important that information on child immunization address all sides of the issue and answer questions thoroughly. However, it was also important to address the needs of parents individually in such areas as how information was to be presented, where it would be most available, and when would it be most helpful.

Beyond the information itself, most participants felt that how health professionals conveyed information had a major impact on them. Comments referring to trust and respect were often heard in the interviews. These mothers wanted to feel respected and supported in whatever decision they made. They did not always feel that health professionals could do this because of their professional role and bias toward promoting immunization.

The findings of this study were limited by the following factors: (i) the design meant that only parents living in a specific rural Alberta area were included and, thus, the results cannot be generalized; (ii) the size of sample was

small; and (iii) only mothers volunteered to participate. It should, however, be noted that some mothers indicated that fathers were actively involved in making decisions about immunizing their children.

While limited, the results were comprehensive and provided much information to improve practice. The significance of this study was found to be in the ideas and concerns these mothers shared during the interviews, which were relevant to the local public health nurses, as confirmed in interviews with the nurses about the utility of the results. Some of the nurses were able to identify improved ways to broach the subject of child immunization with their parents. Others felt confirmed in the way they were supporting parents and conveying information.

As a result of this study, the nurses also recognized that not all parents wanted to immunize their children and that they may not be receptive to information offered to them. The nurses saw that persuading or intimidating these parents into vaccinating their children was unlikely, and that in Alberta parents have the right to choose.

This study clearly suggests parents simply wanted to make the right decision for their children. Sporton et al. has said that parents perceive themselves as having the roles of protector and decision-maker, and being responsible for any consequences resulting from those decisions²⁰. Immunization requires parents to take a small but active risk with their children for the benefit of the community, and some may see that risk as unnecessary²¹. The nurses were able to gain a better understanding of how important it was to acknowledge parents' concerns, articulate a balanced presentation on the benefits and risks of immunization, encourage questions and thoughtful reflection about the issue, and support parents in the decision they make.

Future investigation on this subject, using a larger, more diverse population from both urban and rural areas to ascertain if there are any differences between rural and urban parents' perspectives, would further add to the knowledge base on this subject for front line health professionals.



Conclusion

While not all the information generated in this study may be new, its strength was that the need for it arose in practice, and that nurses appeared to take ownership of the results because this was about parents in their region. Nurses' feedback on this study and its findings demonstrated a high likelihood that the results would be used and lead to changes in practice.

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References

1. Poland GA, Jacobson RM. Understanding those who do not understand: a brief review of the anti-vaccine movement. *Vaccine* 2001; **19**: 2440-2445.
2. Jaroff L. Vaccine jitters. *Time* 1999; **154**(11) : 64-65.
3. Fine PEM, Chen RT. Confounding in studies of adverse reactions to vaccines. *American Journal of Epidemiology* 1992; **136**: 121-135.
4. Lemonick MD, Park A. Vaccines stage a comeback. (Online) 2002. Available: www.time.com (Accessed 5 March 2008).
5. NewsRx. Childhood immunizations: parents must get more information to counter immunization fears. *Medical Letter on the CDC&FDA*. (Online) 14 March 2004. Available: <http://www.newsrx.com/newsletters/Medical-Letter-on-the-CDC-and-FDA/2004-03-14/0314200433322DC.html> (No date of access).
6. Asch-Goodkin J. When parents say "No" to immunizing their child. *Contemporary Pediatrics* 2005; **22** : 80,78,76.
7. Duffell E. Attitudes of parents toward measles and immunisation after a measles outbreak in an anthroposophical community. *Epidemiology and Community Health* 2001; **55**: 685-686.
8. Gellin BG, Maibach EW, Marcuse EK. Do parents understand immunizations? A national telephone survey. *Pediatrics* 2000; **106**: 1097-1102.
9. Halperin SA. How to manage parents unsure about immunization. *Canadian Journal of CME* 2000; **12**: 62-74.
10. Evans G, Bostrom A. Vaccine risk communication. *American Journal of Preventive Medicine* 1998; **14**: 237-239.
11. Levi BH. Addressing parents' concerns about childhood immunizations: a tutorial for primary care providers. *Pediatrics* 2007; **120**: 18-26.
12. Smailbegovic MS, Laing GJ, Bedford H. Why do parents decide against immunization? The effect of health beliefs and health professionals. *Child: Care, Health & Development* 2003; **29**: 303-311.
13. Alberta Health and Wellness. *Table B-11: Immunization coverage*. (Online) 2004. Available: <http://www.health.alberta.ca/regions/b11.htm> Accessed 10 March 2008.
14. Austin H. Parents' perceptions of information on immunization. *Journal of Child Healthcare* 2001; **5**: 54-59.
15. Lochhead YJ. Failure to immunize children under 5 years: a literature review. *Journal of Advanced Nursing* 1991; **16**: 130-137.
16. Creswell JW. *Qualitative inquiry and research design. Choosing among five traditions*. Thousand Oaks, CA: Sage, 1998.
17. Polit DE, Hungler BP. *Nursing research. Principles and methods*, 6th edn. Philadelphia, PA: JB Lippincott, 1999.
18. Rothe JP. *Undertaking qualitative research*. Edmonton, AB: The University of Alberta Press, 2000.



19. Norwood SL. *Research strategies for advanced practice nurses*. New Jersey, NY: Prentice Hall Health, 2000; 147-168.

20. Sporton RK, Francis SA. Choosing not to immunize: are parents making informed decisions? *Family Practice* 2001; **18**: 181-88.

21. Leask JA, Chapman S. An attempt to swindle nature: press anti-immunisation reportage 1993-1997. *Australian and New Zealand Journal of Public Health* 1998; **22**: 17-26.
